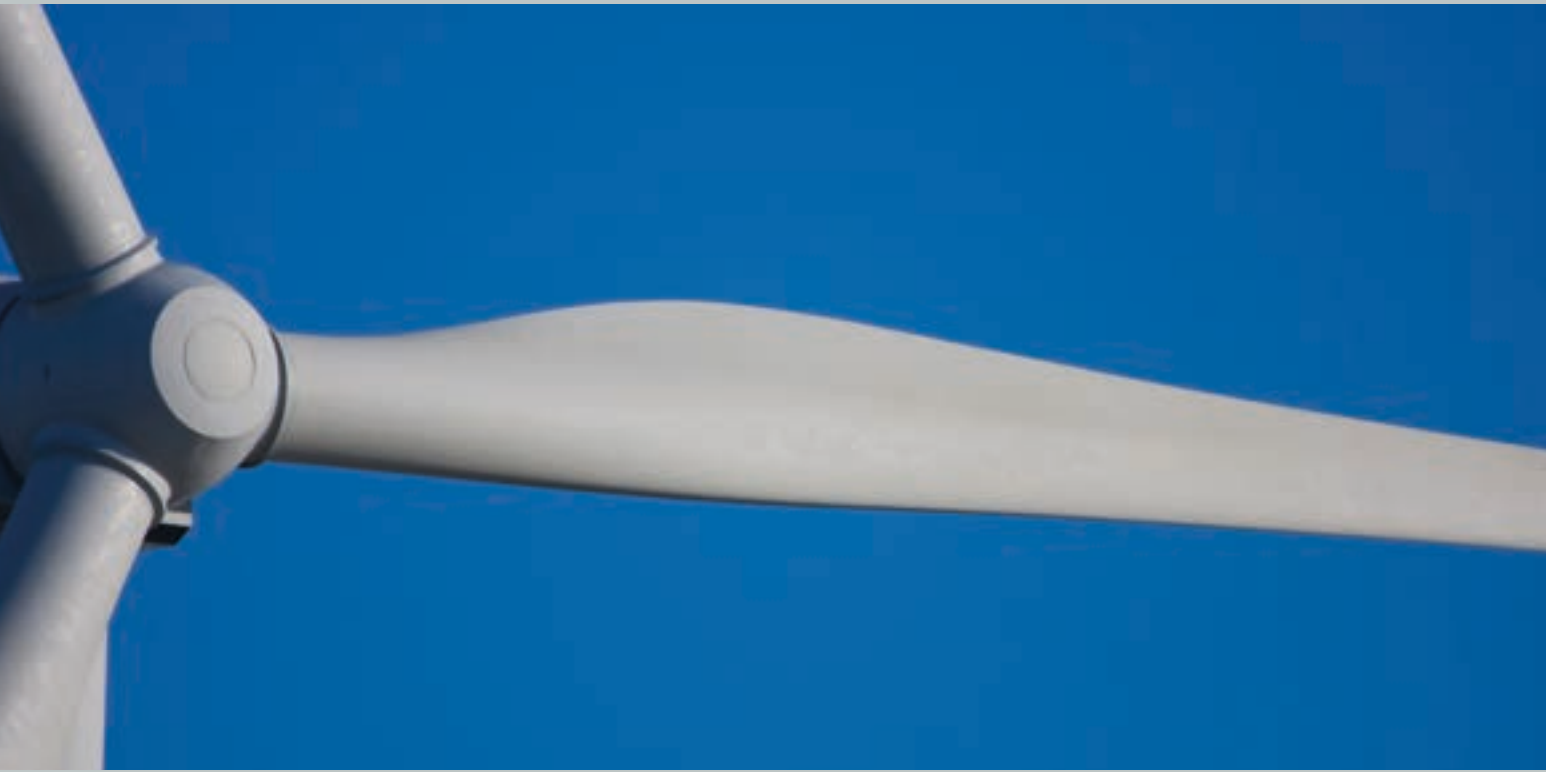




**HELUKABEL®**



 Edition 7

# CABLES & ACCESSORIES FOR WIND TURBINES

**HELUWIND WK-SERIE** 

## ■ EDITORIAL

Cables and wires in wind turbines are as diverse as the wide range of environmental requirements that must be considered when designing them. For example, lightweight and flexible aluminium cables that can be fed into the tower in one length without costly interfaces as well as multi-wire aluminium conductors that can be pre-installed in the individual tower sections; torsion-resistant cables from 0.5 to 400 mm<sup>2</sup> (20 AWG to 750 kcmil) with different insulation materials and voltage levels that have passed rigorous testing in our torsion test tower; heat-resistant cables for generator connections and slip ring transmitter applications; Ethernet cables and bus technology for data communication; various fibre-optic cables with plug-and-play capabilities for fast installation on site.

In addition to selecting the right construction materials, experience is a crucial factor. We have been supporting customers in the wind power industry for over 20 years. As a leading developer in partnership with the largest turbine and component manufacturers, we are well aware of the different application scenarios and requirements. This expertise is reflected in our cable products and the associated connection technology. With our newly published catalogue, we invite you to discover our recent cable technology developments and solutions for the wind power sector.

Kind regards,



Helmut Luksch,  
Chief Executive Officer, HELUKABEL® GmbH



# ■ HELUKABEL® AT A GLANCE

## FAMILY FOCUSED

- Family enterprise since 1978

## GLOBAL

- 43 locations in 26 countries
- Just-in time delivery in over 160 countries

## SUCCESSFUL

- 476 million Euro turnover
- 1.200 employees

## LOGISTICS

- 33,000 products in stock
- 24 h delivery service
- State-of-the-art logistics facility

## PRODUCTION

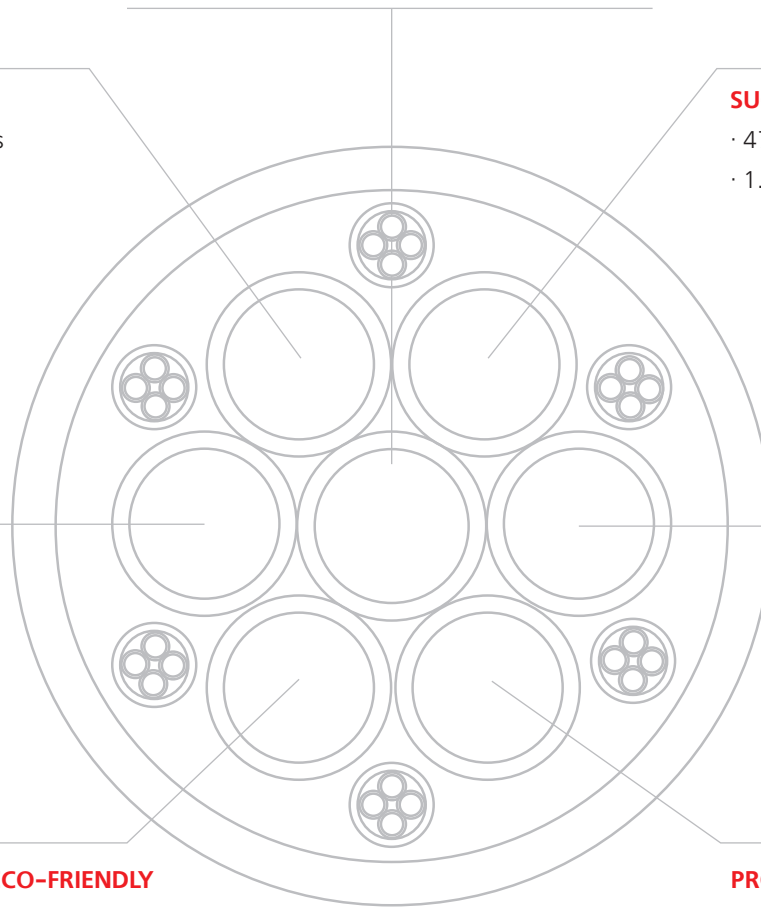
- 6 manufacturing and assembly locations worldwide

## QUALITY-MINDED AND ECO-FRIENDLY

- ISO 9001 & 14001 & 50001
- Energy supplied by the firm's own solar and bio-gas plant

## PRODUCTS

- Cables, wires and cable accessories
- single-source supplier for industry and infrastructure



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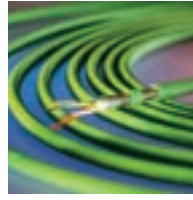
# ■ CHAPTER OVERVIEW



## Torsion-resistant cables

**0,6/1kV** S. 28  
**1,8/3kV** S. 51  
**3/36kV** S. 53

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## Data cables

S. 168

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## Copper power cables

**0,6/1kV** S. 58

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## Control cables UL listed

S. 188

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## Aluminium power cables

**0,6/1kV** S. 66  
**1,8/3kV** S. 77

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## Communication cables for Wind Turbines

S. 218

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## Infrastructure cables

S. 82

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## Tools & Cable Accessories

S. 252

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## Control cables

S. 108

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## Technical information

S. 302

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## Single conductors

S. 154

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# ■ WIND TURBINES: FUNCTIONAL OVERVIEW



## NACELLE

### Oil-resistant cables for high temperatures

- highly flexible control and bus cables for heavy mechanical loads in rough environments of rotating components
- hybrid cable solutions with increased current carrying capacity for the supply and control of the pitch drive (rotor blade adjustment), from the slip ring through the hollow gearbox shaft to the hub
- torsion-resistant, fire detection cable
- copper and fibre optic data and communication cable



## TOWER BASE

### Multi-wire and finely stranded power cables

- aluminium and copper cables
- 0.6 / 1 kV to 35 kV for direct burial
- Fibre optic cable for communication and monitoring
- conduit systems

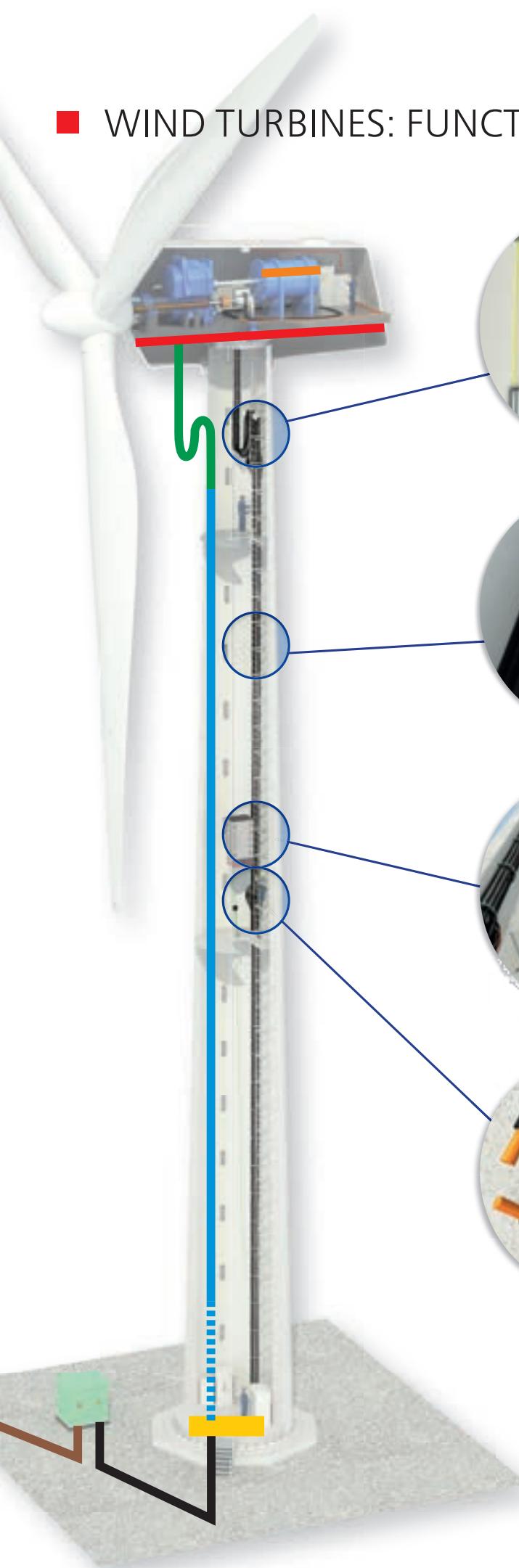
### Connection to the grid

#### Medium-voltage cables

- aluminium and copper cables
- all voltage levels, cross sections up to 1000 mm<sup>2</sup>
- length and laterally watertight
- Outdoor fibre optic cable for park communication Connection & indoor termination sleeves



# ■ WIND TURBINES: FUNCTIONAL OVERVIEW



## LOOP

### Torsion-resistant cables of the HELUKABEL WK series

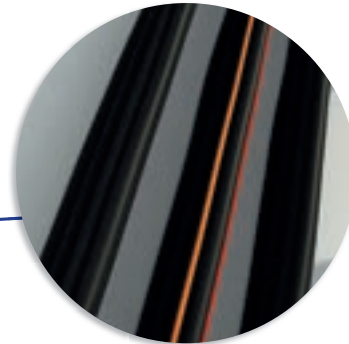
- tested for more than 15,000 torsion cycles
- for climate zones from -40°C to +145°C
- oil, ozone and UV-resistant
- multiple approvals available
- cable grips



## TOWER

### Aluminium & copper cables

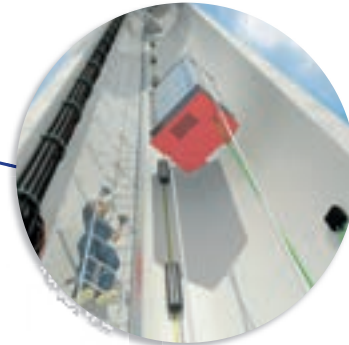
- multi-wire and finely stranded versions, as well as specific alloys
- 0.6/1 kV – 35 kV
- VDE, CE, UL/CSA listed fastening systems from leading manufacturers



## LIFT

### HELUKABEL WK Lift Cables

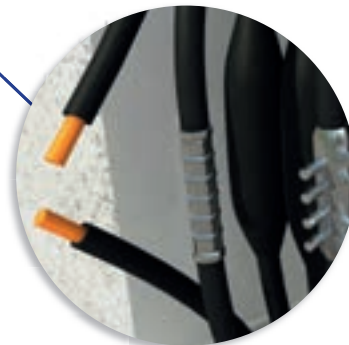
- supply cables for lifts
- as carriage version for mid-level feed-in, optional as flat cables
- high bending and abrasion resistance
- CE & UL/CSA approvals



## CONNECTOR

### Extensive connectivity solutions

- CU/CU – AL/AL – AL/CU
- available as crimp and screw fitting version
- crimp tools: electro-hydraulic, hand-held press tools



## KEY

### Cables and wires for usage in:

- Nacelle
- Generator
- Cable loop
- Tower
- ▒ Tower base
- Tower control
- Infrastructure
- Basement



# SELECTION TABLE: CABLES & WIRES

Usage, see chart  
 Approbation  
 fi e tests FT4  
 fi e tests FT1 (with FT 2)  
 nominal voltage according to UL  
 nominal voltage U<sub>0</sub>/U<sub>i</sub>  
 operating peak voltage  
 halogen-free  
 oil resistant I\*\*  
 largely oil resistant  
 UV-resistant  
 offshore employment  
 temp. non-flexing (in °C)  
 temp. flexing (in °C)  
 twistable +/- per meter  
**Page**

| <b>Torsion-resistant cables 0,6/1kV</b> |                                  |   |        |           |    |   |   |              |             |             |           |           |
|---|----------------------------------|---|--------|-----------|----|---|---|--------------|-------------|-------------|-----------|-----------|
| WK 103w-Torsion                         | UL, CSA, CE                      | x | 1000 V | 0,6/1kV   | x* | x | x | -40 bis +90  | -35 bis +90 | 140°        | <b>30</b> |           |
| WK 103w EMV D-Torsion                   | UL, CSA, CE                      | x | 1000 V | 0,6/1kV   | x* | x | x | -40 bis +90  | -35 bis +90 | 140°        | <b>32</b> |           |
| WK 103k-Torsion                         | UL, CSA, CE                      | x | 1000 V | 0,6/1kV   |    | x | x | -40 bis +80  | -40 bis +80 | 140°        | <b>34</b> |           |
| WK 103k EMV D-Torsion                   | UL, CSA, CE                      | x | 1000 V | 0,6/1kV   |    | x | x | -40 bis +80  | -40 bis +80 | 140°        | <b>36</b> |           |
| WK 135-Torsion                          | UL, CSA, CE 60332-3              |   | 1000 V | 0,6/1kV   | x  | x | x | x            | -40 bis +90 | -40 bis +90 | 150°      | <b>38</b> |
| WK 135 EMV D-Torsion                    | UL, CSA, CE 60332-3              |   | 1000 V | 0,6/1kV   | x  | x | x | x            | -40 bis +90 | -40 bis +90 | 150°      | <b>40</b> |
| WK 137-Torsion FT4                      | UL, CSA, CE x <sup>1</sup> , FT4 |   | 1000 V | 0,6/1kV   | x  | x | x | x            | -40 bis +90 | -40 bis +90 | 150°      | <b>42</b> |
| WK 137 EMV D-Torsion FT4                | UL, CSA, CE x <sup>1</sup> , FT4 |   | 1000 V | 0,6/1kV   | x  | x | x | x            | -40 bis +90 | -40 bis +90 | 150°      | <b>44</b> |
| WK 101 H                                | CE                               |   |        | 0,6/1kV   | x  | x | x | -50 bis +100 | -40 bis +90 |             | <b>46</b> |           |
| WK 110-Torsion                          | CE                               |   |        | 0,6/1kV   | x  | x | x | -40 bis +90  | -40 bis +90 | 150°        | <b>47</b> |           |
| WK H07BN4-F WIND-T                      | CE                               |   |        | 450/750V  |    |   | x | -45 bis +90  | -35 bis +90 | 150°        | <b>48</b> |           |
| WK Fire alarm cable-T                   | CE                               | x |        | 300/500V  | x  | x | x | -50 bis +90  | -40 bis +80 | 216°        | <b>49</b> |           |
| WK DLO, WK DLO-Torsion                  | UL, CSA                          | x | x      | 2000 V    |    |   | x | -40 bis +90  | -40 bis +90 | -/150°      | <b>50</b> |           |
| <b>Torsion-resistant cables 1,8/3kV</b> |                                  |   |        |           |    |   |   |              |             |             |           |           |
| WK 300w-Torsion                         | CE                               |   |        | 1,8/3 kV  |    | x | x | -40 bis +90  | -35 bis +90 | 100°        | <b>51</b> |           |
| WK 310-Torsion                          | CE                               |   |        | 1,8/3 kV  | x  | x | x | -40 bis +90  | -40 bis +90 | 150°        | <b>52</b> |           |
| <b>Torsion-resistant cables 3/36kV</b>  |                                  |   |        |           |    |   |   |              |             |             |           |           |
| WK MS 610 Torsion 3,6/6kV               |                                  |   |        | 3,6/6 kV  |    | x | x | -40 bis +90  | -40 bis +90 | 105°        | <b>53</b> |           |
| WK MS-Single-Torsion 12/20 kV           |                                  |   |        | 12/20 kV  |    | x | x | -40 bis +90  | -40 bis +90 | 105°        | <b>54</b> |           |
| WK MS-Single-Torsion UL/CSA             | UL, CSA                          |   |        | 3,6-20 kV |    | x | x | -40 bis +90  | -40 bis +90 | 105°        | <b>55</b> |           |
| WK MS-Multi-Torsion                     |                                  |   |        | 3,6-38 kV |    | x | x | -40 bis +90  | -40 bis +90 | 105°        | <b>56</b> |           |
| WK MS-Multi-Torsion UL/CSA              | UL, CSA                          |   |        | 3,6-38 kV |    | x | x | -40 bis +90  | -40 bis +90 | 105°        | <b>57</b> |           |

x<sup>1</sup> for Multicore Types

\*in preparation

\*\*in accordance with UL 1277, Table 11.2

<sup>1</sup>For underground laying or foundation with protection tube only (waterproof)

# SELECTION TABLE: CABLES & WIRES

|   | Usage, see chart | Approbation | FT1/IEC 60332-1 | nominal voltage according to UL | nominal voltage U <sub>0</sub> /U <sub>i</sub> / operating peak voltage | halogen-free | largely oil resistant | UV-resistant | temp. non-flexing (in °C) | temp. flexing (in °C) | Cu-Shield | Page         |
|---|------------------|-------------|-----------------|---------------------------------|---|--------------|-----------------------|--------------|---------------------------|-----------------------|-----------|--------------|
| <b>Copper power cables 0,6/1kV</b>          |                  |             |                 |                                 |   |              |                       |              |                           |                       |           |              |
| WK Thermflex 14                             |                  | CE          |                 |                                 | 0,6/1kV   | x            | x                     | x            | -55 bis +145              | -20 bis +120          |           | <b>60</b>    |
| N2XH  |                  | VDE         | 60332-3         |                                 | 0,6/1kV   | x            |                       |              | -30 bis +90               | -5 bis +50            |           | <b>61</b>    |
| Single 600-J/-O                             |                  | UL, CSA     | x               | 600 V                           | 0,6/1kV   |              |                       | x            | -40 bis +90               | -5 bis +90            |           | <b>63</b>    |
| Single 600-CY -J/-O                         |                  | UL, CSA     | x               | 600 V                           | 0,6/1kV   |              |                       | x            | -40 bis +90               | -5 bis +90            | x         | <b>64</b>    |
| <b>Aluminium power cables 0,6/1kV</b>       |                  |             |                 |                                 |   |              |                       |              |                           |                       |           |              |
| NAYY  |                  | VDE         | x               |                                 | 0,6/1kV   |              |                       |              | -40 bis +70               | -5 bis +50            |           | <b>68</b>    |
| NAY2Y                                       |                  | VDE         | x               |                                 | 0,6/1kV   |              |                       |              | -40 bis +70               | -5 bis +50            |           | <b>70</b>    |
| NA2XY                                       |                  | VDE         | x               |                                 | 0,6/1kV   |              |                       |              | -40 bis +70               | -5 bis +50            |           | <b>71</b>    |
| WK (N)A2XH                                  |                  | CE          | 60332-3         |                                 | 0,6/1kV   | x            |                       | x            | -40 bis +90               |                       |           | <b>72</b>    |
| WK ALU Tower                                |                  | CE          |                 |                                 | 0,6/1kV   |              | x                     | x            | -40 bis +90               |                       |           | <b>73</b>    |
| WK ALU Blade                                |                  | CE          |                 |                                 | 0,6/1kV   |              | x                     | x            | -40 bis +80               |                       |           | <b>74</b>    |
| WK POWERLINE ALU <sup>1</sup>               |                  | CE          | x               |                                 | 0,6/1kV   |              | x                     | x            | -40 bis +105 <sup>3</sup> | -20 bis +90           |           | <b>75</b>    |
| WK POWERLINE ALU robust <sup>1</sup>        |                  | CE          | x               |                                 | 0,6/1kV   |              | x                     | x            | -40 bis +105 <sup>3</sup> | -20 bis +90           |           | <b>76</b>    |
| <b>Aluminium power cables 1,8/3kV</b>       |                  |             |                 |                                 |   |              |                       |              |                           |                       |           |              |
| WK POWERLINE ALU <sup>1</sup>               |                  |             | x               |                                 | 1,8/3kV   |              | x                     | x            | -40 bis +105 <sup>3</sup> | -20 bis +90           |           | <b>77</b>    |
| WK POWERLINE ALU robust <sup>1</sup>        |                  |             | x               |                                 | 1,8/3kV   |              | x                     | x            | -40 bis +105 <sup>3</sup> | -20 bis +90           |           | <b>78</b>    |
| WK POWERLINE ALU halogenfree <sup>1</sup>   |                  |             | x               |                                 | 1,8/3kV   | x            | x                     | x            | -40 bis +105 <sup>3</sup> | -20 bis +90           |           | <b>79</b>    |
| WK RHH/RHW-2 ALU <sup>1</sup>               |                  |             |                 | 60332-3                         | 1,8/3kV   |              | x                     | x            |                           | -40 bis +90           |           | <b>80</b>    |
| <b>Infrastructure cables</b>                |                  |             |                 |                                 |   |              |                       |              |                           |                       |           |              |
| N2XS <sub>Y</sub> - N2XS <sub>2Y</sub>      |                  | VDE         |                 |                                 | 6-30 kV   |              |                       |              |                           |                       | x         | <b>84/86</b> |
| NA2XS <sub>Y</sub> - NA2XS <sub>2Y</sub>    |                  | VDE         |                 |                                 | 6-30 kV   |              |                       |              |                           |                       | x         | <b>92/94</b> |
| N2XS(F)2Y - N2XS(FL)2Y                      |                  | VDE         |                 |                                 | 6-30 kV   |              |                       |              |                           |                       | x         | <b>88/90</b> |
| NA2XS(F)2Y - NA2XS(FL)2Y                    |                  | VDE         |                 |                                 | 6-30 kV   |              |                       |              |                           |                       | x         | <b>96/98</b> |
| WK POWERLINE ALU MS Single                  |                  |             |                 |                                 | 6-30kV  |              | x                     | x            |                           | -20 bis +90           | x         | <b>100</b>   |
| MV-90 / MV-105 ALUMINIUM / COPPER UL listed |                  | UL          |                 | 5-35 kV                         |   |              | x                     | x            | 90/105                    |                       | -/x       | <b>101</b>   |
| <b>Data cables</b>                          |                  |             |                 |                                 |   |              |                       |              |                           |                       |           |              |
| PAAR-TRONIC-CY                              |                  |             | x               |                                 | 350V  |              |                       | x            | -30 bis +80               | -5 bis +80            | x         | <b>170</b>   |
| DATAFLAMM®                                  |                  |             | x               |                                 | 350V  | x            |                       |              | -30 bis +80               | -5 bis +80            |           | <b>172</b>   |
| DATAFLAMM®-C                                |                  |             | x               |                                 | 350V  | x            |                       |              | -40 bis +70               | -5 bis +70            | x         | <b>173</b>   |
| DATAFLAMM®-C-PAAR                           |                  |             | x               |                                 | 350V  | x            |                       |              | -40 bis +70               | -5 bis +70            | x         | <b>174</b>   |
| Command cable UL (LiYY)                     |                  | UL, CSA     | x               | 300V                            |   |              | x                     |              | -20 bis +80               | -10 bis +80           |           | <b>175</b>   |
| Command cable UL (LiYCY)                    |                  | UL, CSA     | x               | 300V                            |   |              | x                     |              | -20 bis +80               | -10 bis +80           | x         | <b>176</b>   |
| Command cable UL (LiYY-TP)                  |                  | UL, CSA     | x               | 300V                            |   |              | x                     |              | -20 bis +80               | -10 bis +80           | x         | <b>178</b>   |
| Command cable UL (LiYCY-TP)                 |                  | UL, CSA     | x               | 300V                            |   |              | x                     |              | -20 bis +80               | -10 bis +80           | x         | <b>180</b>   |
| SUPERTRONIC®-PURö                           |                  |             |                 |                                 | 350V  |              | x                     | x            | -40 bis +70               | -5 bis +70            |           | <b>182</b>   |
| SUPERTRONIC®-C-PURö                         |                  |             |                 |                                 | 350V  | x            | x                     | x            | -40 bis +70               | -30 bis +70           | x         | <b>183</b>   |
| SUPERTRONIC®-330 PURö                       |                  | UL, CSA, CE | x               | 300V                            | 300V  | x            | x                     | x            | -40 bis +80               | -30 bis +80           |           | <b>184</b>   |
| SUPERTRONIC®-330-C-PURö                     |                  | UL, CSA, CE | x               | 300V                            | 300V  | x            | x                     | x            | -40 bis +80               | -30 bis +80           | x         | <b>185</b>   |
| SUPER-PAAR-TRONIC-C-PUR®                    |                  |             |                 |                                 | 350V  | x            | x                     | x            | -40 bis +70               | -30 bis +70           | x         | <b>186</b>   |
| SUPER-PAAR-TRONIC 340-C-PUR                 |                  | UL, CSA     | x               | 300V                            | 300V  | x            | x                     | x            | -40 bis +80               | -30 bis +80           | x         | <b>187</b>   |

x<sup>1</sup> for Multicore Types

\*in preparation

\*\*in accordance with UL 1277, Table 11.2

<sup>1</sup>For underground laying or foundation with protection tube only (waterproof)  
<sup>3</sup>maximum 3.000 h

# SELECTION TABLE: CABLES & WIRES

Usage, see chart  
 Approbation  
 FT1/ IEC 60332-1  
 nominal voltage according to UL  
 nominal voltage U<sub>0</sub>/U /  
 operating peak voltage  
 halogen-free  
 largely oil resistant  
 UV-resistant  
 temp. non-flexing (in °C)  
 temp. flexing (in °C)  
 Cu-Shield  
**Page**

| Control cables             |  |              |         |       |           |   |   |       |              |              |   |            |
|----------------------------|--|--------------|---------|-------|-----------|---|---|-------|--------------|--------------|---|------------|
| WK Lift                    |  | CE           |         |       | 300/500 V | x | x | x     | -40 bis +80  | -35 bis +80  |   | <b>110</b> |
| JZ-500                     |  |              | x       |       | 300/500 V |   | x |       | -40 bis +80  | -15 bis +80  |   | <b>111</b> |
| JZ-500 COLD                |  |              | x       |       | 300/500 V |   | x |       | -40 bis +80  | -30 bis +80  |   | <b>113</b> |
| F-CY-JZ                    |  |              | x       |       | 300/500 V |   | x |       | -40 bis +80  | -10 bis +80  | x | <b>114</b> |
| Y-CY-JZ                    |  |              | x       |       | 300/500 V |   | x |       | -40 bis +80  | -15 bis +80  | x | <b>116</b> |
| JZ-500 HMH                 |  |              | 60332-3 |       | 300/500 V | x | x |       | -40 bis +70  | -15 bis +70  |   | <b>118</b> |
| JZ-500 HMH-C               |  |              | 60332-3 |       | 300/500 V | x | x |       | -40 bis +70  | -15 bis +70  | x | <b>120</b> |
| MEGAFLEX 500               |  | UL, CSA      | 60332-3 | 600 V | 300/500 V | x | x | x     | -40 bis +80  | -30 bis +80  |   | <b>122</b> |
| MEGAFLEX 500-C             |  | UL, CSA      | 60332-3 | 600 V | 300/500 V | x | x | x     | -40 bis +80  | -30 bis +80  | x | <b>124</b> |
| JZ-600                     |  |              | x       |       | 0,6/1kV   |   | x | x     | -40 bis +80  | -15 bis +80  |   | <b>126</b> |
| JZ-600-Y-CY                |  |              | x       |       | 0,6/1kV   |   | x | x     | -40 bis +80  | -15 bis +80  | x | <b>128</b> |
| JZ-600 HMH                 |  |              | 60332-3 |       | 0,6/1kV   | x | x |       | -40 bis +70  | -15 bis +70  |   | <b>130</b> |
| JZ-600 HMH-C               |  |              | 60332-3 |       | 0,6/1kV   | x | x |       | -40 bis +70  | -15 bis +70  | x | <b>132</b> |
| JZ-600 UL/CSA              |  | UL, CSA      | x       | 1kV   | 0,6/1kV   |   | x | black | -40 bis +80  | -5 bis +80   |   | <b>134</b> |
| JZ-600-Y-CY-UL/CSA         |  | UL, CSA      | x       | 1kV   | 0,6/1kV   |   | x | black | -40 bis +80  | -5 bis +80   | x | <b>136</b> |
| JZ-602                     |  | UL, CSA      | x       | 600 V |           |   | x |       | -40 bis +90  | -5 bis +90   |   | <b>138</b> |
| JZ-602-CY                  |  | UL, CSA      | x       | 600 V |           |   | x |       | -40 bis +90  | -5 bis +90   | x | <b>140</b> |
| JZ-603                     |  | UL, CSA, HAR | x       | 600 V | 300/500 V |   | x |       | -40 bis +70  | -5 bis +70   |   | <b>142</b> |
| JZ-603-CY                  |  | UL, CSA, HAR | x       | 600 V | 300/500 V |   | x |       | -40 bis +70  | -5 bis +70   | x | <b>143</b> |
| H07RN-F                    |  | HAR          |         |       | 450/750 V |   | x |       | -30 bis +60  | -25 bis +60  |   | <b>145</b> |
| SOOW                       |  | UL, CSA      |         | 600 V |           |   | x | x     | -40 bis +90  |              |   | <b>147</b> |
| WK POWERLINE ALU Multi     |  | CE           | x       |       | 0,6/1kV   |   | x | x     | -40 bis +90  | -20 bis +90  |   | <b>148</b> |
| HELUTHERM® 145 MULTI       |  | GL           | 60332-3 |       | 300/500 V | x | x | x     | -55 bis +145 | -35 bis +120 |   | <b>149</b> |
| HELUTHERM® 145 MULTI/-C    |  | GL           | 60332-3 |       | 300/500 V | x | x | x     | -55 bis +145 | -35 bis +120 | x | <b>151</b> |
| Control cables UL listed   |  |              |         |       |           |   |   |       |              |              |   |            |
| TRAYCONTROL® 300           |  | UL, CSA      | FT 4    | 300V  |           |   | x |       | -25 bis +105 | -25 bis +105 |   | <b>193</b> |
| TRAYCONTROL® 300-C         |  | UL, CSA      | FT 4    | 300V  |           |   | x |       | -25 bis +105 | -25 bis +105 | x | <b>195</b> |
| TRAYCONTROL® 300 TP        |  | UL, CSA      | FT 4    | 300V  |           |   | x |       | -25 bis +105 | -25 bis +105 |   | <b>197</b> |
| TRAYCONTROL® 300-C TP      |  | UL, CSA      | FT 4    | 300V  |           |   | x |       | -25 bis +105 | -25 bis +105 | x | <b>199</b> |
| TRAYCONTROL® 500           |  | UL, CSA      | FT 4    | 600V  |           |   | x |       | -40 bis +90  | -5 bis +90   |   | <b>201</b> |
| TRAYCONTROL® 500-C         |  | UL, CSA      | FT 4    | 600V  |           |   | x |       | -40 bis +90  | -5 bis +90   | x | <b>203</b> |
| JZ-604 TC TRAY CABLE       |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -25 bis +90  | -5 bis +90   |   | <b>205</b> |
| JZ-604-YCY TC TRAY CABLE   |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -25 bis +90  | -5 bis +90   | x | <b>207</b> |
| TRAYCONTROL® 600           |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -40 bis +90  | -5 bis +90   |   | <b>208</b> |
| TRAYCONTROL® 600-C         |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -40 bis +90  | -5 bis +90   | x | <b>210</b> |
| TRAYCONTROL 610 OIL RES II |  | UL, CSA      | FT 4    | 1000V |           |   | x | x     | -40 bis +90  | -40 bis +90  |   | <b>211</b> |
| MULTIFLEX 600              |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -40 bis +90  | -5 bis +90   |   | <b>213</b> |
| MULTIFLEX 600-C            |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -40 bis +90  | -5 bis +90   | x | <b>214</b> |
| TOPFLEX® 600 VFD           |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -25 bis +90  | 25 bis +90   | x | <b>215</b> |
| TOPFLEX® 650 VFD           |  | UL, CSA      | FT 4    | 600V  |           |   | x | x     | -25 bis +105 | -25 bis +105 | x | <b>216</b> |

x<sup>1</sup> for Multicore Types

\*in preparation

\*\*in accordance with UL 1277, Table 11.2

<sup>1</sup>For underground laying or foundation with protection tube only (waterproof)

# SELECTION TABLE: CABLES & WIRES

Usage: see chart  
 Approbation  
 FT1/IEC 60332-1  
 nominal voltage U<sub>0</sub>/U /  
 operating peak voltage  
 operating peak voltage  
 halogen-free  
 largely oil resistant  
 UV-resistant  
 temp. non-flexing (in °C)  
 temp. flexing (in °C)  
 Cu-Shield  
**Page**

| Single conductors  |  |              |         |      |          |   |   |   |                           |                           |   |     |
|--|--|--------------|---------|------|----------|---|---|---|---------------------------|---------------------------|---|-----|
| WK POWERLINE ALU Single  |  | CE           | x       |      | 0,6/1kV  |   | x | x | -40 bis +105              | -20 bis +90               |   | 156 |
| H07 V-K/(H)07 V-K  |  | HAR          | x       |      | 450/750V |   |   |   | -30 bis +80               | -5 bis +70                |   | 157 |
| H05Z-K/H07Z-K  |  | HAR          | x       |      | 300/500V | x |   |   | -40 bis +90               | -5 bis +70                |   | 159 |
| FIVENORM   |  | UL, CSA, HAR | x       |      |          |   |   |   | -40 bis +90               | -5 bis +90                |   | 161 |
| HELUTHERM® 145   |  | GL           | x       |      | 300/500V | x | x | x | -55 bis +145              | -35 bis +120              |   | 164 |
| HELUTHERM® 145 600V  |  | UL, CSA, GL  | x       | 600V |          | x | x | x | -55 bis +105              | -35 bis +105              |   | 166 |
| THHN/THWN  |  | UL, CSA      |         | 600V |          |   | x |   | bis +75/90                |                           |   | 167 |
| Communication cables for Wind Turbines                                   |  |              |         |      |          |   |   |   |                           |                           |   |     |
| PROFInet Type B SF/UTP PVC flexibl                                       |  | UL, CSA, CE  | FT4     | 300V | 100V     |   | x | x | -40 bis +70               | -40 bis +70               | x | 230 |
| PROFInet Type C Torsion S/UTP PUR  |  | UL, CSA, CE  | FT2     |      | 100V     | x | x | x | -40 bis +80               | -40 bis +80               | x | 231 |
| WK Industrial SF/UTP X-FRNC 105°C  |  | UL, CSA, CE  | 60332-3 | 300V | 100V     | x | x | x | -40 bis +105 <sup>2</sup> | -40 bis +105 <sup>2</sup> | x | 232 |
| TORDIERFLEX Industrial Ethernet SF/UTP PUR                               |  | UL, CSA, CE  | x       | 30V  | 50V      | x | x | x | -20 bis +80               | -20 bis +80               | x | 233 |
| WK CAN BUS 105°C   |  | UL, CSA, CE  | x       | 600V | 100V     | x | x | x | -40 bis +105              | -20 bis +90               | x | 234 |
| PROFIBUS SK indoor   |  | UL, CSA, CE  | FT4     | 600V | 100V     |   | x | x | -40 bis +80               | -5 bis +60                | x | 235 |
| PROFIBUS SK outdoor <sup>1</sup>   |  | CE           |         |      | 100V     | x |   | x | -20 bis +70               | -5 bis +60                | x | 235 |
| PROFIBUS L2 Torsion  |  | UL, CSA, CE  | x       | 300V | 100V     | x | x | x | -25 bis +75               | -25 bis +75               | x | 236 |
| PROFIBUS SK Industrial   |  | UL, CSA, CE  | x       | 30V  | 100V     | x | x | x | -40 bis +70               | -5 bis +60                | x | 237 |
| HELUCOM® AT-V(ZN)Y(ZN)Y  |  | UL, CSA      | FT4     |      |          |   | x | x | -40 bis +90               | -40 bis +90               |   | 238 |
| HELUCOM® AT-V(ZN)H(ZN)11Y  |  |              |         |      |          | x | x | x | -40 bis +90               | -40 bis +90               |   | 238 |
| HELUCOM® WK mobile A-V(ZN)11Y  |  |              | x       |      |          | x | x | x | -30 bis +70               | -20 bis +70               |   | 239 |
| HELUCOM® WK mobile A-V(ZN)YY   |  | UL, CSA      | FT4     |      |          |   | x | x | -30 bis +80               | -20 bis +80               |   | 240 |
| HELUCOM® LWL-Breakout cable Industrial HCS I-V(ZN)YY                     |  | UL, CSA      | FT4     |      |          |   | x | x | -30 bis +85               | -20 bis +85               |   | 241 |
| HELUCOM® LWL-Breakout cable Industrial HCS I-V(ZN)Y11Y                   |  |              |         |      |          |   | x |   | -20 bis +70               | -20 bis +70               |   | 242 |
| HELUCOM® Plastic-fibre optic cable PROFInet B POF/PA I-V4Y(ZN)Y          |  | UL, CSA      | FT4     |      |          |   | x |   | -30 bis +70               | -10 bis +50               |   | 243 |
| HELUCOM® Plastic-fibre optic cable PROFIBUS POF/PA I-V4Y(ZN)Y            |  | UL           | FT1     |      |          |   | x | x | -30 bis +70               | -10 bis +50               |   | 244 |
| HELUCOM® Plastic-fibre optic cable Industrial POF/PE I-V2Y, I-V2Y(ZN)11Y |  |              |         |      |          |   | x | x | -20 bis +80               | -20 bis +80               |   | 245 |
| HELUCOM® LWL-Universal cable A/I-DQ(ZN)BH                                |  |              | x       |      |          | x | x | x | -20 bis +60               | -5 bis +50                |   | 246 |
| HELUCOM® LWL-outdoor cable A-DQ(ZN)B2Y (central)                         |  |              |         |      |          |   |   | x | -20 bis +60               | -5 bis +50                |   | 247 |
| HELUCOM® LWL-outdoor cable A-DQ(ZN)B2Y (stranded)                        |  |              |         |      |          |   |   | x | -20 bis +60               | -5 bis +50                |   | 248 |
| HELUCOM® LWL-outdoor cable A-DQ(ZN)B2Y (stranded, Multifibre)            |  |              |         |      |          |   |   | x | -20 bis +60               | -5 bis +50                |   | 249 |
| LIYY-TP-UL   |  | UL, CSA      |         | 300V |          |   | x |   | -20 bis +80               | -10 bis +80               |   | 250 |

x<sup>1</sup> for Multicore Types

\*in preparation

\*\*in accordance with UL 1277, Table 11.2

<sup>1</sup>For underground laying or foundation with protection tube only (waterproof)

<sup>2</sup>With limited life cycle





## ■ RESEARCH & DEVELOPMENT

We develop optimal, tailored cable solutions for our customers.



Drag chain test system

### Our test facilities:

- Test systems for bending and torsion requirements
- Drag chain test systems with movement distances of 1 m, 3 m, 5 m, 6 m, 18 m, and 40 m
- Fire testing systems
- Abrasion testing systems
- Torsion test tower for wind turbine cables
- Aging ovens in accordance with UL, VDE, CSA, HAR, TÜV, CCC

Research and development are the foundation of our work and are an important engine for growth. Using interdisciplinary teams, we continuously push the boundaries to enhance our products and develop solutions to meet the latest technological demands. Additionally, our invaluable customer interactions, and partnerships with regional universities and research institutes allows us to stay on top of the latest emerging technologies.

When it comes to the development of new products and the materials we use, we place as much emphasis on searching for and utilising new materials as we do on manufacturing our plastic granulate mixtures ourselves. We do this in order to influence the enhancement of properties such as oil resistance, temperature range and chemical compatibility. Furthermore, we are capable of drawing the majority of our copper ourselves, thereby ensuring a consistently high level of quality with respect to properties and processing. By continuously optimising our manufacturing processes and facilities, we are striving to produce cables and wires more efficiently and economically and to accommodate the complex requirements of a wide variety of applications.

New products are tested in state-of-the-art research and development centres to ensure that they perform as specified and are ready for series production. Random sampling of products in production as well as tight measurement and control procedures guarantee our high level of quality.

The torsion properties of the HELUWIND® WK series cables are extensively tested to requirements that far exceed those of wind turbine manufacturers. The loop in the torsion test tower at our Windsbach plant is an exact replica of a wind turbine. Up to 20 cables can be assembled and tested at the same time in a specially designed cable bracket from Roxtec. A custom-made drive and control mechanism conducts a variety of torsion cycles and programs based on real rotational movements of the nacelle. Cables experience the stress of up to 18,000 cycles and the maximum required torsion of up to +/- 150° per meter. These test conditions are far more extreme than in actual application, but the findings gained from these tests directly influence the future development of our HELUWIND® WK torsion series.



Torsion test tower







## ■ PRODUCTION

We specialize in the production of high-quality cables and wires.

Using the latest production methods, our two German plants manufacture approximately one million kilometers of conductors each year (25 times around the world). More than 300 qualified employees are specialized in the production of high-quality standard and custom cables. Through the use of the latest materials and collaboration with international test institutes, we drive innovation in the areas of automation, data technology, building system technology, and renewable energy.

Since 2014, HELUKABEL has been producing cables and wires in the Chinese city of Taicang (Shanghai), primarily for the Asian market. As is with our German plants, the focus is on high-quality, flexible and highly-flexible cables and wires that are manufactured in accordance with Chinese and international standards. The use of flexible manufacturing cells enable short delivery times.



Braiding machine



Stranding machine

### Our production in numbers:

- Cables & wires from 0.05 to 1,000 mm<sup>2</sup> (30 AWG to 2,000 kcmil)
  - 40,000 m<sup>2</sup> production area
  - 23 extruder systems
  - 19 stranding machines
  - 50 braiding machines
- Manufacturing in accordance with: VDE, CE, EAC (GOST-R), UL, CSA, HAR, CCC, Germanischer Lloyd, TÜV or customer specification







## ■ LOGISTICS

Redefining logistics in the cable industry.

### INDUSTRIAL CABLE

#### Our logistics center - Hemmingen/Stuttgart

- 40,500 Euro-pallet racks with max. reel weight of 1,500 kg; 16 aisles with 16 storage and retrieval devices
- 36,800 bin locations in the automatic small parts warehouse with a capacity of 1,000 bins per hour
- 670 storage spaces in the heavy load warehouse with max. reel weight of 4,000 kg and 2.20 m diameter
- 2 km conveyor line for pallets
- Conveyer connects direct to the cable-cutting machines
- Manual processes reduced to merely packing

### INFRASTRUCTURE CABLES

#### Our logistics center - Neuenhagen/Berlin

- 11,000 cable reels in stock
- Automatic processing of reels up to 2.80 m diameter and 10 t
- 10 rewinding machines
- Cut to length with state-of-the-art 1,200 mm<sup>2</sup> cutting tools
- 24-hr delivery is possible

At its corporate headquarters in the Swabian town of Hemmingen/ Stuttgart, HELUKABEL® operates Europe's largest distribution center for cables and wires. Here a majority of the more than 33,000 products are located in a storage area of 160,000 m<sup>2</sup>. Through the use of state-of-the-art conveyor and control technology, more than 1,000 orders can be picked and dispatched daily to destinations around the world.

Neuenhagen/Berlin is the central warehouse location for underground, medium-voltage, and other infrastructure cables. Storage capacities of more than 5,000 m<sup>2</sup> (indoor) and 50,000 m<sup>2</sup> (outdoor) enable fast delivery of cable, configured from 1 - 30 kV, to construction sites and major projects. The patented heavy-load cable-cutting machines with a load capacity of more than 10 tons are the largest of their kind in Germany.

The new logistics center at the Taicang production facility serves as a product distribution hub for the Asian market, and offers incredible advantages, particularly for servicing time- and volume-critical customer projects.



Heavy-load, cable-cutting facility



Small parts warehouse



# ■ OUR VALUES

## Success through quality and innovation

HELUKABEL® GmbH is an independent company that develops, manufactures and sells cables, wires and accessories. In an environment of increasing expectations from both customers and society, the growth strategy of HELUKABEL® GmbH is based on consistent target orientation, high adaptability and continuous development of its management system. Our goal is to achieve sustainable business success through the confidence and satisfaction of our customers and society. As a result, HELUKABEL® GmbH places great emphasis on

the quality and environmental impact of its processes and products, the efficient use of resources and energy, and on satisfying legal and regulatory requirements. This is why HELUKABEL® GmbH developed and implemented an integrated management system for quality, environmental impact and energy performance based on the DIN EN ISO 9001, DIN EN ISO 14001 and DIN EN ISO 50001 standards. Our high standards are reflected in the following criteria:



The integrated management system for quality, environmental impact and energy performance reinforces HELUKABEL®'s success as a company and documents our work processes, which all employees and managers are bound to implement in accordance with what is prescribed in the management handbook.





## ■ OUR BRANDED PRODUCTS

### Cables & wires

- BIOFLEX-500® bio-oil resistant cables
- CLEANFLEX® cleanroom data and control cables
- DATAFLAMM® data and computer cables, halogen free
- DATAPUR-C® data and computer cables
- GALVANICABLE® high-voltage cathode cable
- HELUFLON® heat-resistant cables
- HELUTHERM® heat-resistant cables
- HELUTRAIN® train cables
- HELUTRUCK® vehicle cables/truck cables
- HELUWIND® wind power cables
- KOMPOFLEX® microbe-resistant cables
- KOMPOSPEED® bio-oil resistant drag chain cables
- LIFT-TRAGO® elevator control cables
- MEGAFLEX® flexible control cables, halogen free, UL/CSA
- MULTIFLEX 512® PUR drag chain cables
- MULTISPEED® drag chain cables
- NANOFLEX® PUR special control and data cables
- ROBOFLEX® robot cables
- SENSORFLEX® sensor cables
- SHIPFLEX® drag chain cables
- SOLARFLEX® photovoltaic cables
- SUPER-PAAR-TRONIC-C-PUR® drag chain cables, halogen free
- SUPERTRONIC® drag chain cables
- THERMFLEX® heat-resistant cables
- TOPFLEX® servo, feedback and motor cables
- TOPSERV® servo, feedback and motor cables
- TRAYCONTROL® exposed run cable
- TROMMPUR® easy-to-wind cables
- UNIPUR® PUR, flexible control cables

### Cable accessories

- HELUCHAIN® drag chain product line
- HELUTEK® industrial connector series
- HELUTOP® cable gland product line

### Data, network & bus technology

- HELUCOM® fiber optic cables
- HELUKAT® fiber optic connection technology
- HELUKAT® copper data cable
- HELUKAT® copper connection technology

### Media technology

- HELUEVENT® high-powered cable for TV studios
- HELULIGHT® cables for lighting control systems
- HELUSOUND® audio cable

# ■ ALWAYS CLOSE TO YOU – 43 LOCATIONS IN 26 COUNTRIES

## HELUKABEL® GmbH – Germany



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### Sales office & warehouse – Pleiße

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### Sales office Rhein-Ruhr

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### HELUKABEL® Malaysia

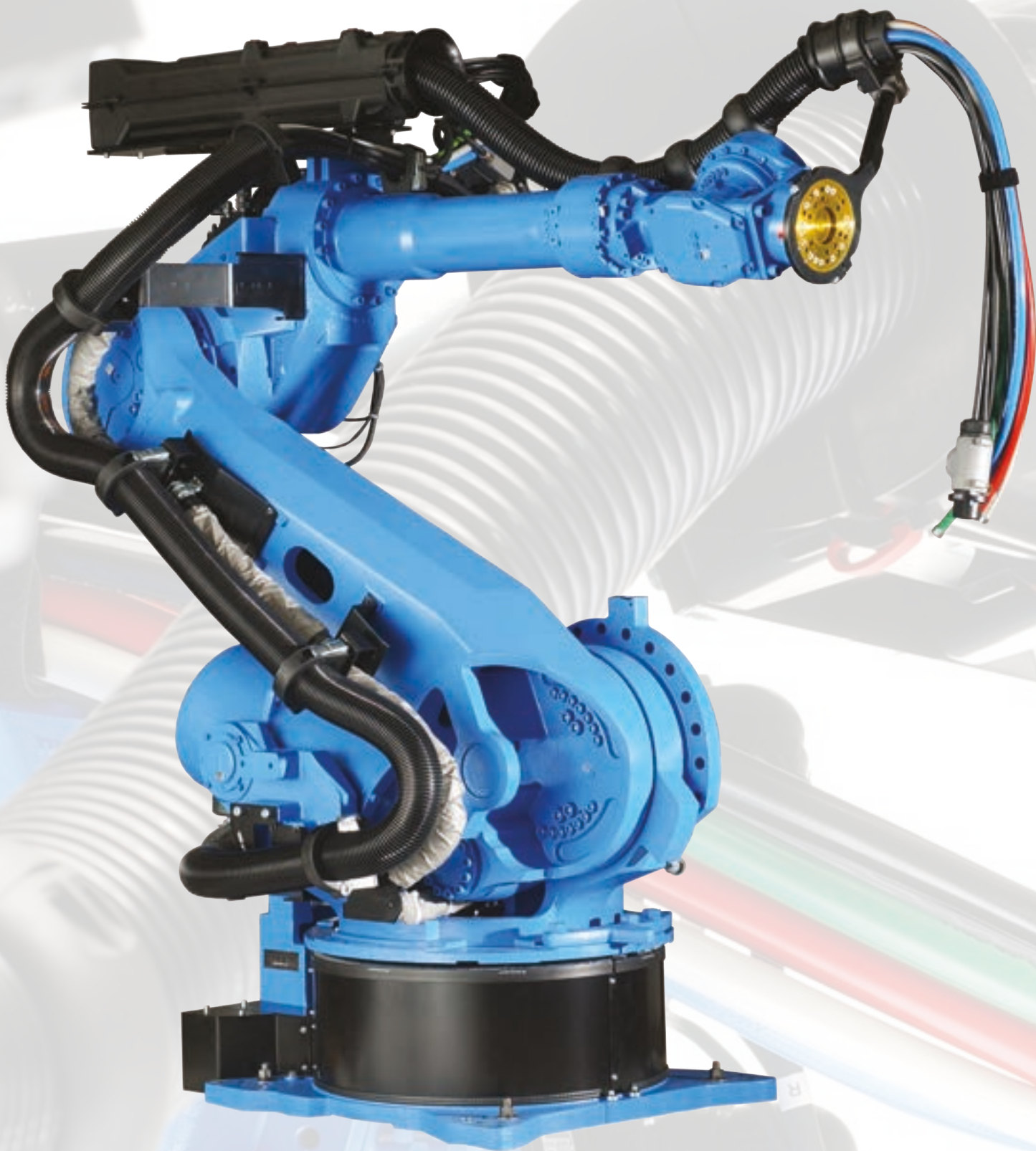
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## ■ ROBOTEC SYSTEMS - UNMATCHED ROBOTIC COMPETENCE

Since its founding in 1998, Robotec Systems GmbH, headquartered in Duisburg, Germany, has become one of the leading European companies for robot hose packages and associated fastening systems as well as for custom robot cables, cable assemblies, power screwdriver technology, controllers for measurement instrumentation and media systems such as air hoses and water hoses. The company has been a 100% subsidiary of HELUKABEL® GmbH since July 2012.

Robotec Systems develops tailored energy-supply systems that are pre-assembled and ready to install. From the development

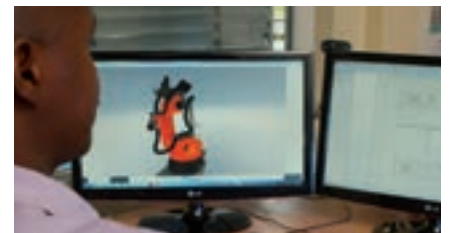
of various design concepts to prototyping, to final installation and on-site service, Robotec is a single source for all robotic services.

Through the use of first-class components, as well as superstructures and material compositions tailored for the respective application, the highest level of reliability and productivity is achieved.

Robotec's products are used in applications, such as spot, laser and inert gas welding, robot handling, and tool changing systems.



Concept



Development



Prototyping



Installation/optimization



Documentation



Repair/maintenance

### Our components:

- Fastening elements & accessories
- Pivot bearings
- Spring clamps
- Protector/impact protection
- Trumpet & accessories
- Precision pipes
- Self-fastening hoses & accessories
- Cable protection hoses
- Attachment parts
- Primary cables
- Control cables
- BUS system cables
- Pre-assembled special cables

### Robotec Systems GmbH

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www.robotec-systems.de  
info@robotec-systems.de





 **kabelmat**  
WICKELTECHNIK

Control panel with various buttons and a digital display.

## ■ KABELMAT WICKELTECHNIK GMBH

Kabelmat Wickeltechnik GmbH's history goes back to the 1960s and since then the company has been among the market leaders for winding systems in the cable and wire industry.

Customers include manufacturers, retailers, cable and wire processors, as well as cable assemblers, electricians, machine manufacturing companies, and many more.

The product range includes virtually all devices and machines for storing, winding and cutting cables, wires, rope, tubes, hoses, and profiles. Winding from and onto drums, as well as from drums to rings are among the tasks that are efficiently executed worldwide with Kabelmat products. We would be pleased to show you our products in our showroom. You are cordially invited to visit us at our facility.



MESSBOI® 40

### We offer:

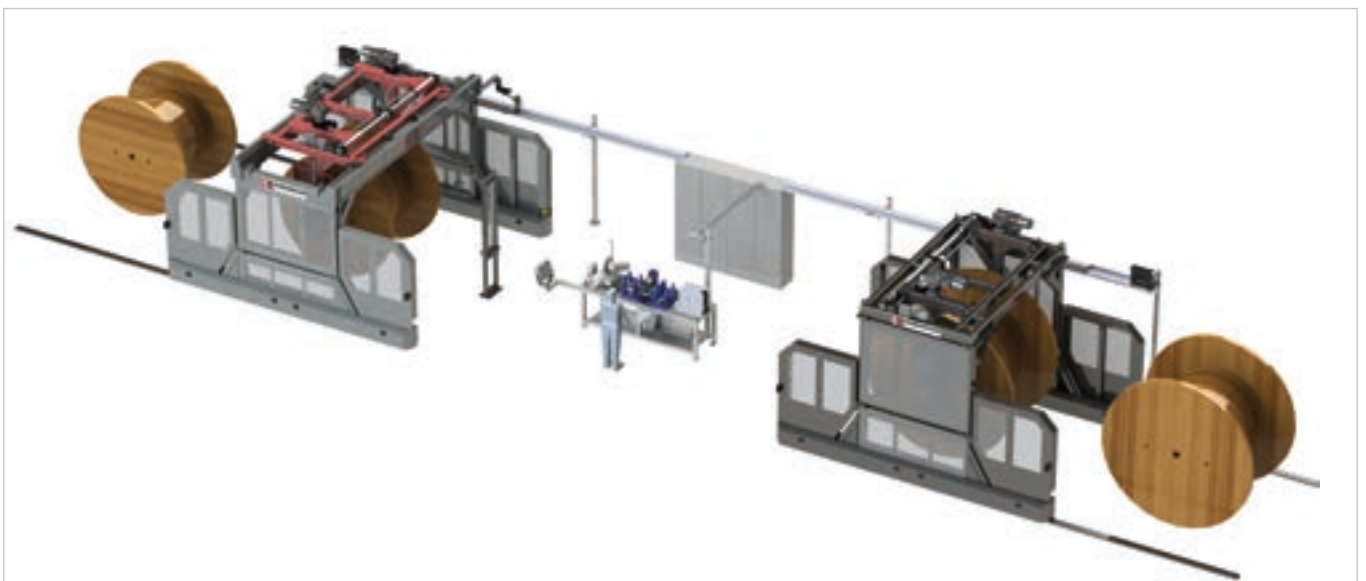
- Manual winding technology
- Automatic winding technology
- Measuring technology
- Storage technology

### Our services:

- Project planning & engineering
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- Service & maintenance

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PORTROL® 2600 - 3000



HELUWIND® WK 103-Torsion

HELUWIND® WK 137-Torsion FT4

HELUWIND® WK MS Multi-Torsion

HELUWIND® WK Fire alarm cable-Torsion



# ■ TORSION-RESISTANT CABLES

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# HELWIND® WK 103w-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -35°C to +90°C  
fixed installation -40°C to +90°C  
installation -20°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three-phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10678 (to 300 mm<sup>2</sup>)  
Multicore UL Style 21179  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special heat-resistant insulation
- Core identification: see table
- Multiconductors cabled
- Sheath: special heat-resistant compound
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103w-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 103w-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 704809   | 4 G 0,34                              | 22      | 7,1             | 29,0                | 86,0                |
| 704810   | 4 G 0,5                               | 20      | 7,4             | 33,4                | 99,0                |
| 704811   | 6 G 0,5                               | 20      | 8,6             | 51,2                | 121,0               |
| 704812   | 10 G 0,5                              | 20      | 10,8            | 48,0                | 165,0               |
| 704813   | 12 G 0,5                              | 20      | 11,1            | 84,0                | 208,0               |
| 704814   | 3 G 0,75                              | 19      | 6,5             | 22,0                | 67,8                |
| 704815   | 4 G 0,75                              | 19      | 7,9             | 29,0                | 100,0               |
| 704816   | 5 G 0,75                              | 19      | 8,6             | 36,0                | 120,0               |
| 704817   | 7 G 0,75                              | 19      | 9,5             | 51,0                | 137,4               |
| 704818   | 10 G 0,75                             | 19      | 11,0            | 72,0                | 200,0               |
| 704819   | 12 G 0,75                             | 19      | 11,8            | 87,0                | 220,0               |
| 704820   | 14 G 0,75                             | 19      | 12,5            | 101,0               | 238,0               |
| 704821   | 16 G 0,75                             | 19      | 13,2            | 116,0               | 271,0               |
| 704822   | 18 G 0,75                             | 19      | 13,9            | 130,0               | 310,0               |
| 704823   | 21 G 0,75                             | 19      | 15,2            | 152,0               | 380,0               |
| 704824   | 25 G 0,75                             | 19      | 16,9            | 180,0               | 490,0               |
| 704825   | 32 G 0,75                             | 19      | 18,2            | 231,0               | 560,0               |
| 704826   | 36 G 0,75                             | 19      | 19,1            | 260,0               | 620,0               |
| 704827   | 40 G 0,75                             | 19      | 20,5            | 288,0               | 729,0               |
| 704828   | 41 G 0,75                             | 19      | 20,8            | 296,0               | 750,0               |
| 704829   | 50 G 0,75                             | 19      | 23,5            | 441,0               | 990,0               |
| 704830   | 4 G 1                                 | 18      | 8,3             | 39,0                | 100,0               |
| 704831   | 5 G 1                                 | 18      | 9,0             | 48,0                | 110,0               |
| 704832   | 7 G 1                                 | 18      | 10,5            | 68,0                | 140,0               |
| 704833   | 10 G 1                                | 18      | 13,0            | 96,0                | 220,0               |
| 704834   | 12 G 1                                | 18      | 13,2            | 116,0               | 240,0               |
| 704835   | 14 G 1                                | 18      | 13,4            | 135,0               | 280,0               |
| 704836   | 16 G 1                                | 18      | 14,1            | 154,0               | 310,0               |
| 704837   | 18 G 1                                | 18      | 15,1            | 173,0               | 360,0               |
| 704838   | 21 G 1                                | 18      | 16,7            | 202,0               | 410,0               |
| 704839   | 25 G 1                                | 18      | 18,4            | 240,0               | 500,0               |
| 704840   | 32 G 1                                | 18      | 19,8            | 308,0               | 590,0               |
| 704841   | 36 G 1                                | 18      | 20,6            | 346,0               | 700,0               |
| 704842   | 40 G 1                                | 18      | 22,4            | 384,0               | 800,0               |
| 704843   | 41 G 1                                | 18      | 22,4            | 394,0               | 810,0               |
| 704844   | 50 G 1                                | 18      | 24,6            | 480,0               | 980,0               |
| 704845   | 2 x 1,5                               | 16      | 7,9             | 29,0                | 75,0                |
| 703920   | 3 G 1,5                               | 16      | 8,0             | 44,0                | 104,9               |
| 703921   | 4 G 1,5                               | 16      | 8,9             | 58,0                | 132,0               |
| 703922   | 5 G 1,5                               | 16      | 9,7             | 72,0                | 157,1               |
| 704366   | 7 G 1,5                               | 16      | 12,0            | 101,0               | 230,8               |
| 704846   | 10 G 1,5                              | 16      | 13,1            | 144,0               | 270,0               |
| 704847   | 12 G 1,5                              | 16      | 14,3            | 173,0               | 360,0               |
| 704848   | 14 G 1,5                              | 16      | 14,9            | 202,0               | 420,0               |
| 704849   | 16 G 1,5                              | 16      | 15,7            | 231,0               | 450,0               |
| 704850   | 18 G 1,5                              | 16      | 16,8            | 260,0               | 510,0               |
| 704851   | 21 G 1,5                              | 16      | 17,8            | 303,0               | 590,0               |
| 704852   | 25 G 1,5                              | 16      | 20,6            | 360,0               | 700,0               |
| 704853   | 32 G 1,5                              | 16      | 22,2            | 460,0               | 900,0               |
| 704854   | 36 G 1,5                              | 16      | 23,1            | 519,0               | 980,0               |

Dimensions and specifications may be changed without prior notice.

## Core identification black with white numbers, 3 cores and more with GN-YE

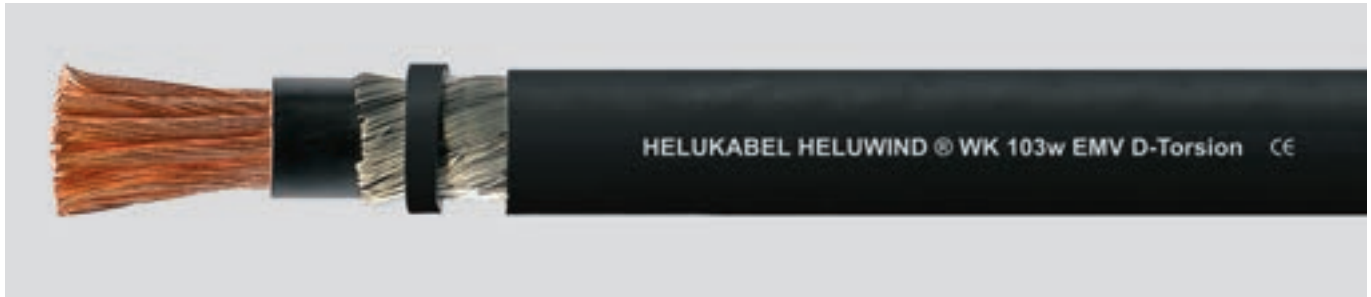
| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 704855   | 40 G 1,5                              | 16      | 25,0            | 576,0               | 1030,0              |
| 704856   | 41 G 1,5                              | 16      | 25,0            | 591,0               | 1050,0              |
| 704857   | 50 G 1,5                              | 16      | 27,7            | 720,0               | 1200,0              |
| 710226   | 2 x 2,5                               | 14      | 8,4             | 48,0                | 115,7               |
| 704267   | 3 G 2,5                               | 14      | 8,9             | 72,0                | 150,8               |
| 703925   | 4 G 2,5                               | 14      | 9,7             | 96,0                | 230,0               |
| 703926   | 5 G 2,5                               | 14      | 10,9            | 120,0               | 237,9               |
| 704858   | 7 G 2,5                               | 14      | 14,4            | 168,0               | 360,0               |
| 704859   | 10 G 2,5                              | 14      | 15,8            | 240,0               | 480,0               |
| 704367   | 12 G 2,5                              | 14      | 16,3            | 288,0               | 527,0               |
| 705040   | 19 G 2,5                              | 14      | 21,0            | 456,0               | 590,0               |
| 704368   | 3 G 4                                 | 12      | 10,8            | 116,0               | 227,5               |
| 703930   | 4 G 4                                 | 12      | 12,0            | 154,0               | 286,8               |
| 704269   | 5 G 4                                 | 12      | 13,6            | 192,0               | 365,7               |
| 704860   | 7 G 4                                 | 12      | 15,9            | 269,0               | 489,0               |
| 704861   | 12 G 4                                | 12      | 19,6            | 461,0               | 740,0               |
| 704862   | 3 G 6                                 | 10      | 13,1            | 173,0               | 340,0               |
| 704863   | 4 G 6                                 | 10      | 14,6            | 230,4               | 460,0               |
| 704864   | 5 G 6                                 | 10      | 16,3            | 288,0               | 566,4               |
| 704865   | 7 G 6                                 | 10      | 19,6            | 404,0               | 780,0               |
| 706318   | 3 G 10                                | 8       | 16,4            | 288,0               | 540,0               |
| 704866   | 4 G 10                                | 8       | 18,2            | 384,0               | 670,0               |
| 703932   | 5 G 10                                | 8       | 20,1            | 480,0               | 851,2               |
| 704867   | 7 G 10                                | 8       | 23,5            | 672,0               | 1150,0              |
| 712561   | 3 G 16                                | 6       | 20,6            | 461,0               | 1083,2              |
| 704868   | 4 G 16                                | 6       | 20,7            | 615,0               | 1180,7              |
| 703933   | 5 G 16                                | 6       | 25,4            | 768,0               | 1348,1              |
| 704869   | 4 G 25                                | 4       | 26,4            | 960,0               | 1576,2              |
| 704870   | 5 G 25                                | 4       | 28,2            | 1200,0              | 1900,0              |
| 704871   | 4 G 35                                | 2       | 31,4            | 1344,0              | 2286,0              |
| 704872   | 5 G 35                                | 2       | 35,4            | 1680,0              | 2770,6              |
| 704873   | 4 G 50                                | 1       | 36,7            | 1920,0              | 2800,0              |

## Core identification black

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|-----------|-----------------|---------------------|---------------------|
| 706337   | 1 x 25                                | 4         | 11,4            | 240,0               | 318,1               |
| 704287   | 1 x 35                                | 2         | 12,9            | 336,0               | 454,4               |
| 704288   | 1 x 50                                | 1         | 15,6            | 480,0               | 630,2               |
| 704289   | 1 x 70                                | 2/0       | 17,9            | 672,0               | 876,8               |
| 704874   | 1 x 95                                | 3/0       | 21,4            | 912,0               | 1230,0              |
| 704291   | 1 x 120                               | 4/0       | 23,1            | 1152,0              | 1535,1              |
| 704875   | 1 x 150                               | 300 kcmil | 24,7            | 1440,0              | 2966,8              |
| 704293   | 1 x 185                               | 350 kcmil | 27,5            | 1776,0              | 2284,0              |
| 704294   | 1 x 240                               | 450 kcmil | 31,2            | 2304,0              | 2966,8              |
| 704295   | 1 x 300                               | 500 kcmil | 34,2            | 2880,0              | 3672,0              |
| 704876   | 1 x 400                               | 750 kcmil | 39,3            | 3840,0              | 4500,0              |

# HELUWIND® WK 103w EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -35°C to +90°C  
fixed installation -40°C to +90°C  
installation -20°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10678  
Multicore UL Style 21179  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special heat-resistant insulation
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned copper wrapping
- Sheath: special heat-resistant compound
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103w EMV D-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 103w EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 704752   | 4 G 0,34                              | 22      | 7,7             | 32,0                | 91,0                |
| 704755   | 4 G 0,5                               | 20      | 8,0             | 37,8                | 105,0               |
| 704758   | 6 G 0,5                               | 20      | 9,2             | 53,6                | 130,0               |
| 704762   | 10 G 0,5                              | 20      | 11,4            | 73,0                | 170,0               |
| 704763   | 12 G 0,5                              | 20      | 11,7            | 88,4                | 220,0               |
| 706599   | 2 x 0,75                              | 19      | 6,7             | 36,0                | 70,5                |
| 704764   | 3 G 0,75                              | 19      | 7,7             | 43,2                | 97,0                |
| 704765   | 4 G 0,75                              | 19      | 7,8             | 52,6                | 101,6               |
| 704767   | 5 G 0,75                              | 19      | 9,0             | 63,0                | 145,0               |
| 704369   | 7 G 0,75                              | 19      | 9,7             | 82,8                | 162,6               |
| 705822   | 3 x 2 x 0,75                          | 19      | 11,5            | 73,0                | 211,0               |
| 704769   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 211,0               |
| 704768   | 8 G 0,75                              | 19      | 10,7            | 93,0                | 220,0               |
| 704771   | 12 G 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 704774   | 18 G 0,75                             | 19      | 14,4            | 179,0               | 400,0               |
| 704775   | 12 x 2 x 0,75                         | 19      | 17,6            | 223,0               | 520,0               |
| 704268   | 25 G 0,75                             | 19      | 17,8            | 256,0               | 547,2               |
| 705228   | 40 G 0,75                             | 19      | 21,2            | 385,0               | 805,4               |
| 704778   | 41 G 0,75                             | 19      | 21,2            | 370,8               | 795,0               |
| 704779   | 50 G 0,75                             | 19      | 23,5            | 441,0               | 900,0               |
| 704784   | 2 x 1,5                               | 16      | 6,8             | 44,0                | 86,0                |
| 704785   | 3 G 1,5                               | 16      | 8,8             | 68,1                | 133,0               |
| 704786   | 4 G 1,5                               | 16      | 9,4             | 87,9                | 159,0               |
| 704788   | 5 G 1,5                               | 16      | 10,3            | 104,0               | 195,0               |
| 704790   | 7 G 1,5                               | 16      | 11,6            | 140,8               | 247,0               |
| 704792   | 12 G 1,5                              | 16      | 14,7            | 226,8               | 410,0               |
| 704793   | 3 G 2,5                               | 14      | 10,4            | 104,4               | 210,0               |
| 704794   | 4 G 2,5                               | 14      | 10,5            | 132,7               | 218,4               |
| 704795   | 5 G 2,5                               | 14      | 12,3            | 161,1               | 288,0               |
| 704796   | 7 G 2,5                               | 14      | 13,5            | 223,1               | 355,1               |
| 704797   | 12 G 2,5                              | 14      | 16,7            | 350,6               | 560,0               |
| 705039   | 19 G 2,5                              | 14      | 21,7            | 561,0               | 638,0               |
| 704798   | 5 G 4                                 | 12      | 14,0            | 237,4               | 382,0               |
| 704799   | 7 G 4                                 | 12      | 16,3            | 325,0               | 582,0               |
| 704800   | 12 G 4                                | 12      | 20,0            | 532,1               | 806,0               |
| 704801   | 5 G 6                                 | 10      | 17,4            | 341,0               | 640,0               |
| 704802   | 4 G 10                                | 8       | 17,8            | 445,6               | 727,0               |
| 704803   | 5 G 10                                | 8       | 20,7            | 550,2               | 935,0               |
| 704804   | 4 G 16                                | 6       | 21,1            | 692,2               | 1072,0              |
| 704805   | 5 G 16                                | 6       | 26,2            | 881,0               | 1667,3              |
| 704806   | 4 G 25                                | 4       | 26,0            | 1059,0              | 1664,0              |
| 704807   | 5 G 25                                | 4       | 28,6            | 1327,0              | 2014,0              |
| 704808   | 4 G 50                                | 1       | 37,0            | 2080,0              | 3200,0              |

## Core identification acc. to DIN 47100

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 704749   | 2 x 2 x 0,25                          | 24      | 8,9             | 27,0                | 90,0                |
| 704750   | 4 x 2 x 0,25                          | 24      | 9,9             | 39,0                | 115,0               |
| 704751   | 5 x 2 x 0,25                          | 24      | 11,1            | 46,0                | 130,0               |
| 704753   | 2 x 2 x 0,34                          | 22      | 9,6             | 35,0                | 110,0               |
| 704754   | 4 x 2 x 0,34                          | 22      | 11,0            | 47,0                | 130,0               |
| 704756   | 2 x 2 x 0,5                           | 20      | 9,8             | 39,0                | 115,0               |
| 704757   | 4 x 0,5                               | 20      | 8,0             | 37,8                | 105,0               |
| 704759   | 6 x 0,5                               | 20      | 9,2             | 53,6                | 130,0               |
| 704761   | 4 x 2 x 0,5                           | 20      | 11,3            | 69,5                | 184,1               |
| 704766   | 2 x 2 x 0,75                          | 19      | 10,4            | 54,0                | 130,0               |
| 705829   | 3 x 2 x 0,75                          | 19      | 11,5            | 73,0                | 172,0               |
| 704770   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 214,5               |
| 704772   | 12 x 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 704773   | 8 x 2 x 0,75                          | 19      | 17,1            | 170,0               | 410,0               |
| 704776   | 12 x 2 x 0,75                         | 19      | 17,6            | 223,0               | 520,0               |
| 704777   | 32 x 0,75                             | 19      | 18,8            | 294,0               | 610,0               |
| 704780   | 4 x 1                                 | 18      | 8,7             | 56,0                | 110,0               |
| 704781   | 6 x 1                                 | 18      | 10,2            | 82,0                | 150,0               |
| 704782   | 8 x 1                                 | 18      | 11,7            | 106,0               | 210,0               |
| 704783   | 12 x 1                                | 18      | 13,3            | 150,0               | 280,0               |
| 704787   | 2 x 2 x 1,5                           | 16      | 12,1            | 90,0                | 180,0               |
| 704789   | 3 x 2 x 1,5                           | 16      | 14,0            | 120,0               | 235,0               |
| 704791   | 4 x 2 x 1,5                           | 16      | 14,6            | 150,0               | 210,0               |

## Core identification black

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|-----------|-----------------|---------------------|---------------------|
| 706601   | 4 x 0,75                              | 19        | 7,8             | 52,6                | 101,6               |
| 703147   | 1 x 70                                | 2/0       | 19,8            | 739,0               | 950,0               |
| 703148   | 1 x 95                                | 3/0       | 22,5            | 989,0               | 1280,0              |
| 703041   | 1 x 120                               | 4/0       | 23,0            | 1242,0              | 1742,6              |
| 703149   | 1 x 150                               | 300 kcmil | 27,5            | 1548,0              | 2000,0              |
| 703150   | 1 x 185                               | 350 kcmil | 27,8            | 1904,0              | 2395,8              |
| 703151   | 1 x 240                               | 450 kcmil | 31,6            | 2451,0              | 3150,0              |
| 703152   | 1 x 300                               | 500 kcmil | 34,4            | 3027,0              | 3920,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK 103k-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -40°C to +80°C  
installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10269  
Multicore UL Style 2570  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special insulation material flexible at low temperatures
- Core identification: see table
- Multiconductors cabled
- Special sheath compound flexible at low temperatures
- Sheath: colour black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103k-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 103k-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------|---------|-----------------|---------------------|---------------------|
| 704941   | 4 G 0,5                   | 20      | 7,4             | 33,4                | 99,0                |
| 704942   | 6 G 0,5                   | 20      | 8,6             | 51,2                | 121,0               |
| 704943   | 10 G 0,5                  | 20      | 10,8            | 48,0                | 165,0               |
| 704944   | 12 G 0,5                  | 20      | 11,1            | 84,0                | 208,0               |
| 704945   | 3 G 0,75                  | 19      | 7,3             | 22,0                | 77,0                |
| 704946   | 4 G 0,75                  | 19      | 7,9             | 29,0                | 100,0               |
| 704947   | 5 G 0,75                  | 19      | 8,6             | 36,0                | 120,0               |
| 704948   | 7 G 0,75                  | 19      | 10,0            | 51,0                | 170,0               |
| 704949   | 10 G 0,75                 | 19      | 11,0            | 72,0                | 200,0               |
| 704950   | 12 G 0,75                 | 19      | 11,8            | 87,0                | 220,0               |
| 704951   | 14 G 0,75                 | 19      | 12,5            | 101,0               | 238,0               |
| 704952   | 16 G 0,75                 | 19      | 13,2            | 116,0               | 271,0               |
| 704953   | 18 G 0,75                 | 19      | 13,9            | 130,0               | 310,0               |
| 704954   | 21 G 0,75                 | 19      | 15,2            | 152,0               | 380,0               |
| 704955   | 25 G 0,75                 | 19      | 16,9            | 180,0               | 490,0               |
| 704956   | 32 G 0,75                 | 19      | 18,2            | 231,0               | 560,0               |
| 704957   | 36 G 0,75                 | 19      | 19,1            | 260,0               | 620,0               |
| 704958   | 40 G 0,75                 | 19      | 20,5            | 288,0               | 729,0               |
| 704959   | 41 G 0,75                 | 19      | 20,8            | 296,0               | 729,0               |
| 704960   | 50 G 0,75                 | 19      | 23,5            | 441,0               | 990,0               |
| 704961   | 4 G 1                     | 18      | 8,3             | 39,0                | 100,0               |
| 704962   | 5 G 1                     | 18      | 9,0             | 48,0                | 110,0               |
| 704963   | 7 G 1                     | 18      | 10,5            | 68,0                | 140,0               |
| 704964   | 10 G 1                    | 18      | 13,0            | 96,0                | 220,0               |
| 704965   | 12 G 1                    | 18      | 13,2            | 116,0               | 240,0               |
| 704966   | 14 G 1                    | 18      | 13,4            | 135,0               | 280,0               |
| 704967   | 16 G 1                    | 18      | 14,1            | 154,0               | 310,0               |
| 704968   | 18 G 1                    | 18      | 15,1            | 173,0               | 360,0               |
| 704969   | 21 G 1                    | 18      | 16,7            | 202,0               | 410,0               |
| 704970   | 25 G 1                    | 18      | 18,4            | 240,0               | 500,0               |
| 704971   | 32 G 1                    | 18      | 19,8            | 308,0               | 590,0               |
| 704972   | 36 G 1                    | 18      | 20,6            | 346,0               | 700,0               |
| 704973   | 40 G 1                    | 18      | 22,4            | 384,0               | 800,0               |
| 704974   | 41 G 1                    | 18      | 22,4            | 394,0               | 810,0               |
| 704975   | 50 G 1                    | 18      | 24,6            | 480,0               | 980,0               |
| 704976   | 2 x 1,5                   | 16      | 7,9             | 29,0                | 75,0                |
| 704977   | 3 G 1,5                   | 16      | 8,0             | 44,0                | 110,0               |
| 704978   | 4 G 1,5                   | 16      | 8,9             | 58,0                | 131,0               |
| 704979   | 5 G 1,5                   | 16      | 9,7             | 72,0                | 165,0               |
| 704980   | 7 G 1,5                   | 16      | 12,0            | 101,0               | 210,0               |
| 704981   | 10 G 1,5                  | 16      | 13,1            | 144,0               | 270,0               |
| 704982   | 12 G 1,5                  | 16      | 14,3            | 173,0               | 360,0               |
| 704983   | 14 G 1,5                  | 16      | 14,9            | 202,0               | 420,0               |
| 704984   | 16 G 1,5                  | 16      | 15,7            | 231,0               | 450,0               |
| 704985   | 18 G 1,5                  | 16      | 16,8            | 260,0               | 510,0               |
| 704986   | 21 G 1,5                  | 16      | 17,8            | 303,0               | 590,0               |
| 704987   | 25 G 1,5                  | 16      | 20,6            | 360,0               | 700,0               |
| 704988   | 32 G 1,5                  | 16      | 22,2            | 460,0               | 900,0               |
| 704989   | 36 G 1,5                  | 16      | 23,1            | 519,0               | 980,0               |
| 704990   | 40 G 1,5                  | 16      | 25,0            | 576,0               | 1030,0              |

## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------|---------|-----------------|---------------------|---------------------|
| 704991   | 41 G 1,5                  | 16      | 25,0            | 591,0               | 1050,0              |
| 704992   | 50 G 1,5                  | 16      | 27,7            | 720,0               | 1200,0              |
| 704993   | 3 G 2,5                   | 14      | 8,9             | 72,0                | 151,0               |
| 704994   | 4 G 2,5                   | 14      | 9,7             | 96,0                | 230,0               |
| 704995   | 5 G 2,5                   | 14      | 10,9            | 120,0               | 250,0               |
| 704996   | 7 G 2,5                   | 14      | 14,4            | 168,0               | 360,0               |
| 704997   | 10 G 2,5                  | 14      | 15,8            | 240,0               | 480,0               |
| 704998   | 12 G 2,5                  | 14      | 16,3            | 288,0               | 560,0               |
| 705038   | 19 G 2,5                  | 14      | 20,4            | 456,0               | 591,0               |
| 704999   | 3 G 4                     | 12      | 10,8            | 116,0               | 250,0               |
| 705000   | 4 G 4                     | 12      | 12,0            | 154,0               | 286,8               |
| 705001   | 5 G 4                     | 12      | 13,6            | 192,0               | 370,0               |
| 705002   | 7 G 4                     | 12      | 15,9            | 269,0               | 530,0               |
| 705003   | 12 G 4                    | 12      | 19,6            | 461,0               | 740,0               |
| 705004   | 3 G 6                     | 10      | 13,1            | 173,0               | 340,0               |
| 705005   | 4 G 6                     | 10      | 14,6            | 231,0               | 460,0               |
| 705006   | 5 G 6                     | 10      | 16,2            | 288,0               | 566,4               |
| 705007   | 7 G 6                     | 10      | 19,6            | 404,0               | 780,0               |
| 705008   | 4 G 10                    | 8       | 17,4            | 384,0               | 670,0               |
| 705009   | 5 G 10                    | 8       | 20,1            | 480,0               | 870,0               |
| 705010   | 7 G 10                    | 8       | 23,5            | 672,0               | 1150,0              |
| 705011   | 4 G 16                    | 6       | 20,7            | 615,0               | 1000,0              |
| 705012   | 5 G 16                    | 6       | 25,4            | 768,0               | 1250,0              |
| 705013   | 4 G 25                    | 4       | 26,5            | 960,0               | 1580,0              |
| 705014   | 5 G 25                    | 4       | 28,2            | 1200,0              | 1900,0              |
| 705016   | 4 G 35                    | 2       | 31,4            | 1344,0              | 2286,0              |
| 705017   | 5 G 35                    | 2       | 35,4            | 1680,0              | 2600,0              |
| 705018   | 4 G 50                    | 1       | 36,7            | 1920,0              | 2800,0              |
| 704940   | 4 G 70                    | 2/0     | 46,0            | 2688,0              | 3600,0              |

## Core identification black

| Part no. | No.cores x cross-sec. mm² | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------|-----------|-----------------|---------------------|---------------------|
| 705015   | 1 x 35                    | 2         | 12,9            | 336,0               | 460,0               |
| 705019   | 1 x 70                    | 2/0       | 17,9            | 672,0               | 1580,0              |
| 705020   | 1 x 95                    | 3/0       | 21,9            | 912,0               | 1230,0              |
| 705021   | 1 x 120                   | 4/0       | 23,1            | 1152,0              | 1540,0              |
| 705022   | 1 x 150                   | 300 kcmil | 27,2            | 1440,0              | 1870,0              |
| 705023   | 1 x 185                   | 350 kcmil | 27,5            | 1776,0              | 2284,0              |
| 705024   | 1 x 240                   | 450 kcmil | 31,2            | 2304,0              | 2966,8              |
| 705025   | 1 x 300                   | 500 kcmil | 35,0            | 2880,0              | 3730,0              |
| 705026   | 1 x 400                   | 750 kcmil | 39,3            | 3840,0              | 4500,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK 103k EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -40°C to +80°C  
installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**
  - DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV
  - AC: Conductor/Earth 0,7 kV
  - Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10269  
Multicore UL Style 2570  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special flexible insulation material for low temperatures
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned copper wrapping
- Special sheath compound flexible at low temperatures
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103k EMV D-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 103k EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 704880   | 4 G 0,34                               | 22      | 7,7             | 32,0                | 91,0                |
| 704883   | 4 G 0,5                                | 20      | 8,0             | 37,8                | 105,0               |
| 704886   | 6 G 0,5                                | 20      | 9,2             | 53,6                | 130,0               |
| 704890   | 10 G 0,5                               | 20      | 11,4            | 73,0                | 170,0               |
| 704891   | 12 G 0,5                               | 20      | 11,7            | 88,4                | 220,0               |
| 704892   | 3 G 0,75                               | 19      | 7,7             | 43,2                | 97,0                |
| 704893   | 4 G 0,75                               | 19      | 8,3             | 52,6                | 122,0               |
| 704895   | 5 G 0,75                               | 19      | 9,0             | 63,0                | 145,0               |
| 704896   | 7 G 0,75                               | 19      | 9,7             | 82,8                | 200,0               |
| 704898   | 4 x 2 x 0,75                           | 19      | 12,7            | 91,0                | 211,0               |
| 704897   | 8 G 0,75                               | 19      | 10,7            | 93,0                | 220,0               |
| 704900   | 12 G 0,75                              | 19      | 12,2            | 126,9               | 257,5               |
| 704903   | 18 G 0,75                              | 19      | 14,4            | 179,0               | 400,0               |
| 704904   | 12 x 2 x 0,75                          | 19      | 17,6            | 223,0               | 520,0               |
| 704906   | 25 G 0,75                              | 19      | 17,8            | 256,0               | 552,0               |
| 704908   | 41 G 0,75                              | 19      | 21,2            | 370,8               | 795,0               |
| 704909   | 50 G 0,75                              | 19      | 23,5            | 441,0               | 900,0               |
| 704914   | 2 x 1,5                                | 16      | 6,8             | 44,0                | 86,0                |
| 704915   | 3 G 1,5                                | 16      | 8,8             | 68,1                | 133,0               |
| 704916   | 4 G 1,5                                | 16      | 9,4             | 87,9                | 159,0               |
| 704918   | 5 G 1,5                                | 16      | 10,3            | 104,0               | 195,0               |
| 704920   | 7 G 1,5                                | 16      | 11,9            | 140,8               | 247,0               |
| 704922   | 12 G 1,5                               | 16      | 14,7            | 229,0               | 410,0               |
| 704923   | 3 G 2,5                                | 14      | 10,4            | 104,4               | 210,0               |
| 704924   | 4 G 2,5                                | 14      | 11,2            | 132,8               | 264,0               |
| 704925   | 5 G 2,5                                | 14      | 12,3            | 161,1               | 288,0               |
| 704926   | 7 G 2,5                                | 14      | 14,8            | 223,1               | 411,0               |
| 704927   | 12 G 2,5                               | 14      | 16,7            | 350,6               | 560,0               |
| 705037   | 19 G 2,5                               | 14      | 21,7            | 561,0               | 638,0               |
| 704928   | 5 G 4                                  | 12      | 13,6            | 237,4               | 382,0               |
| 704929   | 7 G 4                                  | 12      | 16,3            | 325,0               | 582,0               |
| 704930   | 12 G 4                                 | 12      | 20,0            | 532,1               | 806,0               |
| 704931   | 5 G 6                                  | 10      | 17,4            | 341,0               | 640,0               |
| 704932   | 4 G 10                                 | 8       | 17,8            | 445,6               | 727,0               |
| 704933   | 5 G 10                                 | 8       | 19,8            | 550,2               | 935,0               |
| 704934   | 4 G 16                                 | 6       | 21,1            | 692,2               | 1072,0              |
| 704935   | 5 G 16                                 | 6       | 24,4            | 854,4               | 1330,0              |
| 704936   | 4 G 25                                 | 4       | 26,0            | 1059,0              | 1664,0              |
| 704937   | 5 G 25                                 | 4       | 28,6            | 1327,0              | 2014,0              |
| 704938   | 4 G 50                                 | 1       | 37,0            | 2080,0              | 3200,0              |

## Core identification acc. to DIN 47100

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 704877   | 2 x 2 x 0,25                           | 24      | 8,9             | 27,0                | 90,0                |
| 704878   | 4 x 2 x 0,25                           | 24      | 9,9             | 39,0                | 115,0               |
| 704879   | 5 x 2 x 0,25                           | 24      | 11,1            | 46,0                | 130,0               |
| 704881   | 2 x 2 x 0,34                           | 22      | 9,6             | 35,0                | 110,0               |
| 704882   | 4 x 2 x 0,34                           | 22      | 11,0            | 47,0                | 130,0               |
| 704884   | 2 x 2 x 0,5                            | 20      | 9,8             | 39,0                | 115,0               |
| 704885   | 4 x 0,5                                | 20      | 8,0             | 37,8                | 105,0               |
| 704887   | 6 x 0,5                                | 20      | 9,2             | 53,6                | 130,0               |
| 704889   | 8 x 0,5                                | 20      | 11,3            | 42,0                | 150,0               |
| 704888   | 4 x 2 x 0,5                            | 20      | 11,5            | 69,2                | 190,0               |
| 704894   | 2 x 2 x 0,75                           | 19      | 10,4            | 54,0                | 130,0               |
| 704899   | 4 x 2 x 0,75                           | 19      | 12,7            | 91,0                | 211,0               |
| 704901   | 12 x 0,75                              | 19      | 12,2            | 126,9               | 257,5               |
| 704902   | 8 x 2 x 0,75                           | 19      | 17,1            | 170,0               | 410,0               |
| 704905   | 12 x 2 x 0,75                          | 19      | 17,6            | 223,0               | 520,0               |
| 704907   | 32 x 0,75                              | 19      | 18,8            | 294,0               | 610,0               |
| 704910   | 4 x 1                                  | 18      | 8,7             | 56,0                | 110,0               |
| 704911   | 6 x 1                                  | 18      | 10,2            | 82,0                | 150,0               |
| 704912   | 8 x 1                                  | 18      | 11,7            | 106,0               | 210,0               |
| 704913   | 12 x 1                                 | 18      | 13,3            | 150,0               | 280,0               |
| 704917   | 2 x 2 x 1,5                            | 16      | 12,1            | 90,0                | 180,0               |
| 704919   | 3 x 2 x 1,5                            | 16      | 14,0            | 120,0               | 235,0               |
| 704921   | 4 x 2 x 1,5                            | 16      | 14,6            | 150,0               | 210,0               |

## Core identification black

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 78177    | 1 x 70                                 | 2/0       | 19,8            | 739,0               | 950,0               |
| 74006    | 1 x 95                                 | 3/0       | 21,2            | 959,0               | 1285,8              |
| 78178    | 1 x 120                                | 4/0       | 25,0            | 1250,0              | 1644,2              |
| 78179    | 1 x 150                                | 300 kcmil | 28,4            | 1740,0              | 2000,0              |
| 78180    | 1 x 185                                | 350 kcmil | 30,1            | 1904,0              | 2450,0              |
| 703328   | 1 x 240                                | 450 kcmil | 32,5            | 2451,0              | 2953,3              |
| 704939   | 1 x 300                                | 500 kcmil | 39,0            | 3027,0              | 3920,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 135-Torsion

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C  
acc. to UL up to +80°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Approvals**  
Singlecore UL Style 10553  
Multicore UL Style 20234  
cRUus
- **Flame test**  
FT1, IEC 60332-3-24  
UL 758, Cable flame test
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil**  
acc. to oil res II + IEC 60502-1
- **WTTC** in preparation

## Cable structure

- Special bare copper conductor,  
acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Multiconductors cabled
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Suitable for offshore applications
- Extremely oil resistant
- UV resistant
- Recyclable
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us:  
[wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 135-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Thanks to its highly durable sheath and absence of halogen, this cable is ideal for use in offshore wind power plants. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 135-Torsion over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24, increased wear resistance.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 135-Torsion

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 703668   | 4 G 0,34                               | 22      | 7,1             | 29,0                | 88,0                |
| 703669   | 4 G 0,5                                | 20      | 7,4             | 34,0                | 98,0                |
| 703671   | 6 G 0,5                                | 20      | 8,6             | 49,0                | 122,0               |
| 703289   | 10 G 0,5                               | 20      | 10,8            | 48,0                | 165,0               |
| 703673   | 12 G 0,5                               | 20      | 11,1            | 84,0                | 208,0               |
| 703291   | 3 G 0,75                               | 19      | 7,3             | 22,0                | 77,0                |
| 703292   | 4 G 0,75                               | 19      | 7,9             | 29,0                | 100,0               |
| 703293   | 5 G 0,75                               | 19      | 8,6             | 36,0                | 120,0               |
| 703294   | 7 G 0,75                               | 19      | 10,0            | 51,0                | 170,0               |
| 704699   | 10 G 0,75                              | 19      | 11,0            | 72,0                | 200,0               |
| 703295   | 12 G 0,75                              | 19      | 11,8            | 87,0                | 220,0               |
| 704700   | 14 G 0,75                              | 19      | 12,5            | 101,0               | 238,0               |
| 704701   | 16 G 0,75                              | 19      | 13,2            | 116,0               | 271,0               |
| 704702   | 18 G 0,75                              | 19      | 13,9            | 130,0               | 310,0               |
| 704703   | 21 G 0,75                              | 19      | 15,2            | 152,0               | 380,0               |
| 703296   | 25 G 0,75                              | 19      | 16,9            | 180,0               | 490,0               |
| 704704   | 32 G 0,75                              | 19      | 18,2            | 231,0               | 560,0               |
| 704705   | 36 G 0,75                              | 19      | 19,1            | 260,0               | 620,0               |
| 704706   | 40 G 0,75                              | 19      | 20,5            | 288,0               | 729,0               |
| 704707   | 4 G 1                                  | 18      | 8,3             | 39,0                | 100,0               |
| 704708   | 5 G 1                                  | 18      | 9,0             | 48,0                | 110,0               |
| 704709   | 7 G 1                                  | 18      | 10,1            | 68,0                | 140,0               |
| 704710   | 10 G 1                                 | 18      | 13,0            | 96,0                | 220,0               |
| 704711   | 12 G 1                                 | 18      | 12,9            | 116,0               | 240,0               |
| 704712   | 14 G 1                                 | 18      | 13,4            | 135,0               | 280,0               |
| 704713   | 16 G 1                                 | 18      | 14,1            | 154,0               | 310,0               |
| 704714   | 18 G 1                                 | 18      | 15,1            | 173,0               | 360,0               |
| 704715   | 21 G 1                                 | 18      | 16,7            | 202,0               | 410,0               |
| 704716   | 25 G 1                                 | 18      | 18,4            | 240,0               | 500,0               |
| 704717   | 32 G 1                                 | 18      | 19,8            | 308,0               | 590,0               |
| 704718   | 36 G 1                                 | 18      | 20,6            | 346,0               | 700,0               |
| 704719   | 40 G 1                                 | 18      | 22,4            | 384,0               | 800,0               |
| 704720   | 41 G 1                                 | 18      | 22,4            | 394,0               | 810,0               |
| 704721   | 50 G 1                                 | 18      | 24,6            | 480,0               | 980,0               |
| 704722   | 2 x 1,5                                | 16      | 7,9             | 29,0                | 75,0                |
| 703298   | 3 G 1,5                                | 16      | 8,4             | 44,0                | 112,7               |
| 703299   | 4 G 1,5                                | 16      | 9,0             | 58,0                | 137,5               |
| 703300   | 5 G 1,5                                | 16      | 9,9             | 72,0                | 164,6               |
| 703301   | 7 G 1,5                                | 16      | 11,6            | 100,8               | 210,0               |
| 704723   | 10 G 1,5                               | 16      | 13,1            | 144,0               | 270,0               |
| 703302   | 12 G 1,5                               | 16      | 14,0            | 172,8               | 360,0               |
| 704724   | 14 G 1,5                               | 16      | 14,9            | 202,0               | 420,0               |
| 704725   | 16 G 1,5                               | 16      | 15,7            | 231,0               | 450,0               |
| 704727   | 21 G 1,5                               | 16      | 17,8            | 303,0               | 590,0               |
| 704726   | 18 G 1,5                               | 16      | 16,8            | 260,0               | 510,0               |
| 704728   | 25 G 1,5                               | 16      | 20,6            | 360,0               | 700,0               |
| 704729   | 32 G 1,5                               | 16      | 22,2            | 460,0               | 900,0               |
| 704730   | 36 G 1,5                               | 16      | 23,1            | 519,0               | 980,0               |
| 704731   | 40 G 1,5                               | 16      | 25,0            | 576,0               | 1030,0              |
| 704732   | 41 G 1,5                               | 16      | 25,0            | 591,0               | 1050,0              |
| 704733   | 50 G 1,5                               | 16      | 27,7            | 720,0               | 1200,0              |
| 703303   | 3 G 2,5                                | 14      | 9,3             | 72,0                | 151,4               |
| 703304   | 4 G 2,5                                | 14      | 10,1            | 96,0                | 189,3               |
| 703305   | 5 G 2,5                                | 14      | 11,1            | 120,0               | 227,6               |
| 703306   | 7 G 2,5                                | 14      | 13,2            | 168,0               | 360,0               |

Dimensions and specifications may be changed without prior notice.

## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 704734   | 10 G 2,5                               | 14      | 15,8            | 240,0               | 480,0               |
| 703307   | 12 G 2,5                               | 14      | 16,3            | 288,0               | 527,0               |
| 705046   | 19 G 2,5                               | 14      | 21,0            | 456,0               | 591,0               |
| 704735   | 3 G 4                                  | 12      | 10,6            | 116,0               | 217,9               |
| 704736   | 4 G 4                                  | 12      | 13,6            | 153,6               | 315,8               |
| 703308   | 5 G 4                                  | 12      | 13,2            | 192,0               | 332,9               |
| 703309   | 7 G 4                                  | 12      | 15,9            | 269,0               | 530,0               |
| 703310   | 12 G 4                                 | 12      | 19,6            | 461,0               | 740,0               |
| 704737   | 3 G 6                                  | 10      | 12,5            | 173,0               | 327,9               |
| 704738   | 4 G 6                                  | 10      | 13,6            | 231,0               | 460,0               |
| 704471   | 5 G 6                                  | 10      | 16,3            | 288,0               | 538,6               |
| 704739   | 7 G 6                                  | 10      | 19,6            | 404,0               | 780,0               |
| 703311   | 4 G 10                                 | 8       | 18,6            | 384,0               | 670,0               |
| 703312   | 5 G 10                                 | 8       | 20,9            | 480,0               | 885,6               |
| 704740   | 7 G 10                                 | 8       | 23,5            | 672,0               | 1150,0              |
| 703313   | 4 G 16                                 | 6       | 23,2            | 614,4               | 1100,0              |
| 703314   | 5 G 16                                 | 6       | 25,4            | 768,0               | 1382,1              |
| 707651   | 3 G 70                                 | 2/0     | 36,8            | 2016,0              | 3374,4              |
| 703315   | 4 G 25                                 | 4       | 25,9            | 960,0               | 1594,2              |
| 703316   | 5 G 25                                 | 4       | 29,7            | 1200,0              | 1990,0              |
| 704742   | 4 G 35                                 | 2       | 30,6            | 1344,0              | 2261,3              |
| 704743   | 5 G 35                                 | 2       | 34,5            | 1680,0              | 2727,4              |
| 704744   | 4 G 50                                 | 1       | 32,8            | 1920,0              | 3248,0              |
| 705108   | 4 G 95                                 | 3/0     | 45,4            | 3648,0              | 1650,0              |

## Core identification acc. to DIN VDE 0293-308

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 707454   | 4 G 2,5                                | 14      | 10,1            | 96,0                | 185,0               |
| 707456   | 5 G 6                                  | 10      | 16,5            | 288,0               | 540,0               |
| 707463   | 4 G 25                                 | 4       | 26,2            | 960,0               | 1650,0              |
| 707455   | 4 G 35                                 | 2       | 30,6            | 1344,0              | 2100,0              |
| 707464   | 5 G 35                                 | 2       | 34,5            | 1680,0              | 2700,0              |
| 707457   | 5 G 70                                 | 2/0     | 45,7            | 3360,0              | 5414,0              |
| 708436   | 4 G 95                                 | 3/0     | 45,4            | 3648,0              | 5300,0              |
| 708687   | 5 G 95                                 | 3/0     | 51,0            | 4560,0              | 6770,0              |

## Core identification black

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 707129   | 1 x 25                                 | 4         | 11,4            | 240,0               | 476,0               |
| 704741   | 1 x 35                                 | 2         | 12,9            | 336,0               | 454,0               |
| 703317   | 1 x 70                                 | 2/0       | 17,7            | 672,0               | 894,1               |
| 703318   | 1 x 95                                 | 3/0       | 19,2            | 912,0               | 1222,0              |
| 703319   | 1 x 120                                | 4/0       | 21,3            | 1152,0              | 1314,0              |
| 703320   | 1 x 150                                | 300 kcmil | 24,7            | 1440,0              | 1814,2              |
| 703321   | 1 x 185                                | 350 kcmil | 25,7            | 1776,0              | 2186,5              |
| 703322   | 1 x 240                                | 450 kcmil | 30,2            | 2304,0              | 2810,5              |
| 703323   | 1 x 300                                | 500 kcmil | 32,8            | 2880,0              | 3517,3              |
| 704745   | 1 x 400                                | 750 kcmil | 39,3            | 3840,0              | 4500,0              |



# HELUWIND® WK 135 EMV D-Torsion

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, screened,  
UV resistant, UL/CSA-Style 10553/20234 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C  
acc. to UL up to +80°C
- **Permissible conductor operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Approvals**  
Singlecore UL Style 10553  
Multicore UL Style 20234  
cRUus
- **Flame test**  
FT1, IEC 60332-3-24  
UL 758, Cable flame test
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil**  
acc. to oil res II + IEC 60502-1
- **WTTC** in preparation

## Cable structure

- Special bare copper conductor,  
acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned  
copper wrapping
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Suitable for offshore applications
- Extremely oil resistant
- UV resistant
- Recyclable
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 135 EMV D-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Thanks to its highly durable sheath and absence of halogen, this cable is ideal for use in offshore wind power plants. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 135-Torsion over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24, increased wear resistance.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELWIND® WK 135 EMV D-Torsion

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, screened,  
UV resistant, UL/CSA-Style 10553/20234 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 703285   | 4 G 0,34                              | 22      | 7,7             | 32,0                | 91,0                |
| 703286   | 4 G 0,5                               | 20      | 8,0             | 36,5                | 100,9               |
| 703288   | 6 G 0,5                               | 20      | 9,2             | 53,6                | 130,0               |
| 703287   | 8 G 0,5                               | 20      | 11,5            | 69,2                | 190,0               |
| 703672   | 10 G 0,5                              | 20      | 11,4            | 73,0                | 170,0               |
| 703290   | 12 G 0,5                              | 20      | 11,7            | 88,4                | 220,0               |
| 703674   | 3 G 0,75                              | 19      | 7,7             | 43,2                | 97,0                |
| 703675   | 4 G 0,75                              | 19      | 8,3             | 52,6                | 122,0               |
| 703676   | 5 G 0,75                              | 19      | 9,0             | 63,0                | 145,0               |
| 703677   | 7 G 0,75                              | 19      | 10,2            | 82,8                | 177,7               |
| 703678   | 8 G 0,75                              | 19      | 10,7            | 93,0                | 220,0               |
| 704685   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 220,0               |
| 703679   | 12 G 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 703680   | 18 G 0,75                             | 19      | 14,5            | 179,0               | 358,6               |
| 703681   | 25 G 0,75                             | 19      | 17,3            | 238,3               | 560,0               |
| 703682   | 41 G 0,75                             | 19      | 21,2            | 358,0               | 805,8               |
| 704038   | 50 G 0,75                             | 19      | 23,5            | 441,0               | 998,2               |
| 707006   | 25 G 1                                | 18      | 19,0            | 304,0               | 593,0               |
| 704167   | 2 x 1,5                               | 16      | 6,8             | 44,0                | 85,1                |
| 703684   | 3 G 1,5                               | 16      | 8,9             | 68,0                | 133,0               |
| 703685   | 4 G 1,5                               | 16      | 9,6             | 87,9                | 159,0               |
| 703686   | 5 G 1,5                               | 16      | 10,4            | 104,4               | 195,0               |
| 703687   | 7 G 1,5                               | 16      | 11,9            | 140,8               | 248,5               |
| 703688   | 12 G 1,5                              | 16      | 14,9            | 226,8               | 410,0               |
| 703689   | 3 G 2,5                               | 14      | 9,8             | 104,4               | 210,0               |
| 703690   | 4 G 2,5                               | 14      | 10,6            | 132,7               | 216,1               |
| 703691   | 5 G 2,5                               | 14      | 12,3            | 161,0               | 253,4               |
| 703692   | 7 G 2,5                               | 14      | 13,7            | 223,1               | 347,5               |
| 703693   | 12 G 2,5                              | 14      | 16,7            | 350,6               | 560,0               |
| 705045   | 19 G 2,5                              | 14      | 21,7            | 561,0               | 638,0               |
| 703694   | 5 G 4                                 | 12      | 13,4            | 227,0               | 361,2               |
| 703695   | 7 G 4                                 | 12      | 16,4            | 325,0               | 582,0               |
| 703696   | 12 G 4                                | 12      | 20,0            | 532,1               | 806,0               |
| 704697   | 5 G 6                                 | 10      | 17,4            | 341,0               | 640,0               |
| 703697   | 4 G 10                                | 8       | 17,8            | 445,6               | 727,0               |
| 703698   | 5 G 10                                | 8       | 19,8            | 550,2               | 935,0               |
| 703699   | 4 G 16                                | 6       | 23,6            | 696,5               | 1176,0              |
| 703700   | 5 G 16                                | 6       | 26,2            | 863,1               | 1428,0              |
| 703701   | 4 G 25                                | 4       | 26,7            | 1059,4              | 1671,6              |
| 703702   | 5 G 25                                | 4       | 30,1            | 1327,5              | 2108,0              |
| 704698   | 4 G 50                                | 1       | 36,0            | 2070,0              | 3150,0              |

## Core identification acc. to DIN 47100

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 704675   | 2 x 2 x 0,25                          | 24      | 8,9             | 27,0                | 90,0                |
| 704676   | 4 x 2 x 0,25                          | 24      | 9,9             | 39,0                | 115,0               |
| 704677   | 5 x 2 x 0,25                          | 24      | 11,1            | 46,0                | 130,0               |
| 704678   | 2 x 2 x 0,34                          | 22      | 9,6             | 35,0                | 110,0               |
| 704679   | 4 x 2 x 0,34                          | 22      | 11,0            | 47,0                | 130,0               |
| 704680   | 4 x 0,5                               | 20      | 9,8             | 39,0                | 115,0               |
| 704681   | 4 x 0,5                               | 20      | 8,0             | 37,8                | 105,0               |
| 704682   | 6 x 0,5                               | 20      | 9,2             | 53,6                | 130,5               |
| 704683   | 4 x 2 x 0,5                           | 20      | 11,3            | 72,0                | 150,0               |
| 704684   | 2 x 2 x 0,75                          | 19      | 10,4            | 54,0                | 130,0               |
| 707638   | 3 x 2 x 0,75                          | 19      | 11,7            | 81,0                | 188,0               |
| 704040   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 218,1               |
| 704686   | 12 x 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 704687   | 8 x 2 x 0,75                          | 19      | 17,1            | 170,0               | 410,0               |
| 704039   | 12 x 2 x 0,75                         | 19      | 17,6            | 223,0               | 513,2               |
| 704689   | 32 x 0,75                             | 19      | 18,8            | 294,0               | 610,0               |
| 704690   | 4 x 1                                 | 18      | 8,7             | 56,0                | 110,0               |
| 704691   | 6 x 1                                 | 18      | 10,2            | 82,0                | 150,0               |
| 704692   | 8 x 1                                 | 18      | 11,7            | 106,0               | 210,0               |
| 704693   | 12 x 1                                | 18      | 13,3            | 150,0               | 280,0               |
| 704694   | 2 x 2 x 1,5                           | 16      | 12,1            | 90,0                | 180,0               |
| 704695   | 3 x 2 x 1,5                           | 16      | 12,8            | 120,0               | 240,3               |
| 704696   | 4 x 2 x 1,5                           | 16      | 14,6            | 150,0               | 210,0               |

## Core identification black

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|-----------|-----------------|---------------------|---------------------|
| 703703   | 1 x 70                                | 2/0       | 19,6            | 741,1               | 994,0               |
| 703704   | 1 x 95                                | 3/0       | 22,3            | 993,0               | 1305,0              |
| 703705   | 1 x 120                               | 4/0       | 24,7            | 1241,6              | 1603,0              |
| 703706   | 1 x 150                               | 300 kcmil | 25,3            | 1548,0              | 1924,1              |
| 703707   | 1 x 185                               | 350 kcmil | 29,8            | 1900,2              | 2415,0              |
| 703708   | 1 x 240                               | 450 kcmil | 30,7            | 2444,4              | 3030,0              |
| 703804   | 1 x 300                               | 500 kcmil | 33,4            | 3027,0              | 3785,7              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 137-Torsion FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C  
acc. to UL to +80°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/-150° per 1m
- **Approvals**  
Singlecore UL Style 10553  
Multicore UL Style 20234  
cRUus
- **Flame test**  
FT4, IEC 60332-3-24  
UL 758, Cable flame test
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil**  
acc. to oil res II
- **WTTC** in preparation

## Cable structure

- Special bare copper conductor,  
acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Multiconductors cabled
- Sheath: special compound SSH
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Suitable for offshore applications
- Extremely oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 137-Torsion FT4 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Additionally, this cable meets the strict requirements of CSA flame test FT4 and, thanks to its highly durable sheath and absence of halogen, is ideal for use in offshore wind power plants. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 137-Torsion FT4 over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24 and FT4, increased wear resistance.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 137-Torsion FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 705741   | 3 G 0,75                              | 19      | 7,1             | 22,0                | 88,0                |
| 705742   | 5 G 0,75                              | 19      | 8,6             | 36,0                | 122,0               |
| 705743   | 7 G 0,75                              | 19      | 10,0            | 51,0                | 170,0               |
| 705744   | 12 G 0,75                             | 19      | 11,8            | 87,0                | 220,0               |
| 705745   | 18 G 0,75                             | 19      | 13,9            | 130,0               | 310,0               |
| 705719   | 3 G 1                                 | 18      | 7,8             | 49,0                | 133,0               |
| 705746   | 5 G 1                                 | 18      | 9,0             | 48,0                | 110,0               |
| 705747   | 7 G 1                                 | 18      | 10,5            | 68,0                | 140,0               |
| 705748   | 12 G 1                                | 18      | 13,2            | 116,0               | 240,0               |
| 705749   | 18 G 1                                | 18      | 15,1            | 173,0               | 360,0               |
| 705720   | 3 G 1,5                               | 16      | 8,4             | 44,0                | 113,5               |
| 705721   | 4 G 1,5                               | 16      | 9,1             | 58,0                | 139,8               |
| 705722   | 5 G 1,5                               | 16      | 9,9             | 72,0                | 166,5               |
| 705723   | 7 G 1,5                               | 16      | 11,5            | 101,0               | 235,2               |
| 705724   | 12 G 1,5                              | 16      | 14,3            | 173,0               | 360,0               |
| 705725   | 18 G 1,5                              | 16      | 16,8            | 260,0               | 524,6               |
| 705726   | 3 G 2,5                               | 14      | 9,3             | 72,0                | 151,4               |
| 705727   | 5 G 2,5                               | 14      | 11,1            | 120,0               | 227,6               |
| 705750   | 7 G 2,5                               | 14      | 14,4            | 168,0               | 360,0               |
| 705751   | 3 G 4                                 | 12      | 10,8            | 116,0               | 222,0               |
| 705752   | 5 G 4                                 | 12      | 13,2            | 192,0               | 382,0               |
| 705753   | 7 G 4                                 | 12      | 15,9            | 269,0               | 530,0               |
| 705754   | 3 G 6                                 | 10      | 13,1            | 173,0               | 340,0               |
| 705728   | 4 G 6                                 | 10      | 14,6            | 231,0               | 460,0               |
| 705729   | 5 G 6                                 | 10      | 16,3            | 288,0               | 508,6               |
| 705755   | 7 G 6                                 | 10      | 19,6            | 404,0               | 780,0               |

Dimensions and specifications may be changed without prior notice.

## Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 705730   | 4 G 10                                | 8       | 17,4            | 384,0               | 670,0               |
| 705757   | 4 G 16                                | 6       | 20,7            | 615,0               | 1000,0              |
| 705731   | 5 G 16                                | 6       | 25,8            | 768,0               | 1390,0              |
| 705732   | 4 G 25                                | 4       | 26,2            | 960,0               | 1556,6              |
| 705758   | 5 G 25                                | 4       | 28,2            | 1200,0              | 1900,0              |
| 705759   | 4 G 35                                | 2       | 31,0            | 1344,0              | 2234,6              |
| 705733   | 5 G 35                                | 2       | 34,7            | 1680,0              | 2747,3              |
| 705756   | 5 G 10                                | 8       | 20,9            | 480,0               | 893,6               |

## Core identification black

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|-----------|-----------------|---------------------|---------------------|
| 708974   | 1 x 25                                | 4         | 11,4            | 240,0               | 454,0               |
| 708975   | 1 x 35                                | 2         | 13,4            | 336,0               | 476,0               |
| 708976   | 1 x 50                                | 1         | 15,6            | 480,0               | 630,0               |
| 708977   | 1 x 70                                | 2/0       | 18,2            | 672,0               | 894,0               |
| 708978   | 1 x 95                                | 3/0       | 21,9            | 912,0               | 1222,0              |
| 708979   | 1 x 120                               | 4/0       | 22,9            | 1152,0              | 1314,0              |
| 708980   | 1 x 150                               | 300 kcmil | 24,7            | 1440,0              | 1814,0              |
| 708981   | 1 x 185                               | 350 kcmil | 26,1            | 1776,0              | 2186,0              |
| 708982   | 1 x 240                               | 450 kcmil | 30,2            | 2304,0              | 2810,0              |
| 708983   | 1 x 300                               | 500 kcmil | 32,8            | 2880,0              | 3518,0              |
| 708984   | 1 x 400                               | 750 kcmil | 39,3            | 3840,0              | 4500,0              |



# HELUWIND® WK 137 EMV D-Torsion

## FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, screened,  
UV resistant, UL/CSA-Style 10553/20234 Single-/Multicore



### Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C  
acc. to UL to +80°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Approvals**  
Singlecore UL Style 10553  
Multicore UL Style 20234  
cRUus
- **Flame test**  
FT4, IEC 60332-3-24  
UL 758, Cable flame test
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil**  
acc. to oil res II
- **WTTC** in preparation

### Cable structure

- Special bare copper conductor,  
acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned  
copper wrapping
- Sheath: special compound SSH
- Sheath colour: black

### Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Suitable for offshore applications
- Extremely oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

### Note

For more information, especially on  
custom cables, please contact us:  
wind@helukabel.de

### Application

The WK 137 EMV D-Torsion FT4 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Additionally, this cable meets the strict requirements of CSA flame test FT4 and, thanks to its highly durable sheath and absence of halogen, is ideal for use in offshore wind power plants. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 137-Torsion over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24 and FT4, increased wear resistance.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# HELUWIND® WK 137 EMV D-Torsion

## FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, screened,  
UV resistant, UL/CSA-Style 10553/20234 Single-/Multicore



**Core identification black with white numbers,  
3 cores and more with GN-YE**

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 706461   | 4 G 0,34                              | 22      | 7,7             | 32,0                | 91,0                |
| 706462   | 4 G 0,5                               | 20      | 8,0             | 37,8                | 105,0               |
| 706463   | 6 G 0,5                               | 20      | 9,2             | 53,6                | 130,0               |
| 706464   | 4 x 2 x 0,5                           | 20      | 11,5            | 69,2                | 190,0               |
| 706465   | 10 G 0,5                              | 20      | 11,4            | 73,0                | 170,0               |
| 706466   | 12 G 0,5                              | 20      | 11,7            | 88,4                | 220,0               |
| 706467   | 3 G 0,75                              | 19      | 7,1             | 43,2                | 97,0                |
| 706468   | 4 G 0,75                              | 19      | 7,8             | 52,6                | 122,0               |
| 706469   | 5 G 0,75                              | 19      | 9,0             | 63,0                | 145,0               |
| 706470   | 7 G 0,75                              | 19      | 10,2            | 82,8                | 200,0               |
| 706471   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 220,0               |
| 706472   | 8 G 0,75                              | 19      | 10,7            | 93,0                | 220,0               |
| 706473   | 12 G 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 706474   | 18 G 0,75                             | 19      | 14,5            | 179,0               | 400,0               |
| 706475   | 12 x 2 x 0,75                         | 19      | 17,6            | 223,0               | 520,0               |
| 706476   | 25 G 0,75                             | 19      | 17,3            | 238,3               | 544,0               |
| 706477   | 41 G 0,75                             | 19      | 21,2            | 370,8               | 795,0               |
| 706478   | 50 G 0,75                             | 19      | 23,5            | 441,0               | 900,0               |
| 706479   | 2 x 1,5                               | 16      | 6,8             | 44,0                | 86,0                |
| 706480   | 3 G 1,5                               | 16      | 8,8             | 68,0                | 133,0               |
| 706481   | 4 G 1,5                               | 16      | 9,4             | 87,8                | 159,0               |
| 706482   | 5 G 1,5                               | 16      | 10,3            | 104,4               | 195,0               |
| 706483   | 7 G 1,5                               | 16      | 11,9            | 140,8               | 247,0               |
| 706484   | 12 G 1,5                              | 16      | 14,7            | 226,8               | 410,0               |
| 706485   | 3 G 2,5                               | 14      | 9,8             | 104,4               | 210,0               |
| 706486   | 4 G 2,5                               | 14      | 10,5            | 132,7               | 264,0               |
| 706488   | 7 G 2,5                               | 14      | 13,5            | 223,1               | 411,0               |
| 706487   | 12 G 2,5                              | 14      | 12,3            | 161,0               | 288,0               |
| 706489   | 12 G 2,5                              | 14      | 16,7            | 350,6               | 560,0               |
| 706490   | 19 G 2,5                              | 14      | 21,7            | 561,0               | 638,0               |
| 706491   | 5 G 4                                 | 12      | 13,6            | 237,4               | 382,0               |
| 706492   | 7 G 4                                 | 12      | 16,3            | 325,0               | 582,0               |
| 706493   | 12 G 4                                | 12      | 20,0            | 532,1               | 806,0               |
| 706494   | 3 G 6                                 | 10      | 12,9            | 203,3               | 436,0               |
| 706495   | 5 G 6                                 | 10      | 17,4            | 341,0               | 640,0               |
| 706496   | 4 G 10                                | 8       | 17,8            | 445,6               | 727,0               |
| 706497   | 5 G 10                                | 8       | 21,8            | 550,2               | 935,0               |
| 706498   | 4 G 16                                | 6       | 23,6            | 696,5               | 1176,0              |
| 706499   | 5 G 16                                | 6       | 26,2            | 885,0               | 1428,0              |
| 706500   | 4 G 25                                | 4       | 26,9            | 1059,4              | 1742,0              |
| 706501   | 5 G 25                                | 4       | 30,1            | 1327,4              | 2108,0              |

**Core identification acc. to DIN 47100**

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 706510   | 2 x 2 x 0,25                          | 24      | 8,9             | 27,0                | 90,0                |
| 706511   | 4 x 2 x 0,25                          | 24      | 9,9             | 39,0                | 115,0               |
| 706512   | 5 x 2 x 0,25                          | 24      | 11,1            | 46,0                | 130,0               |
| 706513   | 2 x 2 x 0,34                          | 22      | 9,6             | 35,0                | 110,0               |
| 706514   | 4 x 2 x 0,34                          | 22      | 11,0            | 47,0                | 130,0               |
| 706515   | 2 x 2 x 0,5                           | 20      | 9,8             | 39,0                | 115,0               |
| 706516   | 4 x 0,5                               | 20      | 8,0             | 37,8                | 105,0               |
| 706517   | 6 x 0,5                               | 20      | 9,2             | 53,6                | 130,0               |
| 706518   | 4 x 2 x 0,5                           | 20      | 11,3            | 69,5                | 150,0               |
| 706519   | 2 x 2 x 0,75                          | 19      | 10,4            | 54,0                | 130,0               |
| 706520   | 4 x 2 x 0,75                          | 19      | 12,7            | 91,0                | 220,0               |
| 706521   | 12 x 0,75                             | 19      | 12,2            | 126,9               | 257,5               |
| 706522   | 8 x 2 x 0,75                          | 19      | 17,1            | 170,0               | 410,0               |
| 706523   | 12 x 2 x 0,75                         | 19      | 17,6            | 223,0               | 520,0               |
| 706524   | 32 x 0,75                             | 19      | 18,8            | 294,0               | 610,0               |
| 706525   | 4 x 1                                 | 18      | 8,7             | 56,0                | 110,0               |
| 706526   | 6 x 1                                 | 18      | 10,2            | 82,0                | 150,0               |
| 706527   | 8 x 1                                 | 18      | 11,7            | 106,0               | 210,0               |
| 706528   | 12 x 1                                | 18      | 13,3            | 150,0               | 280,0               |
| 706529   | 2 x 2 x 1,5                           | 16      | 12,1            | 90,0                | 180,0               |
| 706530   | 3 x 2 x 1,5                           | 16      | 14,0            | 120,0               | 235,0               |

**Core identification black**

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|-----------|-----------------|---------------------|---------------------|
| 706503   | 1 x 70                                | 2/0       | 19,6            | 741,1               | 994,0               |
| 706504   | 1 x 95                                | 3/0       | 22,3            | 993,0               | 1305,0              |
| 706505   | 1 x 120                               | 4/0       | 24,7            | 1241,6              | 1603,0              |
| 706506   | 1 x 150                               | 300 kcmil | 25,3            | 1548,0              | 1970,0              |
| 706507   | 1 x 185                               | 350 kcmil | 29,8            | 1900,2              | 2415,0              |
| 706508   | 1 x 240                               | 450 kcmil | 32,7            | 2444,4              | 3030,0              |
| 706509   | 1 x 300                               | 500 kcmil | 34,0            | 3300,0              | 4310,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 101 H

0,6/1 kV, halogen free, high flexible



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -50°C to +100°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Halogen-free**  
IEC 60754-1

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Separating foil wrap
- Insulation: special compound black
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Abrasion resistant
- Extremely oil resistant
- UV and ozone-resistant
- Recyclable
- Multi-climate application

## Note

**A torsional version for loop application is available on request.**

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK series has been specifically designed for use in wind power plants. These cables are used in cases that require extremely narrow bending radii and high current carrying capacity levels (+90°C conductor temperature).

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 707522   | 1 x 16                                 | -       | 9,7             | 154,0               | 240,0               |
| 707523   | 1 x 25                                 | -       | 11,2            | 240,0               | 287,7               |
| 707524   | 1 x 35                                 | -       | 12,6            | 336,0               | 394,4               |
| 707525   | 1 x 50                                 | -       | 14,2            | 480,0               | 590,0               |
| 707526   | 1 x 70                                 | -       | 16,2            | 672,0               | 757,7               |
| 707527   | 1 x 95                                 | -       | 18,9            | 912,0               | 1230,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 707528   | 1 x 120                                | -       | 20,2            | 1152,0              | 1295,7              |
| 707529   | 1 x 150                                | -       | 22,8            | 1440,0              | 1679,7              |
| 707494   | 1 x 185                                | -       | 26,7            | 1776,0              | 2009,9              |
| 707495   | 1 x 240                                | -       | 30,5            | 2304,0              | 2900,0              |
| 707530   | 1 x 300                                | -       | 34,9            | 2880,0              | 3490,1              |
| 707531   | 1 x 400                                | -       | 40,1            | 3840,0              | 4430,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 110-Torsion

0,6/1 kV, UV resistant, halogen-free



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C
- **Permissible conductor operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 6x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Flame test**  
IEC 60332-1-2
- **Corrosiveness of combustion gases**  
IEC 60754-2
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-2
- **Oil**  
IEC 60811-2-1,  
acc. to IEC 60811-404

## Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Flame retardant
- Torsion tested
- Extremely oil resistant
- UV resistant
- Ozon-resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 110-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

### Core identification acc. to DIN VDE 0293-308

| Part no. | No. cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|----------------------------|---------|-----------------|---------------------|---------------------|
| 710751   | 3 G 1,5                    | -       | 8,4             | 43,2                | 111,9               |
| 710571   | 4 G 1,5                    | -       | 8,9             | 58,0                | 126,9               |
| 710752   | 5 G 1,5                    | -       | 9,9             | 72,0                | 154,6               |
| 710759   | 3 G 2,5                    | -       | 9,3             | 72,0                | 151,4               |
| 710760   | 4 G 2,5                    | -       | 10,1            | 96,0                | 181,4               |

### Core identification black

| Part no. | No. cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|----------------------------|---------|-----------------|---------------------|---------------------|
| 710435   | 1 x 1,5                    | -       | 3,9             | 14,4                | 27,0                |
| 710436   | 1 x 2,5                    | -       | 4,6             | 24,0                | 37,0                |
| 710437   | 1 x 4                      | -       | 5,5             | 38,4                | 52,0                |
| 710438   | 1 x 6                      | -       | 6,5             | 57,6                | 76,0                |

### Core identification black

| Part no. | No. cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|----------------------------|---------|-----------------|---------------------|---------------------|
| 709855   | 1 x 10                     | -       | 8,3             | 96,0                | 158,0               |
| 709856   | 1 x 16                     | -       | 10,7            | 153,6               | 268,0               |
| 709857   | 1 x 25                     | -       | 11,8            | 240,0               | 381,0               |
| 709858   | 1 x 35                     | -       | 13,3            | 336,0               | 454,0               |
| 709859   | 1 x 50                     | -       | 15,8            | 480,0               | 625,0               |
| 709860   | 1 x 70                     | -       | 18,4            | 672,0               | 894,1               |
| 709861   | 1 x 95                     | -       | 20,4            | 912,0               | 1222,0              |
| 709862   | 1 x 120                    | -       | 22,9            | 1152,0              | 1490,0              |
| 709863   | 1 x 150                    | -       | 25,5            | 1440,0              | 1910,0              |
| 709864   | 1 x 185                    | -       | 27,8            | 1776,0              | 2310,0              |
| 709865   | 1 x 240                    | -       | 30,5            | 2304,0              | 2980,0              |
| 709866   | 1 x 300                    | -       | 33,5            | 2880,0              | 3600,0              |
| 709867   | 1 x 400                    | -       | 37,5            | 3840,0              | 4500,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK H07BN4-F WIND-Torsion

750 V, +90°C, UV resistant



## Technical data

- **Temperature range**  
Ambient temperature -45°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
450/750 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
6x cable Ø
- **Torsion application**  
+/- 150° per 1m

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Insulation: special EPR compound
- Core identification: black
- Sheath: special EPR compound
- Sheath colour: black

## Properties

- UV resistant

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK H07BN4-F Wind-Torsion cable is the special version for torsion applications in wind power plants. We supply the leading wind power plant manufacturers with our cables.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 703402   | 1 x 25                                 | -       | 13,1            | 240,0               | 516,0               |
| 703403   | 1 x 35                                 | -       | 14,6            | 336,0               | 670,0               |
| 703404   | 1 x 50                                 | -       | 17,1            | 480,0               | 840,0               |
| 703390   | 1 x 70                                 | -       | 19,2            | 672,0               | 1112,0              |
| 703391   | 1 x 95                                 | -       | 22,0            | 912,0               | 1520,0              |
| 703392   | 1 x 120                                | -       | 24,4            | 1152,0              | 1880,0              |
| 703393   | 1 x 150                                | -       | 28,0            | 1440,0              | 2513,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 703394   | 1 x 185                                | -       | 30,0            | 1776,0              | 2272,0              |
| 703395   | 1 x 240                                | -       | 34,0            | 2304,0              | 3534,0              |
| 703396   | 1 x 300                                | -       | 36,1            | 2880,0              | 4020,0              |
| 703398   | 1 x 500                                | -       | 46,0            | 4800,0              | 6000,0              |
| 703399   | 1 x 630                                | -       | 54,0            | 6048,0              | 6900,0              |
| 703397   | 1 x 400                                | -       | 41,5            | 3840,0              | 5640,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK Brandmeldekabel-Torsion

halogen-free, FT1



## Technical data

- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -50°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
core/core 1500 V  
core/screen 800 V
- **Minimum bending radius**  
10x cable Ø
- **Torsion application**  
3 x 360° on 5m (= 216° per m)
- **Flame test**  
IEC 60332-1-2,  
acc. to DIN VDE 0472 part 804  
test method B

## Cable structure

- Special bare copper conductor, extra fine stranded acc. to IEC 60228 cl.6
- Special Polyester insulation
- Core identification: black cores with continuous white numbering
- Multiconductors cabled
- EMC-screened types have tinned copper wrapping
- Sheath: special polyurethane compound low adhesion
- Sheath colour: red (RAL 3000)

## Properties

- Very good oil and petrol resistance acc. to DIN VDE 0250 and 0472
- Good resistance to acids, alkalis and solvents
- UV resistant

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

This fire alarm cable has been specifically developed for torsion applications in wind power plant loops. We supply the leading wind power plant manufacturers with our cables.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 702485   | 4 x 0,75                               | -       | 6,6             | 49,0                | 82,0                |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK DLO, WK DLO-Torsion

2 kV, FT4, VW-1, RHH/RHW-2, UL44



## Technical data

- **Temperature range**  
flexing -40°C to +90°C
- **Nominal voltage**  
2000 V
- **Torsion application**  
only for WK DLO-Torsion  
+/- 150° per 1m
- **Torsion rating**  
Torsion tested in accordance with  
HELUKABEL test requirements
- **Approvals**  
RHH/RHW-2, PRI PRII, CSA RW90,  
CSA 22.2 No. 38, VW-1,  
cold impact test, cold bend test,  
wet or dry per UL44, for CT use
- **Flame test**  
CSA FT1, FT4, IEEE 1202

## Cable structure

- Special stranded bare copper wire,  
fine stranded acc. to ASTM-B3
- Insulation: EP
- Separating foil wrap
- Sheath: TPE/CPE
- Sheath colour: black

## Properties

- UV resistant

## Note

For more information, especially on  
custom cables, please contact us:  
wind@helukabel.de

## Application

The cable HELUWIND® WK DLO was specifically designed for use in wind turbines up to a nominal voltage of 2 kV. It has been specially developed for torsion applications in wind turbines. We supply the leading wind turbine manufacturers.

### WK DLO 2 kV

| Part no. | Cross-section<br>AWG / kcmil | Outer Ø<br>app.<br>mm | Weight<br>app.<br>kg / km | Outer Ø<br>app.<br>inch | Weight<br>app.<br>lb / kft |
|----------|------------------------------|-----------------------|---------------------------|-------------------------|----------------------------|
| 703156   | 14                           | 5,9                   | 37,0                      | 0,23                    | 0,0                        |
| 703157   | 12                           | 6,3                   | 69,0                      | 0,25                    | 0,0                        |
| 703158   | 10                           | 7,2                   | 100,0                     | 0,28                    | 0,0                        |
| 702513   | 8                            | 8,4                   | 142,0                     | 0,33                    | 0,0                        |
| 703159   | 6                            | 9,4                   | 200,0                     | 0,37                    | 0,0                        |
| 703160   | 4                            | 11,2                  | 286,0                     | 0,44                    | 0,0                        |
| 703161   | 2                            | 12,7                  | 370,0                     | 0,50                    | 0,0                        |
| 703162   | 1                            | 16,4                  | 637,0                     | 0,65                    | 0,0                        |
| 703163   | 1/0                          | 16,7                  | 715,0                     | 0,66                    | 0,0                        |
| 703862   | 2/0                          | 17,6                  | 830,0                     | 0,69                    | 0,0                        |
| 703164   | 3/0                          | 19,6                  | 1104,0                    | 0,77                    | 0,0                        |
| 702863   | 4/0                          | 21,0                  | 1298,0                    | 0,83                    | 0,0                        |
| 702514   | 262 kcmil                    | 23,7                  | 1590,0                    | 0,93                    | 0,0                        |
| 703165   | 313 kcmil                    | 25,4                  | 1872,0                    | 1,00                    | 0,0                        |
| 708857   | 373 kcmil                    | 27,1                  | 2176,0                    | 1,07                    | 0,0                        |
| 703167   | 444 kcmil                    | 28,8                  | 2570,0                    | 1,13                    | 0,0                        |
| 702515   | 535 kcmil                    | 31,4                  | 3046,0                    | 1,24                    | 0,0                        |
| 703168   | 646 kcmil                    | 33,6                  | 3600,0                    | 1,32                    | 0,0                        |
| 703169   | 777 kcmil                    | 36,0                  | 4290,0                    | 1,42                    | 0,0                        |
| 703170   | 929 kcmil                    | 38,4                  | 5144,0                    | 1,51                    | 0,0                        |
| 703171   | 1111 kcmil                   | 42,5                  | 6070,0                    | 1,67                    | 0,0                        |

### WK DLO-Torsion 2 kV

| Part no. | Cross-section<br>AWG / kcmil | Outer Ø<br>app.<br>mm | Weight<br>app.<br>kg / km | Outer Ø<br>app.<br>inch | Weight<br>app.<br>lb / kft |
|----------|------------------------------|-----------------------|---------------------------|-------------------------|----------------------------|
| 709729   | 8                            | 8,4                   | 142,0                     | 0,33                    | 0,0                        |
| 709730   | 6                            | 9,4                   | 200,0                     | 0,37                    | 0,0                        |
| 709731   | 4                            | 11,2                  | 286,0                     | 0,44                    | 0,0                        |
| 709732   | 2                            | 12,7                  | 370,0                     | 0,50                    | 0,0                        |
| 709733   | 1                            | 16,4                  | 637,0                     | 0,65                    | 0,0                        |
| 709734   | 1/0                          | 16,7                  | 715,0                     | 0,66                    | 0,0                        |
| 709735   | 2/0                          | 17,6                  | 830,0                     | 0,69                    | 0,0                        |
| 709288   | 3/0                          | 19,6                  | 1104,0                    | 0,77                    | 0,0                        |
| 709289   | 4/0                          | 21,0                  | 1298,0                    | 0,83                    | 0,0                        |
| 709290   | 262 kcmil                    | 23,7                  | 1590,0                    | 0,93                    | 0,0                        |
| 709291   | 313 kcmil                    | 25,4                  | 1872,0                    | 1,00                    | 0,0                        |
| 709292   | 373 kcmil                    | 27,1                  | 2176,0                    | 1,07                    | 0,0                        |
| 709293   | 444 kcmil                    | 28,8                  | 2570,0                    | 1,13                    | 0,0                        |
| 709294   | 535 kcmil                    | 31,4                  | 3046,0                    | 1,24                    | 0,0                        |
| 709295   | 646 kcmil                    | 33,6                  | 3600,0                    | 1,32                    | 0,0                        |
| 709296   | 777 kcmil                    | 36,0                  | 4290,0                    | 1,42                    | 0,0                        |
| 709297   | 929 kcmil                    | 38,4                  | 5144,0                    | 1,51                    | 0,0                        |
| 709298   | 1111 kcmil                   | 42,5                  | 6070,0                    | 1,67                    | 0,0                        |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 300w-Torsion

1,8/3 kV, UV resistant, direct burial



## Technical data

- **Temperatur range**  
flexing -35°C to +90°C  
fixed installation -40°C to +90°C  
installation -20°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 1,8/3 kV
- **Test voltage**  
9000 V
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
for unscreened version  
+/- 100° per 1m
- **Flame test**  
self-extinguishing and flame retardant  
acc. to IEC 60332-1-2

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special heat-resistant insulation black
- Sheath: special heat-resistant compound
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble
- Also for direct burial

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 300w-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Another special feature is the higher voltage level of 1.8/3 kV. The WK 300w-Torsion is also designed for flexible installation through ductwork and in the ground. It can be used in power cabling from a converter cabinet to an external transformer station, for example. A conductor temperature of +90° enables a high level of current carrying capacity.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|----------|--|---------|-----------------|---------------------|---------------------|
| 706432   | 1 x 35                                 | -       | 14,8            | 336,0               | 500,0               | 706403   | 1 x 150                                | -       | 25,9            | 1440,0              | 1990,0              |
| 706399   | 1 x 50                                 | -       | 16,6            | 480,0               | 660,0               | 706404   | 1 x 185                                | -       | 28,1            | 1776,0              | 2430,0              |
| 712574   | 1 x 70                                 | -       | 19,5            | 672,0               | 920,0               | 706405   | 1 x 240                                | -       | 31,2            | 2304,0              | 2877,9              |
| 706401   | 1 x 95                                 | -       | 23,9            | 912,0               | 1300,0              | 706406   | 1 x 300                                | -       | 34,2            | 2880,0              | 3960,0              |
| 706402   | 1 x 120                                | -       | 24,8            | 1152,0              | 1600,0              | 706407   | 1 x 400                                | -       | 39,2            | 3840,0              | 4800,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK 310-Torsion

1,8/3 kV, UV resistant



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C
- **Permissible conductor operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 1,8/3 kV
- **Test voltage**  
9000 V
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Flame test**  
IEC 60332-3
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil test**  
acc. to oil res II

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special insulation black
- Sheath: compound low adhesion
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Extremely oil resistant
- UV resistant
- Recyclable
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 310-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Another special feature is the higher voltage level of 1.8/3 kV. The WK 310-Torsion can be used instead of the WK 305.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 706452   | 1 x 50                                 | -       | 15,0            | 480,0               | 660,0               |
| 706453   | 1 x 70                                 | -       | 20,0            | 672,0               | 920,0               |
| 706454   | 1 x 95                                 | -       | 23,8            | 912,0               | 1300,0              |
| 706455   | 1 x 120                                | -       | 26,3            | 1152,0              | 1600,0              |
| 706456   | 1 x 150                                | -       | 29,2            | 1440,0              | 1990,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 706457   | 1 x 185                                | -       | 28,6            | 1776,0              | 2310,0              |
| 706458   | 1 x 240                                | -       | 30,5            | 2304,0              | 2800,0              |
| 706459   | 1 x 300                                | -       | 34,9            | 2880,0              | 3600,0              |
| 706460   | 1 x 400                                | -       | 39,8            | 3840,0              | 4840,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK MS Single 610-Torsion

3,6/6 kV



## Technical data

- **Temperatur range**  
flexing -40°C to +90°C
- **Nominal voltage**  
3,6/6 kV
- **Minimum bending radius**  
12x cable Ø
- **Torsion application**  
+/- 105° per 1m

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special semiconductor layer
- Special insulation black
- Copper screen
- Sheath: special rubber compound
- Sheath colour: black

## Properties

- Abrasion resistant
- Flame retardant
- Torsion tested
- Oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK MS Single 610-Torsion is designed for flexible applications, especially to accommodate torsional stress in the cable loop of a wind turbine. The HELUKABEL WK series was successfully tested for over 18,000 torsion cycles and offers operational reliability well beyond the service life of a wind turbine. Voltage levels: 3.6/6 kV.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 712575   | 1 x 185                                | -       | 30,1            | 1776,0              | 2512,0              |
| 712576   | 1 x 240                                | -       | 34,2            | 2304,0              | 3083,0              |
| 712577   | 1 x 300                                | -       | 37,2            | 2880,0              | 4020,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK MS Single-Torsion

12/20 kV



## Technical data

- **Temperatur range**  
flexing -40°C to +90°C
- **Nominal voltage**  
12/20 kV
- **Minimum bending radius**  
12x cable Ø
- **Torsion application**  
+/- 105° per 1m

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special semiconductor layer
- Special insulation black
- Sheath: special rubber compound
- Sheath colour: black

## Properties

- Abrasion resistant
- Flame retardant
- Torsion tested
- Oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK MS Single-Torsion is designed for flexible applications, especially to accommodate torsional stress in the cable loop of a wind turbine. Due to its flexible structure, the cable allows for small bending radii and is ideally suited for power wiring in wind turbines. Voltage level: 12/20 kV.

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708712   | 1 x 120                                | -       | 27,3            | 1152,0              | 1860,0              |
| 708713   | 1 x 150                                | -       | 29,5            | 1440,0              | 2090,0              |
| 708714   | 1 x 185                                | -       | 31,6            | 1776,0              | 2530,0              |
| 708715   | 1 x 240                                | -       | 34,7            | 2304,0              | 3420,0              |
| 708716   | 1 x 300                                | -       | 36,8            | 2880,0              | 4100,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK MS Single-Torsion UL/CSA

3,6/6 kV, 12/20 kV



## Technical data

- **Temperatur range**  
flexing -40°C to +90°C
- **Nominal voltage**  
3,6/6 kV or  
12/20 kV
- **Minimum bending radius**  
12x cable Ø
- **Torsion application**  
+/- 105° per 1m
- **Approvals**  
UL 1072

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special semiconductor layer
- Special insulation black
- Copper screen
- Sheath: special rubber compound
- Sheath colour: black

## Properties

- Abrasion resistant
- Flame retardant
- Torsion tested
- Oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK MS Single-Torsion UL/CSA has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant in the voltage levels 3.6/6 kV and 12/20 kV. According to the UL standard, the WK MS-Single-Torsion UL/CSA carrying 2 kV and more is only available as a screened cable. Due to its flexible design, this cable is ideal for tight bending radii used in power cabling of wind turbines. Compared to the WK MS-Single, the cable holds an UL/CSA approval. Copper stranding per AWG/kcmil.

### 3,6/6kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.    | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|------------|-----------------|---------------------|---------------------|
| 708702   |  | 262 kcmil  | 24,1            | 1280,0              | 1790,0              |
| 708703   |  | 313 kcmil  | 25,5            | 1590,0              | 2072,0              |
| 708704   |  | 373 kcmil  | 27,8            | 1900,0              | 2376,0              |
| 708705   |  | 444 kcmil  | 29,9            | 2272,0              | 2770,0              |
| 708706   |  | 535 kcmil  | 32,7            | 2608,0              | 3246,0              |
| 708707   |  | 646 kcmil  | 35,1            | 3300,0              | 3801,0              |
| 708708   |  | 777 kcmil  | 37,3            | 3970,0              | 4492,0              |
| 708709   |  | 929 kcmil  | 40,1            | 4780,0              | 5344,0              |
| 708710   |  | 1111 kcmil | 44,2            | 5690,0              | 6410,0              |

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.    | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|------------|-----------------|---------------------|---------------------|
| 708717   |  | 262 kcmil  | 26,1            | 1280,0              | 1990,0              |
| 708718   |  | 313 kcmil  | 27,2            | 1590,0              | 2191,0              |
| 708719   |  | 373 kcmil  | 29,8            | 1900,0              | 2563,0              |
| 708720   |  | 444 kcmil  | 31,9            | 2272,0              | 2983,0              |
| 708721   |  | 535 kcmil  | 34,9            | 2608,0              | 3471,0              |
| 708722   |  | 646 kcmil  | 37,2            | 3300,0              | 4020,0              |
| 708723   |  | 777 kcmil  | 39,4            | 3970,0              | 4696,0              |
| 708724   |  | 929 kcmil  | 42,4            | 4780,0              | 5552,0              |
| 708725   |  | 1111 kcmil | 46,5            | 5690,0              | 6620,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK MS Multi-Torsion

3,6/6 kV, 12/20 kV, 24/38 kV



## Technical data

- **Temperatur range**  
flexing -40°C to +90°C
- **Nominal voltage**  
3,6/6 kV  
12/20 kV  
or 24/38 kV
- **Minimum bending radius**  
12x cable Ø
- **Torsion application**  
+/- 105° per 1m

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special semiconductor layer
- Special insulation black
- Core insulation with semiconductor layer for N-conductor
- Cores wrapped
- Inner Sheath special compound
- Sheath: special rubber compound
- Sheath colour: red

## Properties

- Global application
- Abrasion resistant
- Flame retardant
- Torsion tested
- Oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK MS Multi-Torsion is designed for flexible applications, especially to accommodate torsional stress in the cable loop of a wind turbine. Due to its flexible structure, the cable allows for small bending radii and is ideally suited for power wiring in wind turbines. Voltage levels: 3.6/6 kV, 12/20 kV, 24/38 kV.

### 3,6/6kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708425   | 3 x 25 + 25                            | -       | 40,1            | 960,0               | 2600,0              |
| 708426   | 3 x 35 + 35                            | -       | 45,1            | 1344,0              | 3020,0              |
| 708427   | 3 x 50 + 50                            | -       | 47,2            | 1920,0              | 3500,0              |
| 708428   | 3 x 70 + 70                            | -       | 51,9            | 2688,0              | 4210,0              |

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708726   | 3 x 25 + 25                            | -       | 41,9            | 960,0               | 2790,0              |
| 708727   | 3 x 35 + 35                            | -       | 47,0            | 1344,0              | 3231,0              |

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708728   | 3 x 50 + 50                            | -       | 49,3            | 1920,0              | 3711,0              |
| 708729   | 3 x 70 + 70                            | -       | 54,0            | 2688,0              | 4421,0              |

### 24/38kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708730   | 3 x 25 + 25                            | -       | 43,6            | 960,0               | 2910,0              |
| 708731   | 3 x 35 + 35                            | -       | 48,9            | 1344,0              | 3400,0              |
| 708732   | 3 x 50 + 50                            | -       | 51,2            | 1920,0              | 3921,0              |
| 708733   | 3 x 70 + 70                            | -       | 56,0            | 2688,0              | 4638,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK MS Multi-Torsion UL/CSA

3,6/6 kV, 12/20 kV, 24/38 kV



## Technical data

- **Temperatur range**  
flexing -40°C to +90°C
- **Nominal voltage**  
3,6/6 kV  
12/20 kV  
or 24/38 kV
- **Minimum bending radius**  
12x cable Ø
- **Torsion application**  
+/- 105° per 1m
- **Approvals**  
UL 1072

## Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special semiconductor layer
- Special insulation EOR or AVGM
- Core insulation with semiconductor layer for N-conductor
- Cores wrapping
- Tinned copper screen
- Inner sheath: special compound
- Sheath: special halogen-free compound
- Sheath colour: black

## Properties

- Global application
- Abrasion resistant
- Flame retardant
- Torsion tested
- Suitable for offshore applications
- Oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK MS Multi-Torsion UL/CSA has been designed for flexible use, and specifically for torsional load in the cable loop of a wind turbine in the voltage levels 3.6/6 kV, 12/20 kV and 24/38 kV. Due to its flexible design, this cable is ideal for tight bending radii used in power cabling of wind turbines. Compared to the WK MS-Multi-Torsion, the cable holds an UL/CSA approval.

### 3,6/6kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708734   | 3x4+4                                  | 40,1    | 960,0           | 2600,0              |                     |
| 708735   | 3x2+2                                  | 45,1    | 1344,0          | 3020,0              |                     |
| 708736   | 3x1+1                                  | 47,2    | 1920,0          | 3500,0              |                     |
| 708737   | 3x2/0+2/0                              | 51,9    | 2688,0          | 4210,0              |                     |

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708738   | 3x4+4                                  | 41,9    | 960,0           | 2790,0              |                     |
| 708739   | 3x2+2                                  | 47,0    | 1344,0          | 3231,0              |                     |

### 12/20kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708740   | 3x1+1                                  | 49,3    | 1920,0          | 3711,0              |                     |
| 708741   | 3x2/0+2/0                              | 54,0    | 2688,0          | 4421,0              |                     |

### 24/38kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 708742   | 3x4+4                                  | 43,6    | 960,0           | 2910,0              |                     |
| 708743   | 3x2+2                                  | 48,9    | 1344,0          | 3400,0              |                     |
| 708744   | 3x1+1                                  | 51,2    | 1920,0          | 3921,0              |                     |
| 708745   | 3x2/0+2/0                              | 56,0    | 2688,0          | 4638,0              |                     |

Dimensions and specifications may be changed without prior notice.

HELUVIND® WK THERMFLEX 145

N2XH

Single 600-J/-O

Single 600-CY -J/-O



## ■ COPPER POWER CABLES

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| Single 600-CY-J/-O          | <b>64</b>   |



# HELUWIND® WK THERMFLEX® 145

UV resistant, halogen-free, +145°C



## Technical data

- **Temperature range**  
flexing -20°C to +120°C  
fixed installation -55°C to +145°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Insulation resistance**  
min. 100 MOhm x km
- **Minimum bending radius**  
flexing 12,5x cable Ø  
fixed installation 4x cable Ø
- **Flame test**  
IEC 60332-3-24 Cat.C

## Cable structure

- Tinned copper conductor, fine stranded acc. to IEC 60228 cl.5
- Insulation: special polyolefin-copolymer, halogen-free, flame retardant
- Sheath colour: black

## Properties

- Halogen-free, no release of corrosive or toxic gases
- Reduced propagation of fire
- Minimal smoke generation
- Good abrasion resistance
- Good oil and weathering resistance
- Resistant to UV radiation and ozone
- Thermal class B
- Easy to assemble
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

This special cable can be used as a generator connecting cable in wind power plants, for example. Other areas of application: Connecting cable for temperature class B (130°C) in the case of motors, transformers, relays, coils, magnets, and so on. Unit connections in the automotive industry. Halogen-free wiring of switchgear and control cabinets. Connecting cable for heating equipment. Supply line for high-power lighting in industry, sports centres and street lighting.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

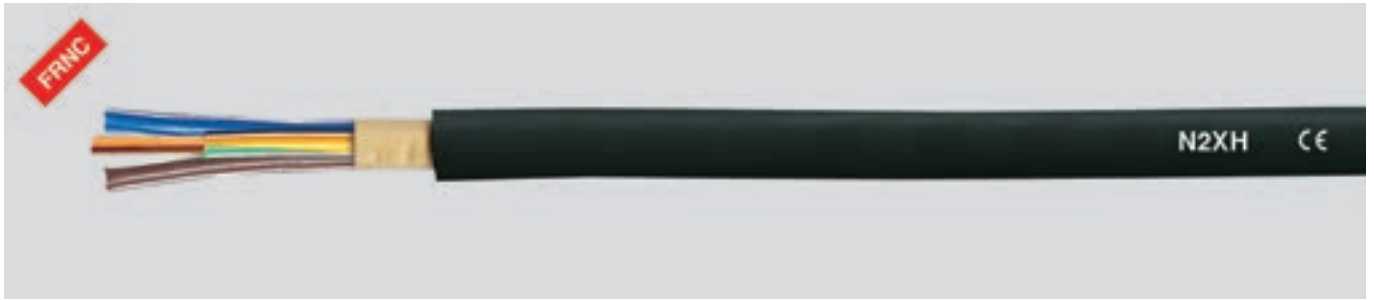
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 75486    | 1 x 6                                  | -       | 5,4             | 58,0                | 70,0                |
| 75487    | 1 x 10                                 | -       | 6,8             | 96,0                | 119,0               |
| 75488    | 1 x 16                                 | -       | 8,5             | 154,0               | 180,0               |
| 75489    | 1 x 25                                 | -       | 10,3            | 240,0               | 270,0               |
| 75490    | 1 x 35                                 | -       | 11,8            | 336,0               | 373,0               |
| 75491    | 1 x 50                                 | -       | 13,9            | 480,0               | 528,0               |
| 75492    | 1 x 70                                 | -       | 16,0            | 672,0               | 728,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 75493    | 1 x 95                                 | -       | 17,3            | 912,0               | 966,0               |
| 75494    | 1 x 120                                | -       | 20,0            | 1152,0              | 1230,0              |
| 75495    | 1 x 150                                | -       | 22,1            | 1440,0              | 1530,0              |
| 71437    | 1 x 185                                | -       | 24,8            | 1776,0              | 2106,3              |
| 75496    | 1 x 240                                | -       | 27,7            | 2304,0              | 2583,8              |
| 706557   | 1 x 300                                | -       | 30,0            | 2880,0              | 3910,0              |
| 706558   | 1 x 400                                | -       | 38,7            | 3840,0              | 4870,0              |

Dimensions and specifications may be changed without prior notice.

# N2XH

power cable, 0,6/1 kV, halogen free, without functionality



## Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single-core 15x cable Ø  
multi-core 12x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values**  
see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE)  
compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor  
J-type: GN-YE (½), BN, BK, GY  
O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour: black

## Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- re = round conductor, single-wire  
rm = round conductor, multi-wire  
sm = sectional conductor, multi-wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- **LSOH** = Low Smoke Zero Halogen

## Application

Halogen-free power cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. | Outer Ø    | Cop.    | Weight  | AWG-No. | Part no.  | No. cores x cross-sec. | Outer Ø    | Cop.      | Weight  | AWG-No. |       |
|----------|------------------------|------------|---------|---------|---------|-----------|------------------------|------------|-----------|---------|---------|-------|
| J type   | O type                 | app. mm    | weight  | app.    |         | J type    | O type                 | app. mm    | weight    | app.    |         |       |
|          | mm <sup>2</sup>        |            | kg / km | kg / km |         |           | mm <sup>2</sup>        |            | kg / km   | kg / km |         |       |
|          | 1 x 1,5 rm             | 6,0        | 14,4    | 41,0    | 16      | 53114     | 53262                  | 2 x 1,5 re | 12,0      | 29,0    | 185,0   |       |
|          | 1 x 2,5 rm             | 6,5        | 24,0    | 53,0    | 14      | 53115     | 53263                  | 2 x 2,5 re | 12,2      | 48,0    | 220,0   |       |
| 53100    | 53248                  | 1 x 4 re   | 8,0     | 39,0    | 68,0    | 12        | 53116                  | 53264      | 2 x 4 re  | 13,2    | 77,0    | 275,0 |
| 53101    | 53249                  | 1 x 6 re   | 9,0     | 58,0    | 90,0    | 10        | 53117                  | 53265      | 2 x 6 re  | 14,1    | 115,0   | 335,0 |
| 53102    | 53250                  | 1 x 10 re  | 9,0     | 96,0    | 140,0   | 8         | 53118                  | 53266      | 2 x 10 re | 16,2    | 192,0   | 450,0 |
| 53103    | 53251                  | 1 x 16 re  | 10,0    | 154,0   | 190,0   | 6         | 53119                  | 53267      | 2 x 16 re | 17,8    | 307,0   | 620,0 |
| 53104    | 53252                  | 1 x 25 rm  | 11,0    | 240,0   | 290,0   | 4         | 53120                  | 53268      | 2 x 25 rm | 21,0    | 480,0   | 930,0 |
| 53105    | 53253                  | 1 x 35 rm  | 12,0    | 336,0   | 390,0   | 2         |                        |            |           |         |         |       |
| 53106    | 53254                  | 1 x 50 rm  | 15,0    | 480,0   | 510,0   | 1         |                        |            |           |         |         |       |
| 53107    | 53255                  | 1 x 70 rm  | 17,0    | 672,0   | 710,0   | 2/0       |                        |            |           |         |         |       |
| 53108    | 53256                  | 1 x 95 rm  | 19,0    | 912,0   | 960,0   | 3/0       |                        |            |           |         |         |       |
| 53109    | 53257                  | 1 x 120 rm | 21,0    | 1152,0  | 1200,0  | 4/0       |                        |            |           |         |         |       |
| 53110    | 53258                  | 1 x 150 rm | 23,0    | 1440,0  | 1480,0  | 300 kcmil |                        |            |           |         |         |       |
| 53111    | 53259                  | 1 x 185 rm | 25,0    | 1776,0  | 1910,0  | 350 kcmil |                        |            |           |         |         |       |
| 53112    | 53260                  | 1 x 240 rm | 28,0    | 2304,0  | 2370,0  | 500 kcmil |                        |            |           |         |         |       |
| 53113    | 53261                  | 1 x 300 rm | 30,0    | 2880,0  | 2970,0  | 600 kcmil |                        |            |           |         |         |       |
| 52485    | 52486                  | 1 x 400 rm | 32,9    | 3840,0  | 3957,0  | 750 kcmil |                        |            |           |         |         |       |

Continuation ▶

# N2XH

power cable, 0,6/1 kV, halogen free, without functionality



| Part no.<br>J type | O type | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km | AWG-No.   |
|--------------------|--------|---|--------------------|---------------------------|---------------------------|-----------|
| 53121              | 53269  | 3 x 1,5 re                                  | 13,0               | 43,0                      | 220,0                     | 16        |
| 53122              | 53270  | 3 x 2,5 re                                  | 14,0               | 72,0                      | 280,0                     | 14        |
| 53123              | 53271  | 3 x 4 re                                    | 15,0               | 115,0                     | 350,0                     | 12        |
| 53124              | 53272  | 3 x 6 re                                    | 16,0               | 173,0                     | 420,0                     | 10        |
| 53125              | 53273  | 3 x 10 re                                   | 18,0               | 288,0                     | 600,0                     | 8         |
| 53126              | 53274  | 3 x 16 re                                   | 20,0               | 461,0                     | 770,0                     | 6         |
| 53127              | 53275  | 3 x 25 rm                                   | 21,8               | 720,0                     | 1120,0                    | 4         |
| 53128              | 53276  | 3 x 35 sm                                   | 24,9               | 1008,0                    | 1550,0                    | 2         |
| 53129              | 53277  | 3 x 50 sm                                   | 25,2               | 1440,0                    | 1750,0                    | 1         |
| 53130              | 53278  | 3 x 70 sm                                   | 29,2               | 2016,0                    | 2450,0                    | 2/0       |
| 53131              | 53279  | 3 x 95 sm                                   | 32,0               | 2736,0                    | 3250,0                    | 3/0       |
| 53132              | 53280  | 3 x 120 sm                                  | 34,9               | 3456,0                    | 4000,0                    | 4/0       |
| 53133              | 53281  | 3 x 150 sm                                  | 39,2               | 4320,0                    | 5000,0                    | 300 kcmil |
| 53134              | 53282  | 3 x 185 sm                                  | 44,1               | 5328,0                    | 6150,0                    | 350 kcmil |
| 53135              | 53283  | 3 x 240 sm                                  | 49,2               | 6912,0                    | 8000,0                    | 500 kcmil |
| 53143              | 53284  | 4 x 1,5 re                                  | 13,0               | 58,0                      | 235,0                     | 16        |
| 53144              | 53285  | 4 x 2,5 re                                  | 14,0               | 96,0                      | 290,0                     | 14        |
| 53145              | 53286  | 4 x 4 re                                    | 15,0               | 154,0                     | 370,0                     | 12        |
| 53146              | 53287  | 4 x 6 re                                    | 16,0               | 230,0                     | 470,0                     | 10        |
| 53147              | 53288  | 4 x 10 re                                   | 18,0               | 384,0                     | 670,0                     | 8         |
| 53148              | 53289  | 4 x 16 re                                   | 20,0               | 614,0                     | 930,0                     | 6         |
| 53149              | 53290  | 4 x 25 rm                                   | 25,0               | 960,0                     | 1440,0                    | 4         |
| 53150              | 53291  | 4 x 35 sm                                   | 27,0               | 1344,0                    | 1890,0                    | 2         |
| 53151              | 53292  | 4 x 50 sm                                   | 28,0               | 1920,0                    | 2300,0                    | 1         |
| 53152              | 53293  | 4 x 70 sm                                   | 32,0               | 2688,0                    | 3200,0                    | 2/0       |
| 53153              | 53294  | 4 x 95 sm                                   | 36,0               | 3648,0                    | 4250,0                    | 3/0       |
| 53154              | 53295  | 4 x 120 sm                                  | 40,2               | 4608,0                    | 5350,0                    | 4/0       |
| 53155              | 53296  | 4 x 150 sm                                  | 45,8               | 5760,0                    | 6550,0                    | 300 kcmil |
| 53156              | 53297  | 4 x 185 sm                                  | 49,5               | 7104,0                    | 8100,0                    | 350 kcmil |
| 53157              | 53298  | 4 x 240 sm                                  | 56,0               | 9216,0                    | 10550,0                   | 500 kcmil |
| 53158              | 53299  | 5 x 1,5 re                                  | 14,5               | 72,0                      | 280,0                     | 16        |
| 53159              | 53309  | 5 x 2,5 re                                  | 16,0               | 120,0                     | 350,0                     | 14        |
| 53160              | 53310  | 5 x 4 re                                    | 17,0               | 192,0                     | 450,0                     | 12        |
| 53161              | 53311  | 5 x 6 re                                    | 18,5               | 288,0                     | 600,0                     | 10        |
| 53162              | 53312  | 5 x 10 re                                   | 21,0               | 480,0                     | 850,0                     | 8         |
| 53163              | 53313  | 5 x 16 re                                   | 24,0               | 768,0                     | 1200,0                    | 6         |
| 53557              |        | 5 x 25 rm                                   | 28,0               | 1200,0                    | 1539,0                    | 4         |
| 53164              | 53314  | 7 x 1,5 re                                  | 15,5               | 101,0                     | 350,0                     | 16        |
| 53171              | 53315  | 7 x 2,5 re                                  | 17,0               | 168,0                     | 370,0                     | 14        |
| 53178              | 53316  | 7 x 4 re                                    | 17,2               | 269,0                     | 530,0                     | 12        |
| 53165              | 53317  | 10 x 1,5 re                                 | 18,5               | 144,0                     | 480,0                     | 16        |
| 53172              | 53318  | 10 x 2,5 re                                 | 20,0               | 240,0                     | 500,0                     | 14        |
| 53166              | 53319  | 12 x 1,5 re                                 | 19,0               | 173,0                     | 520,0                     | 16        |
| 53173              | 53320  | 12 x 2,5 re                                 | 21,0               | 288,0                     | 560,0                     | 14        |
| 53179              | 53321  | 12 x 4 re                                   | 21,2               | 461,0                     | 800,0                     | 12        |
| 53167              | 53322  | 14 x 1,5 re                                 | 20,0               | 202,0                     | 550,0                     | 16        |
| 53174              | 53323  | 14 x 2,5 re                                 | 22,0               | 336,0                     | 630,0                     | 14        |
| 53168              | 53324  | 19 x 1,5 re                                 | 22,0               | 274,0                     | 700,0                     | 16        |
| 53175              | 53325  | 19 x 2,5 re                                 | 24,0               | 456,0                     | 800,0                     | 14        |
| 53169              | 53326  | 24 x 1,5 re                                 | 25,0               | 346,0                     | 850,0                     | 16        |
| 53176              | 53327  | 24 x 2,5 re                                 | 27,0               | 576,0                     | 990,0                     | 14        |
| 53170              | 53328  | 30 x 1,5 re                                 | 26,0               | 432,0                     | 950,0                     | 16        |
| 53177              | 53329  | 30 x 2,5 re                                 | 28,0               | 720,0                     | 1180,0                    | 14        |

| Part no.<br>J type | O type | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km | AWG-No.   |
|--------------------|--------|---|--------------------|---------------------------|---------------------------|-----------|
| 53136              | 53330  | 3 x 50 / 25 sm                              | 28,5               | 1680,0                    | 2100,0                    | 1         |
| 53137              | 53331  | 3 x 70 / 35 sm                              | 31,4               | 2352,0                    | 2800,0                    | 2/0       |
| 53138              | 53332  | 3 x 95 / 50 sm                              | 34,9               | 3216,0                    | 3750,0                    | 3/0       |
| 53139              | 53333  | 3 x 120 / 70 sm                             | 38,0               | 4128,0                    | 4750,0                    | 4/0       |
| 53140              | 53334  | 3 x 150 / 70 sm                             | 43,3               | 4992,0                    | 5750,0                    | 300 kcmil |
| 53141              | 53335  | 3 x 185 / 95 sm                             | 47,2               | 6240,0                    | 7200,0                    | 350 kcmil |
| 53142              | 53336  | 3 x 240 / 120 sm                            | 53,4               | 8064,0                    | 9300,0                    | 500 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ02)

# Single 600-J / -O

special single core cable, 600 V, meter marking



## Technical data

- Special PVC single core acc. to UL Style 10107 and CSA AWM I/II A/B, adapted to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, acc. to UL Std.758
- **Temperature range**  
flexing -5°C bis +90°C  
fixed installation -40°C bis +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 600 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, fine wire conductors to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC to class 43, 90°C acc. to UL Std.1581 colour black or green-yellow
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/ DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Chemical Resistance  
see "Technical Informations"
  - The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
  - UV resistant
- Tests**
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = green-yellow  
x = black
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**Single 600-CY-J / -O**
- Also as 1000 V Style 10678 deliverable

## Application

PVC Single cores suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burial- or as underwater cable. These two norms approved single cores designed for exportorientated machinery manufacturer for machine tools, conveyor belts and production lines.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

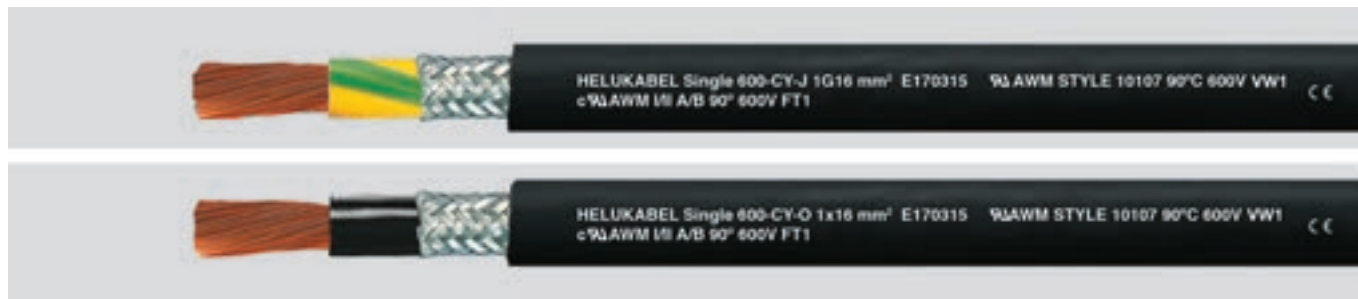
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Core colour  | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|--------------|-----------------|---------------------|---------------------|
| 10881    | 1 G 6                                  | 10      | green-yellow | 7,8             | 58,0                | 118,0               |
| 10882    | 1 x 6                                  | 10      | black        | 7,8             | 58,0                | 118,0               |
| 10883    | 1 G 10                                 | 8       | green-yellow | 9,0             | 96,0                | 180,0               |
| 10884    | 1 x 10                                 | 8       | black        | 9,0             | 96,0                | 180,0               |
| 10885    | 1 G 16                                 | 6       | green-yellow | 10,0            | 154,0               | 250,0               |
| 10886    | 1 x 16                                 | 6       | black        | 10,0            | 154,0               | 250,0               |
| 10887    | 1 G 25                                 | 4       | green-yellow | 11,5            | 240,0               | 370,0               |
| 10888    | 1 x 25                                 | 4       | black        | 11,5            | 240,0               | 370,0               |
| 10889    | 1 G 35                                 | 2       | green-yellow | 13,0            | 336,0               | 490,0               |
| 10890    | 1 x 35                                 | 2       | black        | 13,0            | 336,0               | 490,0               |
| 10891    | 1 G 50                                 | 1       | green-yellow | 15,6            | 480,0               | 665,0               |
| 10892    | 1 x 50                                 | 1       | black        | 15,6            | 480,0               | 665,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Core colour  | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|--------------|-----------------|---------------------|---------------------|
| 10893    | 1 G 70                                 | 2/0       | green-yellow | 17,9            | 672,0               | 910,0               |
| 10894    | 1 x 70                                 | 2/0       | black        | 17,9            | 672,0               | 910,0               |
| 10895    | 1 G 95                                 | 3/0       | green-yellow | 19,5            | 912,0               | 1195,0              |
| 10896    | 1 x 95                                 | 3/0       | black        | 19,5            | 912,0               | 1195,0              |
| 10897    | 1 G 120                                | 4/0       | green-yellow | 22,3            | 1152,0              | 1545,0              |
| 10898    | 1 x 120                                | 4/0       | black        | 22,3            | 1152,0              | 1545,0              |
| 10899    | 1 G 150                                | 250 kcmil | green-yellow | 25,0            | 1440,0              | 1750,0              |
| 10900    | 1 x 150                                | 250 kcmil | black        | 25,0            | 1440,0              | 1750,0              |
| 10901    | 1 G 185                                | 350 kcmil | green-yellow | 28,6            | 1776,0              | 2320,0              |
| 10902    | 1 x 185                                | 350 kcmil | black        | 28,6            | 1776,0              | 2320,0              |
| 10903    | 1 G 240                                | 450 kcmil | green-yellow | 31,4            | 2304,0              | 2960,0              |
| 10904    | 1 x 240                                | 450 kcmil | black        | 31,4            | 2304,0              | 2960,0              |

Dimensions and specifications may be changed without prior notice. (RN06)

# Single 600-CY-J / -O

special single core cable, 600 V, Cu-screened, EMC-preferred type, meter marking



## Technical data

- Special PVC single cores acc. to UL Style 10107 and CSA AWM I/II A/B, adapted to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, acc. to UL Std.758
- **Temperature range**  
flexing -5°C bis +90°C  
fixed installation -40°C bis +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 600 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC to class 43, 90°C acc. to UL Std.1581 colour black or green-yellow
- Tinned copper braided screening, coverage approx. 85%
- Outer sheath special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Chemical Resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = green-yellow  
x = black
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**Single 600-J / -O**
- Also as 1000 V Style 10678 deliverable

## Application

PVC single cores suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burial-or as underwater cable. These two norms approved single cores designed for exportorientated machinery manufacturer for machine tools, conveyor belts and production lines. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibility).

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Core colour  | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|--------------|-----------------|---------------------|---------------------|
| 10910    | 1 G 6                                  | 10      | green-yellow | 7,6             | 72,0                | 140,0               |
| 10911    | 1 x 6                                  | 10      | black        | 7,6             | 72,0                | 140,0               |
| 10912    | 1 G 10                                 | 8       | green-yellow | 9,4             | 130,0               | 230,0               |
| 10913    | 1 x 10                                 | 8       | black        | 9,4             | 130,0               | 230,0               |
| 10914    | 1 G 16                                 | 6       | green-yellow | 10,4            | 190,0               | 300,0               |
| 10915    | 1 x 16                                 | 6       | black        | 10,4            | 190,0               | 300,0               |
| 10916    | 1 G 25                                 | 4       | green-yellow | 12,0            | 260,0               | 420,0               |
| 10917    | 1 x 25                                 | 4       | black        | 12,0            | 260,0               | 420,0               |
| 10918    | 1 G 35                                 | 2       | green-yellow | 14,4            | 405,0               | 615,0               |
| 10919    | 1 x 35                                 | 2       | black        | 14,4            | 405,0               | 615,0               |
| 10920    | 1 G 50                                 | 1       | green-yellow | 16,4            | 560,0               | 825,0               |
| 10921    | 1 x 50                                 | 1       | black        | 16,4            | 560,0               | 825,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Core colour  | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|--------------|-----------------|---------------------|---------------------|
| 10922    | 1 G 70                                 | 2/0       | green-yellow | 17,4            | 780,0               | 1090,0              |
| 10923    | 1 x 70                                 | 2/0       | black        | 17,4            | 780,0               | 1090,0              |
| 10924    | 1 G 95                                 | 3/0       | green-yellow | 20,1            | 1030,0              | 1395,0              |
| 10925    | 1 x 95                                 | 3/0       | black        | 20,1            | 1030,0              | 1395,0              |
| 10926    | 1 G 120                                | 4/0       | green-yellow | 23,0            | 1285,0              | 1770,0              |
| 10927    | 1 x 120                                | 4/0       | black        | 23,0            | 1285,0              | 1770,0              |
| 10928    | 1 G 150                                | 250 kcmil | green-yellow | 26,1            | 1570,0              | 1930,0              |
| 10929    | 1 x 150                                | 250 kcmil | black        | 26,1            | 1570,0              | 1930,0              |
| 10930    | 1 G 185                                | 350 kcmil | green-yellow | 29,3            | 1940,0              | 2635,0              |
| 10931    | 1 x 185                                | 350 kcmil | black        | 29,3            | 1940,0              | 2635,0              |
| 10932    | 1 G 240                                | 450 kcmil | green-yellow | 32,2            | 2530,0              | 3380,0              |
| 10933    | 1 x 240                                | 450 kcmil | black        | 32,2            | 2530,0              | 3380,0              |

Dimensions and specifications may be changed without prior notice. (RN06)





HELUWIND® WK POWERLINE ALU 105°C, 1,8/3kV

HELUWIND® WK POWERLINE ALU halogenfree, 105°C 1,8/3kV

HELUWIND® WK RHH/RHW-2 ALU

HELUWIND® WK POWERLINE ALU robust 105°C, 1,8/3kV



# ■ ALUMINIUM POWER CABLES

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## Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and sheath-compound of thermoplastic PVC
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s)  
≤ 300 mm<sup>2</sup> +160°C  
> 300 mm<sup>2</sup> +140°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- Max. permissible **tensile stress** with cable grip at conductor  
30 N/mm<sup>2</sup>
- **Current carrying capacity** to DIN VDE 0276 part 603, in normal operation table 14 and 15, under short circuit conditions table 17
- **Minimum bending radius**  
single-core 15x cable Ø  
multi-core 12x cable Ø
- **Caloric load values**  
see "Technical Informations"

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Cores stranded in concentric layers
- Common core sheath
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems  
both outer conductors insulated 1,4 kV
  - Single-phase systems  
one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

## Note

- re = round conductor, single-wire
- rm = round conductor, multi-wire
- se = sectional conductor, single-wire
- sm = sectional conductor, multi-wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not be expected.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Alu weight kg / km | Weight app. kg / km | J type Part no. | AWG-No.   | O type Part no. | AWG-No.   |
|--|-----------------|--------------------|---------------------|-----------------|-----------|-----------------|-----------|
| 4 x 16 re                              | 23,0            | 186,0              | 750,0               | 32301           | 6         | 32184           | 6         |
| 4 x 25 re                              | 26,0            | 290,0              | 950,0               | 32302           | 4         | 32185           | 4         |
| 4 x 35 re                              | 28,5            | 406,0              | 1120,0              | 32303           | 2         | 32186           | 2         |
| 4 x 50 se                              | 30,0            | 580,0              | 1151,0              | 32304           | 1         | 32187           | 1         |
| 4 x 70 se                              | 35,0            | 812,0              | 1549,0              | 32305           | 2/0       | 32188           | 2/0       |
| 4 x 95 se                              | 39,5            | 1102,0             | 2030,0              | 32306           | 3/0       | 32189           | 3/0       |
| 4 x 95 sm                              | 39,5            | 1102,0             | 2030,0              | 32177           | 3/0       | 32190           | 3/0       |
| 4 x 120 se                             | 44,0            | 1392,0             | 2400,0              | 32307           | 4/0       | 32191           | 4/0       |
| 4 x 120 sm                             | 44,0            | 1392,0             | 2400,0              | 32178           | 4/0       | 32192           | 4/0       |
| 4 x 150 se                             | 46,0            | 1740,0             | 3030,0              | 32308           | 300 kcmil | 32193           | 300 kcmil |
| 4 x 150 sm                             | 46,0            | 1740,0             | 3030,0              | 32179           | 300 kcmil | 32194           | 300 kcmil |
| 4 x 185 se                             | 51,0            | 2146,0             | 3650,0              | 32309           | 350 kcmil | 32195           | 350 kcmil |
| 4 x 185 sm                             | 51,0            | 2146,0             | 3650,0              | 32180           | 350 kcmil | 32196           | 350 kcmil |
| 4 x 240 se                             | 56,0            | 2784,0             | 4800,0              | 32310           | 500 kcmil | 32197           | 500 kcmil |
| 4 x 240 sm                             | 56,0            | 2784,0             | 4800,0              | 32181           | 500 kcmil | 32198           | 500 kcmil |
| 4 x 300 se                             | 64,0            | 3480,0             | 5596,0              | 32182           | 600 kcmil | 32199           | 600 kcmil |
| 4 x 300 sm                             | 64,0            | 3480,0             | 5596,0              | 32183           | 600 kcmil | 32258           | 600 kcmil |

Continuation ▶

| No. cores x cross-sec. mm <sup>2</sup> |    | Outer Ø app. mm | Alu weight kg / km | Weight app. kg / km | J type Part no. | AWG-No.   |   | O type Part no. | AWG-No.   |   |
|--|----|-----------------|--------------------|---------------------|-----------------|-----------|---|-----------------|-----------|---|
| 5 x 10                                 | re | 22,0            | 145,0              | 637,0               | 33275           | 8         | - | 33283           | 8         | - |
| 5 x 16                                 | re | 25,0            | 232,0              | 832,0               | 33276           | 6         | - | 33284           | 6         | - |
| 5 x 25                                 | re | 28,0            | 363,0              | 1175,0              | 33277           | 4         | - | 33285           | 4         | - |
| 5 x 35                                 | re | 31,0            | 508,0              | 1399,0              | 33278           | 2         | - | 33286           | 2         | - |
| 5 x 50                                 | rm | 35,0            | 725,0              | 1855,0              | 33279           | 1         | - | 33287           | 1         | - |
| 5 x 70                                 | rm | 40,0            | 1015,0             | 2351,0              | 33280           | 2/0       | - | 33288           | 2/0       | - |
| 5 x 95                                 | rm | 45,0            | 1378,0             | 3071,0              | 33281           | 3/0       | - | 33289           | 3/0       | - |
| 5 x 120                                | rm | 49,0            | 1740,0             | 3631,0              | 33282           | 4/0       | - | 33290           | 4/0       | - |
| 5 x 150                                | rm | 57,8            | 2175,0             | 4405,0              | 34041           | 300 kcmil | - | 34042           | 300 kcmil | - |
| 5 x 185                                | rm | 61,5            | 2683,0             | 5420,0              | 34043           | 350 kcmil | - | 34044           | 350 kcmil | - |
| 5 x 240                                | rm | 70,0            | 3480,0             | 6860,0              | 34045           | 500 kcmil | - | 34046           | 500 kcmil | - |

| No. cores x cross-sec. mm <sup>2</sup> |    | Outer Ø app. mm | Alu weight kg / km | Weight app. kg / km | J type Part no. | AWG-No.    |   | O type Part no. | AWG-No.    |   |
|--|----|-----------------|--------------------|---------------------|-----------------|------------|---|-----------------|------------|---|
| 1 x 35                                 | re | 13,0            | 102,0              | 240,0               | 32328           | 2          | - | 32311           | 2          | - |
| 1 x 50                                 | re | 15,0            | 145,0              | 360,0               | 32329           | 1          | - | 32312           | 1          | - |
| 1 x 70                                 | rm | 16,5            | 203,0              | 410,0               | 32390           | 2/0        | - | 32313           | 2/0        | - |
| 1 x 95                                 | rm | 19,0            | 276,0              | 570,0               | 32391           | 3/0        | - | 32314           | 3/0        | - |
| 1 x 120                                | rm | 20,5            | 348,0              | 691,0               | 32392           | 4/0        | - | 32315           | 4/0        | - |
| 1 x 150                                | rm | 22,5            | 435,0              | 804,0               | 32393           | 300 kcmil  | - | 32321           | 300 kcmil  | - |
| 1 x 185                                | rm | 25,0            | 537,0              | 979,0               | 32394           | 350 kcmil  | - | 32322           | 350 kcmil  | - |
| 1 x 240                                | rm | 28,0            | 696,0              | 1253,0              | 32395           | 500 kcmil  | - | 32323           | 500 kcmil  | - |
| 1 x 300                                | rm | 30,0            | 870,0              | 1395,0              | 32396           | 600 kcmil  | - | 32324           | 600 kcmil  | - |
| 1 x 400                                | rm | 34,0            | 1160,0             | 1890,0              | 32397           | 750 kcmil  | - | 32325           | 750 kcmil  | - |
| 1 x 500                                | rm | 38,0            | 1450,0             | 2600,0              | 32398           | 1000 kcmil | - | 32326           | 1000 kcmil | - |
| 1 x 630                                | rm | 43,0            | 1827,0             | 2780,0              | 32399           | 1250 kcmil | - | 32327           | 1250 kcmil | - |

Dimensions and specifications may be changed without prior notice. (RQ01)



# NAY2Y

power cable, 0,6/1 kV, with PE-outer sheath



## Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm<sup>2</sup>
- **Minimum bending radius**  
12x cable Ø

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC
- Core identification GN-YE, BN, BK, GY
- Cores stranded in concentric layers
- Common core sheath
- Outer sheath of PE
- Sheath colour: black

## Properties

- Outer sheath PE of not self-extinguishing and flame retardant
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

## Note

- re = round conductor, single-wire
- se = sectional conductor, single-wire
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks. Usable in extreme working conditions due to the robust PE outer sheath.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Alu weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|--|-----------------|--------------------|---------------------|-----------|
| 31129    | 4 x 25 re                              | 26,0            | 290,0              | 970,0               | 4         |
| 31139    | 4 x 35 re                              | 28,0            | 406,0              | 1145,0              | 2         |
| 31149    | 4 x 50 se                              | 30,0            | 580,0              | 1184,0              | 1         |
| 31159    | 4 x 70 se                              | 33,0            | 812,0              | 1578,0              | 2/0       |
| 31169    | 4 x 95 se                              | 38,0            | 1102,0             | 2186,0              | 3/0       |
| 31179    | 4 x 120 se                             | 42,0            | 1382,0             | 2501,0              | 4/0       |
| 31189    | 4 x 150 se                             | 45,0            | 1740,0             | 3180,0              | 300 kcmil |
| 31199    | 4 x 185 se                             | 51,0            | 2146,0             | 3807,0              | 350 kcmil |
| 31209    | 4 x 240 se                             | 55,0            | 2784,0             | 4996,0              | 500 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ01)

# NA2XY

power cable, 0,6/1 kV, VDE approved, current-carrying capacity



## Technical data

- Power and control cable to DIN VDE 0276 Part 603, HD 603 S1 and IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage**  
 $U_0/U$  0,6/1 kV
- **Test voltage**  
4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm<sup>2</sup>
- **Minimum bending radius**  
single-core 15x cable Ø  
multi-core 12x cable Ø

## Cable structure

- Aluminium-conductor to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV6/DMP2 to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

### Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems  
both outer conductors insulated 1,4 kV
  - Single-phase systems  
one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

### Note

- re = round conductor, single-wire  
rm = round conductor, multi-wire  
se = sectional conductor, single-wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| No. cores x cross-sec. mm <sup>2</sup> |    | Outer Ø app. mm | Alu weight kg / km | Weight app. kg / km | J type Part no. | AWG-No.   |   | O type Part no. | AWG-No.   |   |
|--|----|-----------------|--------------------|---------------------|-----------------|-----------|---|-----------------|-----------|---|
| 1 x 16                                 | re | 11,5            | 47,0               | 98,0                | 33113           | 6         | - | 33125           | 6         | - |
| 1 x 25                                 | re | 12,5            | 73,0               | 150,0               | 33114           | 4         | - | 33126           | 4         | - |
| 1 x 35                                 | re | 13,5            | 102,0              | 241,0               | 33115           | 2         | - | 33127           | 2         | - |
| 1 x 50                                 | rm | 15,5            | 145,0              | 357,0               | 33116           | 1         | - | 33128           | 1         | - |
| 1 x 70                                 | rm | 17,0            | 203,0              | 409,0               | 33117           | 2/0       | - | 33129           | 2/0       | - |
| 1 x 95                                 | rm | 19,0            | 276,0              | 570,0               | 33118           | 3/0       | - | 33130           | 3/0       | - |
| 1 x 120                                | rm | 20,5            | 348,0              | 590,0               | 33119           | 4/0       | - | 33131           | 4/0       | - |
| 1 x 150                                | rm | 23,0            | 435,0              | 804,0               | 33120           | 300 kcmil | - | 33132           | 300 kcmil | - |
| 1 x 185                                | rm | 25,5            | 537,0              | 978,0               | 33121           | 350 kcmil | - | 33133           | 350 kcmil | - |
| 1 x 240                                | rm | 28,5            | 696,0              | 1253,0              | 33122           | 500 kcmil | - | 33134           | 500 kcmil | - |
| 1 x 300                                | rm | 30,0            | 870,0              | 1394,0              | 33123           | 600 kcmil | - | 33135           | 600 kcmil | - |
| 1 x 400                                | rm | 34,0            | 1160,0             | 1890,0              | 33124           | 750 kcmil | - | 33136           | 750 kcmil | - |
| 4 x 16                                 | re | 21,5            | 186,0              | 750,0               | 33137           | 6         | - | 33147           | 6         | - |
| 4 x 25                                 | re | 26,0            | 290,0              | 950,0               | 33138           | 4         | - | 33148           | 4         | - |
| 4 x 35                                 | re | 27,5            | 406,0              | 1120,0              | 33139           | 2         | - | 33149           | 2         | - |
| 4 x 50                                 | se | 30,0            | 580,0              | 1251,0              | 33140           | 1         | - | 33150           | 1         | - |
| 4 x 70                                 | se | 34,0            | 812,0              | 1548,0              | 33141           | 2/0       | - | 33151           | 2/0       | - |
| 4 x 95                                 | se | 39,0            | 1102,0             | 2030,0              | 33142           | 3/0       | - | 33152           | 3/0       | - |
| 4 x 120                                | se | 42,5            | 1392,0             | 2400,0              | 33143           | 4/0       | - | 33153           | 4/0       | - |
| 4 x 150                                | se | 47,5            | 1740,0             | 3030,0              | 33144           | 300 kcmil | - | 33154           | 300 kcmil | - |
| 4 x 185                                | se | 52,0            | 2146,0             | 3650,0              | 33145           | 350 kcmil | - | 33155           | 350 kcmil | - |
| 4 x 240                                | se | 58,0            | 2784,0             | 4800,0              | 33146           | 500 kcmil | - | 33156           | 500 kcmil | - |

Dimensions and specifications may be changed without prior notice. (RQ02)

# HELUWIND® WK (N)A2XH

0,6/1 kV, halogen-free



## Technical data

- **Temperature range**  
fixed installation -40°C to +90°C  
during assembly -5°C to +50°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
 $U_0/U$  0,6/1 V
- **Test voltage**  
4 kV
- **Approvals**  
production in acc. to VDE standards,  
CE compliant
- **Minimum bending radius**  
15x cable Ø
- **Flame test**  
IEC 60332-3-24,  
IEC 60332-1-2 cat. C
- **Smoke density**  
IEC 61034-1-2
- **Corrosivity of combustion gases**  
IEC 60754-2
- **Halogen-free**  
IEC 60754-1
- **Current carrying capacity**  
IEC 60364-5-52 Table B.5.2.13

## Cable structure

- ALU conductors, stranded conductors  
acc. to IEC 60228 cl.2
- Core insulation: cross-linked PE
- Core identification: black
- Sheath: thermoplastic polymer
- Sheath colour: black

## Properties

- Halogen-free
- UV resistant

## Note

For more information, especially on custom cables and connectivity solutions, please contact us:  
wind@helukabel.de

## Application

The HELUWIND® WK series was specifically designed for wind power applications. We supply the leading wind turbine manufacturers with our cables.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 712374   | 1 x 95                                 | -       | 18,0            | 275,5             | 445,0               |
| 712589   | 1 x 150                                | -       | 20,0            | 435,0             | 950,0               |
| 705031   | 1 x 185                                | -       | 22,0            | 537,0             | 1100,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 705032   | 1 x 240                                | -       | 25,0            | 696,0             | 1208,0              |
| 705033   | 1 x 300                                | -       | 28,5            | 870,0             | 1342,0              |
| 705034   | 1 x 400                                | -       | 32,0            | 1160,0            | 1843,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK ALU Tower

0,6/1 kV



## Technical data

- **Temperature range**  
flexing -25°C to +50°C  
fixed installation -40°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
15x cable Ø
- **Approvals**  
acc. to IEC 60502-1

## Cable structure

- ALU stranded round shaped conductors (RM)  
acc. to IEC 60228 cl.2 (nv) annealed
- Insulation: EPR compound black
- Sheath: special PCP compound
- Sheath colour: black

## Properties

- UV resistant
- Oil resistant

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

For medium mechanical stress in dry, damp and wet environments; for outdoor use; particularly as a power cable in wind turbines, for fixed installation in the tower or lattice tower. Due to the special cable structure, and outer sheath, this cable provides a better flexibility than standard cables (NAYY-NA2XY-NA2XH). Thanks to its increased flexibility, this cable is perfectly suited for connecting wind turbines and external substations (pipes). The cable is also available with a rated voltage of 1,8/3 kV.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 708470   | 1 x 150                                | -       | 23,0            | 435,0             | 790,0               |
| 708471   | 1 x 185                                | -       | 26,0            | 537,0             | 960,0               |
| 709957   | 1 x 240                                | -       | 25,0            | 696,0             | 1100,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 708473   | 1 x 300                                | -       | 29,0            | 870,0             | 1342,0              |
| 708474   | 1 x 400                                | -       | 31,4            | 1160,0            | 1843,0              |

Dimensions and specifications may be changed without prior notice.

# HELWIND® WK ALU Blade

lightning protection, rotor blades



## Technical data

- **Temperature range**  
fixed installation -40°C to +80°C
- **Nominal voltage**  
0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
fixed installation 15x cable Ø

## Cable structure

- Aluminium conductor, with special conductor construction
- Special insulation compound
- Sheath colour: black

## Properties

- Oil resistant
- UV resistant

## Note

For more information, especially on custom cables and connectivity solutions, please contact us:  
wind@helukabel.de

## Application

This lightning protection cable is suitable for limited flexible applications despite its multi-stranding (class 2) aluminium conductor. This cable can be used in rotor blades of wind turbines.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 706576   | 1 x 50                                 | -       | 12,1            | 160,0             | 376,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 706577   | 1 x 70                                 | -       | 13,7            | 224,0             | 491,0               |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK POWERLINE ALU

0,6/1 kV, flexible ALU-Conductor



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flame test**  
IEC 60332-1-2
- **Approvals**  
acc. to DIN VDE 0250-813  
UL/CSA in preparation

## Cable structure

- Aluminium conductor,  
fine stranded wires
- Special insulation black
- Sheath: special compound
- Sheath colour: black

## Properties

- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK POWERLINE ALU is a highly flexible aluminium cable with a finely stranded structure and is designed for use in the power engineering sector; specifically, for power cabling in wind power plants. Thanks to its high degree of flexibility and low tare weight, this cable can be fed into the tower as a single length. This eliminates the need for time-consuming cabling of each individual tower segment. However, its key advantage lies in the process reliability the connection technology offers: using this cable can reduce the number of interruptions between the topmost tower segment and the converter from 90 connection points to just 18 (depending on the number of power cables and tower segments). As a result, the amount of time required for installation can drop from several days to a few hours. For torsion applications, we recommend the WK 103-Torsion, WK 135-Torsion or WK 137-Torsion.

**The HELUWIND® WK POWERLINE ALU may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A.**

See the accessories section of the catalogue. The cable is also available with a halogen-free design, UL/CSA approval or a rated voltage of 1.8/3 kV. = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 707062   | 1 x 70                                 | -       | 17,4            | 206,0             | 379,0               |
| 707063   | 1 x 95                                 | -       | 18,8            | 280,0             | 480,0               |
| 707064   | 1 x 120                                | -       | 20,6            | 355,0             | 576,0               |
| 706408   | 1 x 150                                | -       | 22,4            | 441,0             | 665,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 706088   | 1 x 185                                | -       | 24,5            | 544,0             | 950,0               |
| 706089   | 1 x 240                                | -       | 27,5            | 706,0             | 1150,0              |
| 706084   | 1 x 300                                | -       | 31,9            | 882,0             | 1400,0              |
| 706085   | 1 x 400                                | -       | 36,7            | 1176,0            | 1680,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK POWERLINE ALU robust

0,6/1 kV, flexible ALU-Conductor



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flame test**  
IEC 60332-1-2
- **Approvals**  
acc. to DIN VDE 0250-813  
UL/CSA in preparation

## Cable structure

- Aluminium conductor, fine stranded wires
- Special insulation black
- Sheath: special compound
- Sheath colour: black

## Properties

- Extremely abrasion resistant
- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK POWERLINE ALU robust is a highly flexible aluminium cable with a finely stranded structure and is designed for use in the power engineering sector; specifically, for power cabling in wind power plants. An essential advantage of the WK POWERLINE ALU series is the highly mechanical resistance of the outer sheath. Thanks to its high degree of flexibility and low tare weight, this cable can be fed in the tower in one length. This eliminates the need for time-consuming cabling of each individual tower segment. However, its key advantage lies in the process reliability the connection technology offers: using this cable can reduce the number of interruptions between the topmost tower segment and the converter from 90 connection points to just 18 (depending on the number of power cables and tower segments). The amount of time required for installation can drop from several days to a few hours. For torsion applications, we recommend the WK 103-Torsion, WK 135-Torsion or WK 137-Torsion.

**The HELUWIND® WK POWERLINE ALU may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A.**

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|----------------------------|---------|-----------------|-------------------|---------------------|
| 707097   | 1 x 70                     | -       | 17,4            | 206,0             | 460,0               |
| 707098   | 1 x 95                     | -       | 17,9            | 280,0             | 536,0               |
| 707099   | 1 x 120                    | -       | 20,6            | 355,0             | 576,0               |
| 707100   | 1 x 150                    | -       | 22,4            | 441,0             | 665,0               |

| Part no. | No. cores x cross-sec. mm² | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|----------------------------|---------|-----------------|-------------------|---------------------|
| 707101   | 1 x 185                    | -       | 24,5            | 544,0             | 950,0               |
| 707102   | 1 x 240                    | -       | 28,1            | 706,0             | 1150,0              |
| 707103   | 1 x 300                    | -       | 31,4            | 882,0             | 1398,0              |
| 707104   | 1 x 400                    | -       | 36,7            | 1176,0            | 1588,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK POWERLINE ALU

1,8/3 kV, flexible ALU-Conductor, direct burial



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
1,8/3 kV
- **Test voltage**  
9 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flame test**  
IEC 60332-1-2
- **Approvals**  
in accordance DIN VDE 0250-813

## Cable structure

- Aluminium conductor, fine stranded wires
- Special insulation black
- Sheath: special compound
- Sheath colour: black

## Properties

- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable
- Direct burial

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK POWERLINE ALU is a highly flexible, aluminium cable with a finely stranded structure and is designed for use in the power engineering sector, specifically for power cabling in industrial applications. Thanks to its high level of flexibility and reduced weight, this cable is an interesting option compared to fine-stranded copper cables in many applications.

The HELUWIND® WK POWERLINE ALU series unlocks its full potential, when it comes to power wiring of wind power plants. Due to its low weight, cables can be fed through the tower in one length. This eliminates the need for the time-consuming cabling of individual tower segments. However, the key benefit is an increased reliability of the connection technology: The number of interruptions between the topmost tower segment and the converter can be reduced from 90 connection points to just 18 (depending on the number of power cables and tower segments). As a result, the amount of time required for installation can drop from several days, to a few hours. For torsion applications, we recommend the HELUWIND® WK 103-Torsion, WK 135-Torsion or WK 137-Torsion.

**The HELUWIND® WK POWERLINE ALU may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A.**

The cable is also available in a halogen-free design, with UL/CSA approval, and a rated voltage of 0.6/1 kV. The "robust" version features a high abrasion and mechanical load resistant PUR sheath.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 707647   | 1 x 185                                | -       | 26,0            | 544,0             | 1020,0              |
| 706578   | 1 x 240                                | -       | 30,3            | 706,0             | 1250,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 707432   | 1 x 300                                | -       | 33,2            | 882,0             | 1520,0              |
| 707648   | 1 x 400                                | -       | 37,4            | 1176,0            | 1855,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK POWERLINE ALU robust

1,8/3 kV, flexible ALU-Conductor



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
1,8/3 kV
- **Test voltage**  
9 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flame test**  
IEC 60332-1-2
- **Approvals**  
in accordance DIN VDE 0250-813

## Cable structure

- Aluminium conductor, fine stranded wires
- Special insulation black
- Sheath: special compound
- Sheath colour: black

## Properties

- Extremely abrasion resistant
- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK POWERLINE ALU robust is a highly flexible, aluminium cable with a finely stranded structure and is designed for use in the power engineering sector, specifically for power cabling in industrial applications. Thanks to its high level of flexibility and reduced weight, this cable is an interesting option compared to fine-stranded copper cables in many applications.

The HELUWIND® WK POWERLINE ALU series unlocks its full potential, when it comes to power wiring of wind power plants. Due to its low weight, cables can be fed through the tower in one length. This eliminates the need for the time-consuming cabling of individual tower segments. However, the key benefit is an increased reliability of the connection technology: The number of interruptions between the topmost tower segment and the converter can be reduced from 90 connection points to just 18 (depending on the number of power cables and tower segments). As a result, the amount of time required for installation can drop from several days, to a few hours. For torsion applications, we recommend the HELUWIND® WK 103-Torsion, WK 135-Torsion or WK 137-Torsion.

**The HELUWIND® WK POWERLINE ALU may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 Cl. A.**

The cable is also available in a halogen-free design, with UL/CSA approval, and a rated voltage of 0,6/1 kV. The "robust" version features a high abrasion and mechanical load resistant PUR sheath.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 707692   | 1 x 185                                | -       | 26,0            | 544,0             | 1020,0              |
| 707693   | 1 x 240                                | -       | 28,4            | 706,0             | 1250,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 707694   | 1 x 300                                | -       | 33,2            | 882,0             | 1520,0              |
| 707695   | 1 x 400                                | -       | 38,1            | 1176,0            | 1855,0              |

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK POWERLINE ALU halogen-free

1,8/3 kV, flexible ALU-Conductor



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
1,8/3 kV
- **Test voltage**  
9 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Approvals**  
in accordance DIN VDE 0250-813

## Cable structure

- Aluminium conductor, fine stranded wires
- Special insulation black
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Abrasion resistant
- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK POWERLINE ALU halogen-free is a highly flexible, aluminium cable with a finely stranded structure and is designed for use in the power engineering sector, specifically for power cabling in industrial applications. Thanks to its high level of flexibility and reduced weight, this cable is an interesting option compared to fine-stranded copper cables in many applications.

The HELUWIND® WK POWERLINE ALU series unlocks its full potential, when it comes to power wiring of wind power plants. Due to its low weight, cables can be fed through the tower in one length. This eliminates the need for the time-consuming cabling of individual tower segments. However, the key benefit is an increased reliability of the connection technology: The number of interruptions between the topmost tower segment and the converter can be reduced from 90 connection points to just 18 (depending on the number of power cables and tower segments). As a result, the amount

of time required for installation can drop from several days, to a few hours. For torsion applications, we recommend the HELUWIND® WK 103-Torsion, WK 135-Torsion or WK 137-Torsion.

**The HELUWIND® WK POWERLINE ALU may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A.**

The cable is also available with UL/CSA approval.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 709143   | 1 x 185                                | -       | 26,0            | 544,0             | 1020,0              |
| 709144   | 1 x 240                                | -       | 28,4            | 706,0             | 1150,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 709145   | 1 x 300                                | -       | 33,2            | 882,0             | 1400,0              |
| 709146   | 1 x 400                                | -       | 38,1            | 1176,0            | 1680,0              |

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK RHH/RHW-2 ALU

UL listed as types RHW/RHW-2. RW90/R90, FT4 per CSA



## Technical data

- **Temperature range**  
flexing -40°C to +90°C (wet & dry)
- **Nominal voltage**  
2000 V
- **Approvals**  
UL 44 for Thermoset-Insulated Wires and Cables  
ICEA S-95-658 / NEMA WC70 for Non-shielded 0-2 kV Cables  
All cross sections are rated VW1 (fire protection classification)

## Cable structure

- **Conductor:**
  - Aluminium AA-8000 alloy compacted conductor
  - Class B stranding, per ASTM B801
  - Sizes: 6 AWG - 1000 kcmil
- **Insulation:**
  - Flame retardant thermoset ethylene propylene rubber (EPR) compound
- **Sheath:**
  - Black flame retardant thermoset chlorinated polyethylene (CPE) compound

## Properties

- Sheath is rated Oil Resistance I or II per UL 44
- Rated Sun Resistance for CT use, 1/0 AWG and larger

## Note

- **RHH/RHW-2 600 V on request** For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

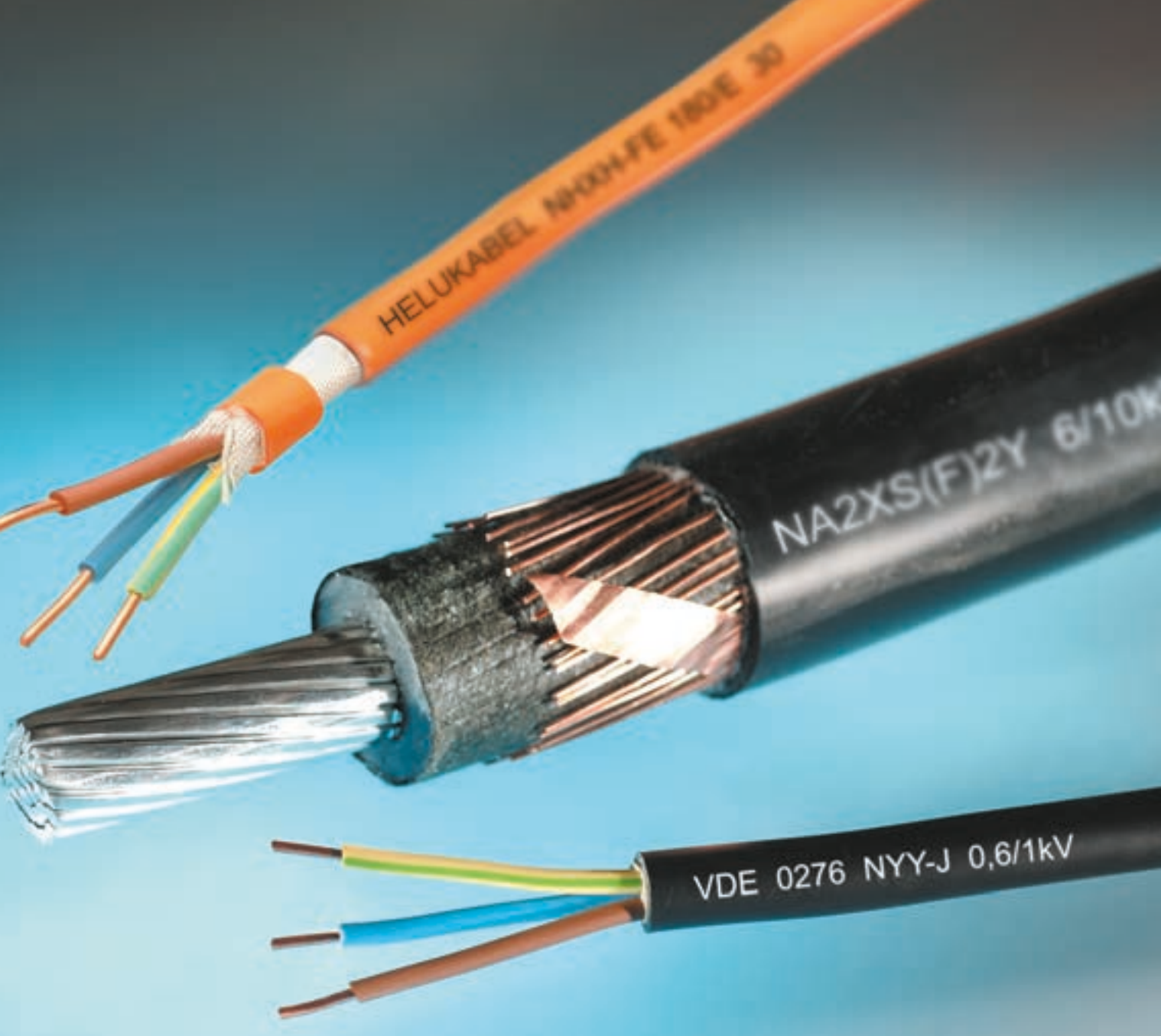
For power, lighting, signal and control circuits installed in wet or dry locations. In conduit, duct, tray, and open air, and aerial installations. Suitable for use in industrial areas, fixed installation in wind turbines and utility systems where flame resistance is essential.

| Part no. | Cross-section<br>AWG / kcmil | Outer Ø<br>app.<br>mm | Weight<br>app.<br>kg / km | Outer Ø<br>app.<br>inch | Weight<br>app.<br>lb / kft |
|----------|------------------------------|-----------------------|---------------------------|-------------------------|----------------------------|
| 708746   | 6                            | 8,9                   | 0,0                       | 0,35                    | 71,0                       |
| 708747   | 4                            | 9,9                   | 0,0                       | 0,39                    | 91,0                       |
| 708748   | 2                            | 11,4                  | 0,0                       | 0,45                    | 124,0                      |
| 708749   | 1                            | 13,7                  | 0,0                       | 0,54                    | 174,0                      |
| 708750   | 1/0                          | 14,5                  | 0,0                       | 0,57                    | 202,0                      |
| 708751   | 2/0                          | 15,5                  | 0,0                       | 0,61                    | 238,0                      |
| 708752   | 3/0                          | 16,8                  | 0,0                       | 0,66                    | 281,0                      |
| 708753   | 4/0                          | 18,0                  | 0,0                       | 0,71                    | 335,0                      |

| Part no. | Cross-section<br>AWG / kcmil | Outer Ø<br>app.<br>mm | Weight<br>app.<br>kg / km | Outer Ø<br>app.<br>inch | Weight<br>app.<br>lb / kft |
|----------|------------------------------|-----------------------|---------------------------|-------------------------|----------------------------|
| 708754   | 250 kcmil                    | 20,8                  | 0,0                       | 0,82                    | 429,0                      |
| 712222   | 300 kcmil                    | 22,1                  | 0,0                       | 0,87                    | 491,0                      |
| 712223   | 350 kcmil                    | 23,4                  | 0,0                       | 0,92                    | 552,0                      |
| 712224   | 400 kcmil                    | 24,4                  | 0,0                       | 0,96                    | 612,0                      |
| 712225   | 500 kcmil                    | 26,4                  | 0,0                       | 1,04                    | 729,0                      |
| 712226   | 600 kcmil                    | 29,2                  | 0,0                       | 1,15                    | 878,0                      |
| 712227   | 750 kcmil                    | 31,5                  | 0,0                       | 1,24                    | 1052,0                     |
| 712228   | 1000 kcmil                   | 35,2                  | 0,0                       | 0,00                    | 1338,0                     |

Dimensions and specifications may be changed without prior notice.





**N2XS2Y 6/10kV, 12/20kV, 18/30kV**

HELUWIND® WK POWERLINE MS single

**NA2XS2Y 6/10kV, 12/20kV, 18/30kV**

N2XS(F)2Y 6/10kV, 12/20kV, 18/30kV

# ■ INFRASTRUCTURE CABLES

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# N2XSY 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, PVC-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltage** U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltage** for 6/10 kV = 21 kV for 12/20 kV = 42 kV for 18/30 kV = 63 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings table** see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PVC compound type DMV6 to HD 620 S2
- Sheath colour: red

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Installation notes

- To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoor with protected laying, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|---------------------|------------|
| 32400    | 1 x 35 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 23,0 - 28,0            | 518,0               | 905,0               | 2          |
| 32401    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 24,0 - 29,0            | 662,0               | 1080,0              | 1          |
| 32402    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 31,0            | 854,0               | 1310,0              | 2/0        |
| 32403    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 32,0            | 1094,0              | 1580,0              | 3/0        |
| 32404    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 28,0 - 34,0            | 1334,0              | 1860,0              | 4/0        |
| 32405    | 1 x 150 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 1622,0              | 2040,0              | 300 kcmil  |
| 32406    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 1723,0              | 2210,0              | 300 kcmil  |
| 32407    | 1 x 185 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 1958,0              | 2450,0              | 350 kcmil  |
| 32408    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 2059,0              | 2580,0              | 350 kcmil  |
| 32409    | 1 x 240 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 2486,0              | 3000,0              | 500 kcmil  |
| 32410    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 2587,0              | 3130,0              | 500 kcmil  |
| 32411    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 36,0 - 41,0            | 3163,0              | 3780,0              | 600 kcmil  |
| 32412    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 40,0 - 45,0            | 4234,0              | 4670,0              | 750 kcmil  |
| 32413    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 43,0 - 48,0            | 5194,0              | 5750,0              | 1000 kcmil |
| 33099    | 1 x 630 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 44,0 - 49,0            | 6442,0              | 7180,0              | 1250 kcmil |
| 32414    | 1 x 35 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 27,0 - 32,0            | 518,0               | 1110,0              | 2          |
| 32415    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 28,0 - 33,0            | 662,0               | 1250,0              | 1          |
| 32416    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 30,0 - 35,0            | 854,0               | 1510,0              | 2/0        |
| 32417    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 31,0 - 36,0            | 1094,0              | 1780,0              | 3/0        |
| 32418    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 32,0 - 38,0            | 1334,0              | 2070,0              | 4/0        |
| 32419    | 1 x 150 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 1622,0              | 2310,0              | 300 kcmil  |
| 32420    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 1723,0              | 2420,0              | 300 kcmil  |
| 32421    | 1 x 185 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 1958,0              | 2650,0              | 350 kcmil  |
| 32422    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 2059,0              | 2810,0              | 350 kcmil  |
| 32423    | 1 x 240 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 2486,0              | 3260,0              | 500 kcmil  |
| 32424    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 2587,0              | 3360,0              | 500 kcmil  |
| 32425    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 40,0 - 46,0            | 3163,0              | 4020,0              | 600 kcmil  |
| 32426    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 43,0 - 49,0            | 4234,0              | 4930,0              | 750 kcmil  |
| 32427    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 46,0 - 52,0            | 5194,0              | 6050,0              | 1000 kcmil |
| 33096    | 1 x 630 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 47,0 - 53,0            | 6442,0              | 7510,0              | 1250 kcmil |

Continuation ▶



# N2XSy 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, PVC-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|---------------------|------------|
| 32428    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 32,0 - 38,0            | 662,0               | 1480,0              | 1          |
| 32429    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 34,0 - 40,0            | 854,0               | 1730,0              | 2/0        |
| 32430    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 35,0 - 41,0            | 1094,0              | 2060,0              | 3/0        |
| 32431    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 37,0 - 43,0            | 1334,0              | 2330,0              | 4/0        |
| 32432    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 38,0 - 44,0            | 1723,0              | 2720,0              | 300 kcmil  |
| 32433    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 40,0 - 46,0            | 2059,0              | 3100,0              | 350 kcmil  |
| 32434    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 42,0 - 48,0            | 2587,0              | 3730,0              | 500 kcmil  |
| 32435    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 45,0 - 51,0            | 3163,0              | 4000,0              | 600 kcmil  |
| 32436    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 48,0 - 54,0            | 4234,0              | 5330,0              | 750 kcmil  |
| 32437    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 51,0 - 57,0            | 5194,0              | 6480,0              | 1000 kcmil |
| 33098    | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 52,0 - 59,0            | 6442,0              | 7970,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# N2XS2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, PE-sheath



## Technical data

- XLPE-insulated power cables acc.to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltage** U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltage** for 6/10 kV = 21 kV for 12/20 kV = 42 kV for 18/30 kV = 63 kV
- **Minimum bending radius** 15x cable Ø
- **Power rating** see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE-sheath is not flame retardant acc. to DIN EN 60332-1-2. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|---------------------|------------|
| 32480    | 1 x 35 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 23,0 - 28,0            | 518,0               | 910,0               | 2          |
| 32481    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 24,0 - 29,0            | 662,0               | 990,0               | 1          |
| 32482    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 31,0            | 854,0               | 1205,0              | 2/0        |
| 32483    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 32,0            | 1098,0              | 1520,0              | 3/0        |
| 32484    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 28,0 - 34,0            | 1334,0              | 1760,0              | 4/0        |
| 32485    | 1 x 150 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 1622,0              | 2020,0              | 300 kcmil  |
| 32486    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 1725,0              | 2130,0              | 300 kcmil  |
| 32487    | 1 x 185 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 1958,0              | 2360,0              | 350 kcmil  |
| 32488    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 2059,0              | 2470,0              | 350 kcmil  |
| 32489    | 1 x 240 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 2486,0              | 2960,0              | 500 kcmil  |
| 32490    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 2587,0              | 3020,0              | 500 kcmil  |
| 32491    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 36,0 - 41,0            | 3163,0              | 3630,0              | 600 kcmil  |
| 32492    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 40,0 - 45,0            | 4234,0              | 4560,0              | 750 kcmil  |
| 32493    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 43,0 - 48,0            | 5194,0              | 5580,0              | 1000 kcmil |
| 32494    | 1 x 35 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 27,0 - 32,0            | 518,0               | 960,0               | 2          |
| 32495    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 28,0 - 33,0            | 662,0               | 1160,0              | 1          |
| 32496    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 30,0 - 35,0            | 854,0               | 1410,0              | 2/0        |
| 32497    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 31,0 - 36,0            | 1094,0              | 1670,0              | 3/0        |
| 32498    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 38,0            | 1334,0              | 1960,0              | 4/0        |
| 32499    | 1 x 150 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 34,0 - 39,0            | 1622,0              | 2220,0              | 300 kcmil  |
| 32500    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 34,0 - 39,0            | 1723,0              | 2310,0              | 300 kcmil  |
| 32501    | 1 x 185 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 36,0 - 41,0            | 1958,0              | 2620,0              | 350 kcmil  |
| 32502    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 36,0 - 41,0            | 2059,0              | 2670,0              | 350 kcmil  |
| 32503    | 1 x 240 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 39,0 - 44,0            | 2486,0              | 3160,0              | 500 kcmil  |
| 32504    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 39,0 - 44,0            | 2587,0              | 3270,0              | 500 kcmil  |
| 32505    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 41,0 - 46,0            | 3163,0              | 3880,0              | 600 kcmil  |
| 32506    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 44,0 - 49,0            | 4234,0              | 4820,0              | 750 kcmil  |
| 32507    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 47,0 - 52,0            | 5194,0              | 5860,0              | 1000 kcmil |

Continuation ▶

# N2XS2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, PE-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|---------------------|------------|
| 32508    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 32,0 - 38,0            | 662,0               | 1410,0              | 1          |
| 32509    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 34,0 - 40,0            | 854,0               | 1660,0              | 2/0        |
| 32510    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 35,0 - 41,0            | 1094,0              | 1970,0              | 3/0        |
| 32511    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 37,0 - 43,0            | 1334,0              | 2220,0              | 4/0        |
| 32512    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 38,0 - 44,0            | 1723,0              | 2650,0              | 300 kcmil  |
| 32513    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 40,0 - 46,0            | 2059,0              | 2980,0              | 350 kcmil  |
| 32514    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 42,0 - 48,0            | 2587,0              | 3570,0              | 500 kcmil  |
| 32515    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 45,0 - 51,0            | 3163,0              | 4220,0              | 600 kcmil  |
| 32516    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 48,0 - 54,0            | 4234,0              | 5170,0              | 750 kcmil  |
| 32517    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 51,0 - 57,0            | 5194,0              | 6260,0              | 1000 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# N2XS(F)2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, longitudinally watertight, screened, PE-sheath



## Technical data

- XLPE-insulated power cables acc.to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range**  
during installation up to -20°C
- **Operating temperature**  
max. +90°C
- **Short circuit temperature**  
+250°C (short circuit duration max. 5 s)
- **Nominal voltage**  
U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz**  
for 6/10 kV = max. 12 kV  
for 12/20 kV = max. 24 kV  
for 18/30 kV = max. 36 kV
- **Test voltage**  
for 6/10 kV = 21 kV  
for 12/20 kV = 42 kV  
for 18/30 kV = 63 kV
- **Minimum bending radius**  
15x cable Ø
- **Power rating**  
see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Longitudinally watertight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally water-tight wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes**  
To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Sheath thickness Nominal value mm | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------|---------------------|---------------------|------------|
| 32560    | 1 x 35 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 26,0            | 518,0               | 1050,0              | 2          |
| 32561    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 28,0            | 662,0               | 1150,0              | 1          |
| 32562    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 30,0            | 854,0               | 1460,0              | 2/0        |
| 32563    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 31,0            | 1094,0              | 1700,0              | 3/0        |
| 32564    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 32,0            | 1334,0              | 2030,0              | 4/0        |
| 32565    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 34,0            | 1723,0              | 2350,0              | 300 kcmil  |
| 32566    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 36,0            | 2059,0              | 2700,0              | 350 kcmil  |
| 32567    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 38,0            | 2587,0              | 3300,0              | 500 kcmil  |
| 32568    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 40,0            | 3163,0              | 3900,0              | 600 kcmil  |
| 32569    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 44,0            | 4234,0              | 4850,0              | 750 kcmil  |
| 32570    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 47,0            | 5194,0              | 6000,0              | 1000 kcmil |
| 79954    | 1 x 630 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 49,0            | 6442,0              | 7020,0              | 1250 kcmil |
| 32571    | 1 x 35 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 31,0            | 518,0               | 1210,0              | 2          |
| 32572    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 33,0            | 662,0               | 1400,0              | 1          |
| 32573    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 34,0            | 854,0               | 1550,0              | 2/0        |
| 32574    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 36,0            | 1094,0              | 1800,0              | 3/0        |
| 32575    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 37,0            | 1334,0              | 2150,0              | 4/0        |
| 32576    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 39,0            | 1723,0              | 2400,0              | 300 kcmil  |
| 32577    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 41,0            | 2059,0              | 2850,0              | 350 kcmil  |
| 32578    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 43,0            | 2587,0              | 3250,0              | 500 kcmil  |
| 32579    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 45,0            | 3163,0              | 3850,0              | 600 kcmil  |
| 32580    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 48,0            | 4234,0              | 4900,0              | 750 kcmil  |
| 32581    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 52,0            | 5194,0              | 6100,0              | 1000 kcmil |
| 33092    | 1 x 630 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 54,0            | 6442,0              | 7340,0              | 1250 kcmil |

Continuation ▶

# N2XS(F)2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, longitudinally watertight, screened, PE-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Sheath thickness Nominal value mm | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------|---------------------|---------------------|------------|
| 32582    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 37,0            | 662,0               | 1700,0              | 1          |
| 32583    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 38,0            | 854,0               | 1950,0              | 2/0        |
| 32584    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 40,0            | 1094,0              | 2300,0              | 3/0        |
| 32585    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 42,0            | 1334,0              | 2600,0              | 4/0        |
| 32586    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 43,0            | 1723,0              | 3000,0              | 300 kcmil  |
| 32587    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 45,0            | 2059,0              | 3350,0              | 350 kcmil  |
| 32588    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 47,0            | 2587,0              | 4100,0              | 500 kcmil  |
| 32589    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 50,0            | 3163,0              | 4800,0              | 600 kcmil  |
| 32590    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 53,0            | 4234,0              | 5750,0              | 750 kcmil  |
| 32591    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 56,0            | 5194,0              | 6700,0              | 1000 kcmil |
| 708487   | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 59,0            | 6442,0              | 7760,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)



# N2XS(FL)2Y 6/ 10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, longitudinally and crosswise watertight, PE-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range**  
during installation up to -20°C
- **Operating temperature**  
max. +90°C
- **Short circuit temperature**  
+250°C (short circuit duration max. 5 s)
- **Nominal voltage**  
U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz**  
for 6/10 kV = max. 12 kV  
for 12/20 kV = max. 24 kV  
for 18/30 kV = max. 36 kV
- **Test voltage**  
for 6/10 kV = 21 kV  
for 12/20 kV = 42 kV  
for 18/30 kV = 63 kV
- **Minimum bending radius**  
15x cable Ø
- **Power ratings**  
see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Longitudinally watertight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally watertight wrapping
- Aluminium tape spliced with PE sheath
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes**  
To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The PE sheathing is not flame-retardant to DIN EN 60332-1-2. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Sheath thickness Nominal value mm | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------|---------------------|---------------------|------------|
| 33054    | 1 x 35 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 28,0            | 518,0               | 860,0               | 2          |
| 33055    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 30,0            | 662,0               | 1000,0              | 1          |
| 33056    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 32,0            | 854,0               | 1350,0              | 2/0        |
| 33057    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 33,0            | 1094,0              | 1680,0              | 3/0        |
| 33058    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 16                                | 2,5                               | 34,0            | 1334,0              | 2070,0              | 4/0        |
| 33059    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 36,0            | 1723,0              | 2350,0              | 300 kcmil  |
| 33060    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 38,0            | 2059,0              | 2710,0              | 350 kcmil  |
| 33061    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 40,0            | 2587,0              | 3260,0              | 500 kcmil  |
| 38049    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 2,5                               | 42,0            | 3163,0              | 3850,0              | 600 kcmil  |
| 38050    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 46,0            | 4234,0              | 4740,0              | 750 kcmil  |
| 38051    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 49,0            | 5194,0              | 5800,0              | 1000 kcmil |
| 38052    | 1 x 630 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 2,5                               | 51,0            | 6442,0              | 7120,0              | 1250 kcmil |
| 38053    | 1 x 35 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 33,0            | 518,0               | 1020,0              | 2          |
| 33066    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 35,0            | 662,0               | 1170,0              | 1          |
| 33067    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 36,0            | 854,0               | 1470,0              | 2/0        |
| 33083    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 38,0            | 1094,0              | 1860,0              | 3/0        |
| 33069    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 16                                | 2,5                               | 39,0            | 1334,0              | 2260,0              | 4/0        |
| 33070    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 41,0            | 1723,0              | 2550,0              | 300 kcmil  |
| 33071    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 43,0            | 2059,0              | 2920,0              | 350 kcmil  |
| 33072    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 45,0            | 2587,0              | 3490,0              | 500 kcmil  |
| 33073    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 2,5                               | 47,0            | 3163,0              | 4090,0              | 600 kcmil  |
| 33074    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 50,0            | 4234,0              | 5010,0              | 750 kcmil  |
| 33075    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 54,0            | 5194,0              | 6090,0              | 1000 kcmil |
| 38054    | 1 x 630 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 2,5                               | 55,0            | 6442,0              | 7440,0              | 1250 kcmil |

Continuation ▶

# N2XS(FL)2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Cu-conductor, single core, screened, longitudinally and crosswise watertight, PE-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Sheath thickness Nominal value mm | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------------------------|-----------------|---------------------|---------------------|------------|
| 34312    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 36,0            | 662,0               | 1400,0              | 1          |
| 38055    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 40,0            | 854,0               | 1710,0              | 2/0        |
| 38056    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 42,0            | 1094,0              | 2110,0              | 3/0        |
| 38057    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 16                                | 2,5                               | 44,0            | 1334,0              | 2520,0              | 4/0        |
| 38058    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 45,0            | 1723,0              | 2830,0              | 300 kcmil  |
| 34313    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 47,0            | 2059,0              | 3210,0              | 350 kcmil  |
| 38059    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 49,0            | 2587,0              | 3790,0              | 500 kcmil  |
| 34314    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 2,5                               | 52,0            | 3163,0              | 4430,0              | 600 kcmil  |
| 34315    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 55,0            | 4234,0              | 5390,0              | 750 kcmil  |
| 38060    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 58,0            | 5194,0              | 6500,0              | 1000 kcmil |
| 38061    | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 2,5                               | 60,0            | 6442,0              | 7870,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# NA2XS Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, screened, PVC-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltage** U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltage** for 6/10 kV = 21 kV for 12/20 kV = 42 kV for 18/30 kV = 63 kV
- **Minimum bending radius** 15x cable Ø
- **Power rating** see "Technical Informations"

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PVC compound type DMV6 to HD 620 S2
- Sheath colour: red

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoor with protected laying, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways.

The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|--------------------|---------------------|------------|
| 32440    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 24,0 - 29,0            | 182,0               | 145,0              | 780,0               | 1          |
| 32441    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 31,0            | 182,0               | 203,0              | 875,0               | 2/0        |
| 32442    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 32,0            | 182,0               | 276,0              | 990,0               | 3/0        |
| 32443    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 28,0 - 34,0            | 182,0               | 348,0              | 1110,0              | 4/0        |
| 32444    | 1 x 150 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 182,0               | 435,0              | 1240,0              | 300 kcmil  |
| 32445    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 283,0               | 435,0              | 1310,0              | 300 kcmil  |
| 32446    | 1 x 185 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 182,0               | 537,0              | 1405,0              | 350 kcmil  |
| 32447    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 283,0               | 537,0              | 1460,0              | 350 kcmil  |
| 32448    | 1 x 240 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 182,0               | 696,0              | 1615,0              | 500 kcmil  |
| 32449    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 283,0               | 696,0              | 1660,0              | 500 kcmil  |
| 32450    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 36,0 - 41,0            | 283,0               | 870,0              | 1910,0              | 600 kcmil  |
| 32451    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 40,0 - 45,0            | 394,0               | 1160,0             | 2315,0              | 750 kcmil  |
| 32452    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 43,0 - 48,0            | 394,0               | 1450,0             | 2750,0              | 1000 kcmil |
| 32453    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 28,0 - 33,0            | 182,0               | 145,0              | 950,0               | 1          |
| 32454    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 30,0 - 35,0            | 182,0               | 203,0              | 1110,0              | 2/0        |
| 32455    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 31,0 - 36,0            | 182,0               | 276,0              | 1220,0              | 3/0        |
| 32456    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 32,0 - 38,0            | 182,0               | 348,0              | 1310,0              | 4/0        |
| 32457    | 1 x 150 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 182,0               | 435,0              | 1460,0              | 300 kcmil  |
| 32458    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 283,0               | 435,0              | 1520,0              | 300 kcmil  |
| 32459    | 1 x 185 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 182,0               | 537,0              | 1660,0              | 350 kcmil  |
| 32460    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 283,0               | 537,0              | 1720,0              | 350 kcmil  |
| 32461    | 1 x 240 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 182,0               | 696,0              | 1860,0              | 500 kcmil  |
| 32462    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 283,0               | 696,0              | 1910,0              | 500 kcmil  |
| 32463    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 40,0 - 46,0            | 283,0               | 870,0              | 2220,0              | 600 kcmil  |
| 32464    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 43,0 - 49,0            | 394,0               | 1160,0             | 2620,0              | 750 kcmil  |
| 32465    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 46,0 - 52,0            | 394,0               | 1450,0             | 3030,0              | 1000 kcmil |

Continuation ▶

# NA2XSY 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, screened, PVC-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|--------------------|---------------------|------------|
| 32466    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 32,0 - 38,0            | 182,0               | 145,0              | 1260,0              | 1          |
| 32467    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 34,0 - 40,0            | 182,0               | 203,0              | 1360,0              | 2/0        |
| 32468    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 35,0 - 41,0            | 182,0               | 276,0              | 1510,0              | 3/0        |
| 32469    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 37,0 - 43,0            | 182,0               | 348,0              | 1610,0              | 4/0        |
| 32470    | 1 x 150 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 38,0 - 44,0            | 182,0               | 435,0              | 1760,0              | 300 kcmil  |
| 32471    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 38,0 - 44,0            | 283,0               | 435,0              | 1810,0              | 300 kcmil  |
| 32472    | 1 x 185 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 40,0 - 46,0            | 182,0               | 537,0              | 1960,0              | 350 kcmil  |
| 32473    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 40,0 - 46,0            | 283,0               | 537,0              | 2020,0              | 350 kcmil  |
| 32474    | 1 x 240 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 42,0 - 48,0            | 182,0               | 696,0              | 2210,0              | 500 kcmil  |
| 32475    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 42,0 - 48,0            | 283,0               | 696,0              | 2260,0              | 500 kcmil  |
| 32476    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 45,0 - 51,0            | 283,0               | 870,0              | 2560,0              | 600 kcmil  |
| 32477    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 48,0 - 54,0            | 394,0               | 1160,0             | 2960,0              | 750 kcmil  |
| 32478    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 51,0 - 57,0            | 394,0               | 1450,0             | 3460,0              | 1000 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# NA2XS2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Alu-conductor, single core, screened, PE-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltage** U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltage** for 6/10 kV = 21 kV for 12/20 kV = 42 kV for 18/30 kV = 63 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see "Technical Informations"

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|--------------------|---------------------|------------|
| 32520    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 24,0 - 29,0            | 182,0               | 145,0              | 710,0               | 1          |
| 32521    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 31,0            | 182,0               | 203,0              | 790,0               | 2/0        |
| 32522    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 2,5                               | 26,0 - 32,0            | 182,0               | 276,0              | 920,0               | 3/0        |
| 32523    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 28,0 - 34,0            | 182,0               | 348,0              | 990,0               | 4/0        |
| 32524    | 1 x 150 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 182,0               | 435,0              | 1110,0              | 300 kcmil  |
| 32525    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 29,0 - 35,0            | 283,0               | 435,0              | 1220,0              | 300 kcmil  |
| 32526    | 1 x 185 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 31,0 - 37,0            | 182,0               | 537,0              | 1260,0              | 350 kcmil  |
| 32527    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 283,0               | 537,0              | 1370,0              | 350 kcmil  |
| 32528    | 1 x 240 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 182,0               | 696,0              | 1480,0              | 500 kcmil  |
| 32529    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 33,0 - 39,0            | 283,0               | 696,0              | 1530,0              | 500 kcmil  |
| 32530    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 36,0 - 41,0            | 283,0               | 870,0              | 1820,0              | 600 kcmil  |
| 32531    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 40,0 - 45,0            | 394,0               | 1160,0             | 2220,0              | 750 kcmil  |
| 32532    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 2,5                               | 43,0 - 48,0            | 394,0               | 1450,0             | 2570,0              | 1000 kcmil |
| 32533    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 28,0 - 33,0            | 182,0               | 145,0              | 890,0               | 1          |
| 32534    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 30,0 - 35,0            | 182,0               | 203,0              | 970,0               | 2/0        |
| 32535    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 2,5                               | 31,0 - 36,0            | 182,0               | 276,0              | 1120,0              | 3/0        |
| 32536    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 32,0 - 38,0            | 182,0               | 348,0              | 1210,0              | 4/0        |
| 32537    | 1 x 150 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 182,0               | 435,0              | 1370,0              | 300 kcmil  |
| 32538    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 33,0 - 39,0            | 283,0               | 435,0              | 1420,0              | 300 kcmil  |
| 32539    | 1 x 185 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 182,0               | 537,0              | 1530,0              | 350 kcmil  |
| 32540    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 35,0 - 41,0            | 283,0               | 537,0              | 1570,0              | 350 kcmil  |
| 32541    | 1 x 240 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 182,0               | 696,0              | 1720,0              | 500 kcmil  |
| 32542    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 38,0 - 44,0            | 283,0               | 696,0              | 1830,0              | 500 kcmil  |
| 32543    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 40,0 - 46,0            | 283,0               | 870,0              | 2070,0              | 600 kcmil  |
| 32544    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 43,0 - 49,0            | 394,0               | 1160,0             | 2460,0              | 750 kcmil  |
| 32545    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 46,0 - 52,0            | 394,0               | 1450,0             | 2890,0              | 1000 kcmil |
| 33078    | 1 x 630 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 2,5                               | 47,0 - 53,0            | 394,0               | 1827,0             | 3370,0              | 1250 kcmil |
| 32546    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 32,0 - 38,0            | 182,0               | 145,0              | 1120,0              | 1          |

Continuation ▶



# NA2XS2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, Alu-conductor, single core, screened, PE-sheath

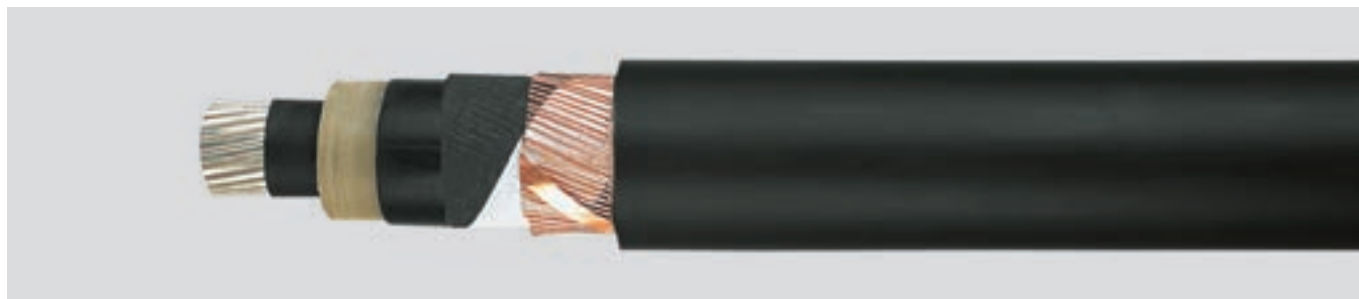


| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Sheath thickness Nominal value mm | Outer Ø min. - max. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|------------------------|---------------------|--------------------|---------------------|------------|
| 32547    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 34,0 - 40,0            | 182,0               | 203,0              | 1270,0              | 2/0        |
| 32548    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 2,5                               | 35,0 - 41,0            | 182,0               | 276,0              | 1380,0              | 3/0        |
| 32549    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 2,5                               | 37,0 - 43,0            | 182,0               | 348,0              | 1530,0              | 4/0        |
| 32550    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 38,0 - 44,0            | 283,0               | 435,0              | 1720,0              | 300 kcmil  |
| 32551    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 40,0 - 46,0            | 283,0               | 537,0              | 1860,0              | 350 kcmil  |
| 32552    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 42,0 - 48,0            | 283,0               | 696,0              | 2110,0              | 500 kcmil  |
| 32553    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 2,5                               | 45,0 - 51,0            | 283,0               | 870,0              | 2370,0              | 600 kcmil  |
| 32554    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 48,0 - 54,0            | 394,0               | 1160,0             | 2820,0              | 750 kcmil  |
| 32555    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 51,0 - 57,0            | 394,0               | 1450,0             | 3280,0              | 1000 kcmil |
| 32999    | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 2,5                               | 52,0 - 59,0            | 394,0               | 1827,0             | 3770,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# NA2XS(F)2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, longitudinally watertight, screened, PE-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range**  
during installation up to -20°C
- **Operating temperature**  
max. +90°C
- **Short circuit temperature**  
+250°C (short circuit duration max. 5 s)
- **Nominal voltage**  
U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz**  
for 6/10 kV = max. 12 kV  
for 12/20 kV = max. 24 kV  
for 18/30 kV = max. 36 kV
- **Test voltage**  
for 6/10 kV = 21 kV  
for 12/20 kV = 42 kV  
for 18/30 kV = 63 kV
- **Minimum bending radius**  
15x cable Ø
- **Power rating**  
see "Technical Informations"

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Longitudinally watertight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally watertight wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black
- Sheath wall thickness  
nominal value 2,5 mm

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes**  
To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------|---------------------|--------------------|---------------------|------------|
| 32600    | 1 x 35 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 26,0            | 182,0               | 102,0              | 780,0               | 2          |
| 32601    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 28,0            | 182,0               | 145,0              | 850,0               | 1          |
| 32602    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 30,0            | 182,0               | 203,0              | 980,0               | 2/0        |
| 32603    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 31,0            | 182,0               | 276,0              | 1080,0              | 3/0        |
| 32604    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 16                                | 32,0            | 182,0               | 348,0              | 1150,0              | 4/0        |
| 32605    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 34,0            | 283,0               | 435,0              | 1280,0              | 300 kcmil  |
| 32606    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 36,0            | 283,0               | 537,0              | 1420,0              | 350 kcmil  |
| 32607    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 38,0            | 283,0               | 696,0              | 1630,0              | 500 kcmil  |
| 32608    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 40,0            | 283,0               | 870,0              | 1950,0              | 600 kcmil  |
| 32609    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 44,0            | 394,0               | 1160,0             | 2350,0              | 750 kcmil  |
| 32610    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 47,0            | 394,0               | 1450,0             | 2780,0              | 1000 kcmil |
| 32611    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 33,0            | 182,0               | 145,0              | 920,0               | 1          |
| 32612    | 1 x 70 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 34,0            | 182,0               | 203,0              | 1030,0              | 2/0        |
| 32613    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 36,0            | 182,0               | 276,0              | 1140,0              | 3/0        |
| 32614    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 16                                | 37,0            | 182,0               | 348,0              | 1250,0              | 4/0        |
| 32615    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 39,0            | 283,0               | 435,0              | 1320,0              | 300 kcmil  |
| 32616    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 41,0            | 283,0               | 537,0              | 1570,0              | 350 kcmil  |
| 32617    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 43,0            | 283,0               | 696,0              | 1780,0              | 500 kcmil  |
| 32618    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 45,0            | 283,0               | 870,0              | 2100,0              | 600 kcmil  |
| 32619    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 48,0            | 394,0               | 1160,0             | 2480,0              | 750 kcmil  |
| 32620    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 50,0            | 394,0               | 1450,0             | 2900,0              | 1000 kcmil |
| 33090    | 1 x 630 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 52,0            | 394,0               | 1827,0             | 3380,0              | 1250 kcmil |
| 33091    | 1 x 800 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 57,0            | 394,0               | 2320,0             | 4400,0              | 1500 kcmil |
| 33097    | 1 x 1000 rm / 35                       | 24                     | 12 / 20            | 5,5                     | 35                                | 62,0            | 394,0               | 2900,0             | 4780,0              | 2000 kcmil |

Continuation »

# NA2XS(F)2Y 6/ 10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, longitudinally watertight, screened, PE-sheath



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------|---------------------|--------------------|---------------------|------------|
| 32621    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 37,0            | 182,0               | 145,0              | 1250,0              | 1          |
| 32622    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 38,0            | 182,0               | 203,0              | 1500,0              | 2/0        |
| 32623    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 40,0            | 182,0               | 276,0              | 1700,0              | 3/0        |
| 32624    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 16                                | 42,0            | 182,0               | 348,0              | 1800,0              | 4/0        |
| 32625    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 43,0            | 283,0               | 435,0              | 2050,0              | 300 kcmil  |
| 32626    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 45,0            | 283,0               | 537,0              | 2150,0              | 350 kcmil  |
| 32627    | 1 x 240 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 47,0            | 283,0               | 696,0              | 2400,0              | 500 kcmil  |
| 32628    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 50,0            | 283,0               | 870,0              | 2700,0              | 600 kcmil  |
| 32629    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 53,0            | 394,0               | 1160,0             | 3200,0              | 750 kcmil  |
| 32630    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 56,0            | 394,0               | 1450,0             | 3555,0              | 1000 kcmil |
| 31219    | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 58,0            | 394,0               | 1827,0             | 3790,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)

# NA2XS(FL)2Y 6/10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, longitudinally and crosswise watertight, screened, PE-sheath



## Technical data

- XLPE-insulated power cables acc. to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range**  
during installation up to -20°C
- **Operating temperature**  
max. +90°C
- **Short circuit temperature**  
250°C (short circuit duration max. 5 s)
- **Nominal voltage**  
U<sub>0</sub>/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltage, 50 Hz**  
for 6/10 kV = max. 12 kV  
for 12/20 kV = max. 24 kV  
for 18/30 kV = max. 36 kV
- **Test voltage**  
for 6/10 kV = 21 kV  
for 12/20 kV = 42 kV  
for 18/30 kV = 63 kV
- **Minimum bending radius**  
15x cable Ø
- **Power ratings**  
see "Technical Informations"

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and permanently welded with the core insulation
- Longitudinally watertight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally watertight wrapping
- Aluminium tape spliced with PE sheath
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour: black
- Sheath wall thickness  
nominal value 2,5 mm

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Installation notes**  
To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

## Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The PE sheathing is not flame-retardant to DIN EN 60332-1-2. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------|---------------------|--------------------|---------------------|------------|
| 38062    | 1 x 50 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 30,0            | 182,0               | 145,0              | 710,0               | 1          |
| 38063    | 1 x 70 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 32,0            | 182,0               | 203,0              | 890,0               | 2/0        |
| 38064    | 1 x 95 rm / 16                         | 12                     | 6 / 10             | 3,4                     | 16                                | 33,0            | 182,0               | 276,0              | 1100,0              | 3/0        |
| 38065    | 1 x 120 rm / 16                        | 12                     | 6 / 10             | 3,4                     | 16                                | 34,0            | 182,0               | 348,0              | 1330,0              | 4/0        |
| 38066    | 1 x 150 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 36,0            | 283,0               | 435,0              | 1450,0              | 300 kcmil  |
| 38067    | 1 x 185 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 38,0            | 283,0               | 537,0              | 1580,0              | 350 kcmil  |
| 38068    | 1 x 240 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 40,0            | 283,0               | 696,0              | 1780,0              | 500 kcmil  |
| 38069    | 1 x 300 rm / 25                        | 12                     | 6 / 10             | 3,4                     | 25                                | 42,0            | 283,0               | 870,0              | 1990,0              | 600 kcmil  |
| 38070    | 1 x 400 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 46,0            | 394,0               | 1160,0             | 2320,0              | 750 kcmil  |
| 38071    | 1 x 500 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 49,0            | 394,0               | 1450,0             | 2690,0              | 1000 kcmil |
| 38072    | 1 x 630 rm / 35                        | 12                     | 6 / 10             | 3,4                     | 35                                | 51,0            | 394,0               | 1827,0             | 3160,0              | 1250 kcmil |
| 38073    | 1 x 50 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 35,0            | 182,0               | 145,0              | 870,0               | 1          |
| 38074    | 1 x 70 rm / 16                         | 12                     | 12 / 20            | 5,5                     | 16                                | 36,0            | 182,0               | 203,0              | 1060,0              | 2/0        |
| 38075    | 1 x 95 rm / 16                         | 24                     | 12 / 20            | 5,5                     | 16                                | 38,0            | 182,0               | 276,0              | 1280,0              | 3/0        |
| 38076    | 1 x 120 rm / 16                        | 24                     | 12 / 20            | 5,5                     | 16                                | 39,0            | 182,0               | 348,0              | 1520,0              | 4/0        |
| 33089    | 1 x 150 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 41,0            | 283,0               | 435,0              | 1650,0              | 300 kcmil  |
| 38077    | 1 x 185 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 43,0            | 283,0               | 537,0              | 1800,0              | 350 kcmil  |
| 38078    | 1 x 240 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 45,0            | 283,0               | 696,0              | 2000,0              | 500 kcmil  |
| 38079    | 1 x 300 rm / 25                        | 24                     | 12 / 20            | 5,5                     | 25                                | 47,0            | 283,0               | 870,0              | 2230,0              | 600 kcmil  |
| 38080    | 1 x 400 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 50,0            | 394,0               | 1160,0             | 2580,0              | 750 kcmil  |
| 38081    | 1 x 500 rm / 35                        | 24                     | 12 / 20            | 5,5                     | 35                                | 54,0            | 394,0               | 1450,0             | 2980,0              | 1000 kcmil |
| 38082    | 1 x 630 rm / 35                        | 24                     | 6 / 10             | 5,5                     | 35                                | 55,0            | 394,0               | 1827,0             | 3480,0              | 1250 kcmil |

Continuation ▶

# NA2XS(FL)2Y 6/ 10 kV, 12/20 kV, 18/30 kV

XLPE-insulated, alu-conductor, single core, longitudinally and crosswise watertight, screened, PE-sheath



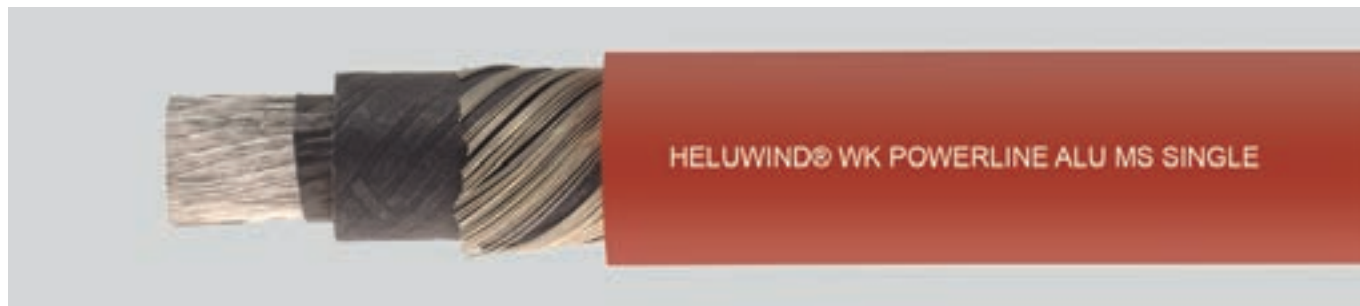
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Operation voltage max. | Nominal voltage kV | Insulation thickness mm | Screen cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Alu weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|--------------------|-------------------------|-----------------------------------|-----------------|---------------------|--------------------|---------------------|------------|
| 33084    | 1 x 50 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 39,0            | 182,0               | 145,0              | 1100,0              | 1          |
| 33085    | 1 x 70 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 40,0            | 182,0               | 203,0              | 1300,0              | 2/0        |
| 38083    | 1 x 95 rm / 16                         | 36                     | 18 / 30            | 8                       | 16                                | 42,0            | 182,0               | 276,0              | 1530,0              | 3/0        |
| 38084    | 1 x 120 rm / 16                        | 36                     | 18 / 30            | 8                       | 16                                | 44,0            | 182,0               | 348,0              | 1780,0              | 4/0        |
| 38085    | 1 x 150 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 45,0            | 283,0               | 435,0              | 1920,0              | 300 kcmil  |
| 38086    | 1 x 185 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 47,0            | 283,0               | 537,0              | 2080,0              | 350 kcmil  |
| 38087    | 1 x 240 rm / 25                        | 36                     | 10 / 30            | 8                       | 25                                | 49,0            | 283,0               | 696,0              | 2300,0              | 500 kcmil  |
| 38088    | 1 x 300 rm / 25                        | 36                     | 18 / 30            | 8                       | 25                                | 52,0            | 283,0               | 870,0              | 2550,0              | 600 kcmil  |
| 38089    | 1 x 400 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 55,0            | 394,0               | 1160,0             | 2960,0              | 750 kcmil  |
| 38090    | 1 x 500 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 30,0            | 394,0               | 1450,0             | 3380,0              | 1000 kcmil |
| 38091    | 1 x 630 rm / 35                        | 36                     | 18 / 30            | 8                       | 35                                | 60,0            | 394,0               | 1827,0             | 3900,0              | 1250 kcmil |

Dimensions and specifications may be changed without prior notice. (RQ03)



# HELUWIND® WK POWERLINE ALU MS SINGLE

3,6/6 kV, 12/20 kV, 18/30 kV with flexible ALU stranded wires



## Technical data

- **Temperature range**  
flexing -20°C up to +90°C
- **Nominal voltage**  
3,6/6 kV,  
12/20 kV,  
or 18/30 kV
- **Maximum short circuit conductor temperature**  
+250°C
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 8x cable Ø

## Cable structure

- **Conductor**  
Highly flexible aluminium conductor  
Extruded inner semi conductive layer
- **Insulation**  
Material EPR  
1st semi conductive layer extruded  
2nd semi conductive layer tape wrapped
- **Screen wrapped copper wires**
- **Outer sheath**  
Material special rubber compound  
Colour red

## Properties

- Oil resistant
- UV resistant
- Hydrolysis resistant
- Ozone resistant
- Flame retardant
- Heat resistant

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

Designed for use in switchboards and power generators, where very small bending radii are required. In wind turbines, for applications requiring flexible connections; ideal to be fed through the tower in one continuous length. This eliminates cost intensive connection points between the individual tower sections. Not suitable for applications in the cable loop.

### 3,6/6 (7,2) kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 712184   | 1x50                                   | -       | 25,0            | 0,0               | 807,0               |
| 712185   | 1x70                                   | -       | 27,0            | 0,0               | 932,0               |
| 712186   | 1x95                                   | -       | 28,4            | 0,0               | 1039,0              |
| 712187   | 1x120                                  | -       | 30,8            | 0,0               | 1231,0              |
| 712188   | 1x150                                  | -       | 33,4            | 0,0               | 1492,0              |
| 712189   | 1x185                                  | -       | 34,0            | 0,0               | 1633,0              |
| 712190   | 1x240                                  | -       | 38,1            | 0,0               | 1610,0              |
| 712192   | 1x300                                  | -       | 41,7            | 0,0               | 2293,0              |
| 712191   | 1x400                                  | -       | 46,3            | 0,0               | 2791,0              |

### 12/20 (24) kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 712193   | 1x50                                   | -       | 31,2            | 0,0               | 1214,0              |
| 712194   | 1x70                                   | -       | 33,4            | 0,0               | 1389,0              |
| 712195   | 1x95                                   | -       | 34,8            | 0,0               | 1516,0              |
| 712196   | 1x120                                  | -       | 37,2            | 0,0               | 1756,0              |

### 12/20 (24) kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 712197   | 1x150                                  | -       | 39,8            | 0,0               | 2043,0              |
| 712198   | 1x185                                  | -       | 40,4            | 0,0               | 2208,0              |
| 712199   | 1x240                                  | -       | 44,3            | 0,0               | 2535,0              |
| 712200   | 1x300                                  | -       | 47,3            | 0,0               | 2884,0              |
| 712201   | 1x400                                  | -       | 51,7            | 0,0               | 3421,0              |

### 18/30 (36) kV

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 712202   | 1x50                                   | -       | 36,6            | 0,0               | 1648,0              |
| 712203   | 1x70                                   | -       | 38,8            | 0,0               | 1853,0              |
| 712204   | 1x95                                   | -       | 40,2            | 0,0               | 1997,0              |
| 712205   | 1x120                                  | -       | 42,6            | 0,0               | 2285,0              |
| 712206   | 1x150                                  | -       | 45,2            | 0,0               | 2586,0              |
| 712207   | 1x185                                  | -       | 45,8            | 0,0               | 2771,0              |
| 712208   | 1x240                                  | -       | 49,7            | 0,0               | 3139,0              |
| 712209   | 1x300                                  | -       | 52,7            | 0,0               | 3529,0              |
| 712210   | 1x400                                  | -       | 57,1            | 0,0               | 4123,0              |

Dimensions and specifications may be changed without prior notice.



## Technical Data

- UL 1072  
Medium-Voltage Power Cables  
MV-90/MV-105 shielded:  
5 kV – 46 kV  
MV-90 non-shielded:  
2.4 kV
- **Temperature range**  
during installation up to -5 °C
- **Conductor operation temperatures**  
Normal:  
MV-90: 90 °C (194 °F)  
MV-105: 105 °C (221 °F)  
Emergency: 130 °C (266 °F)  
Short circuit: 250 °C (482 °F)
- **Maximum operating voltage**  
MV-90/MV-105 shielded:  
5 kV /8kV/15kV/25kV/ 35 kV 100%  
and 133% IL  
MV-90 non-shielded :  
2.4 kV per UL  
5 kV, 100% and 3.0 kV, 133% per ICEA
- **Minimum bending radius**  
MV-90 2,4 KV non-shielded =  
8 x OD  
MV-90 and 105 copper wire shielded =  
8 x OD  
MV-90 and 105 copper tape shielded =  
12 x OD

## Cable structure

- **Conductor:**  
Soft annealed uncoated copper compacted Class B per ASTM B496 or hard drawn Aluminium-1350 compacted Class B per ASTM B400.  
Sizes: 8 AWG (6 AWG Aluminium) up to 1000 kcmil (on request, larger conductor sizes available)  
Optional : annealed AA-8000 Aluminium compacted Class B per ASTM B80.
- **Conductor Shield:**  
• Semi-conducting cross-linked polyethylene (XLPE).
- **Insulation:**  
MV-90: Thermoset cross-linked polyethylene (XLPE).  
MV-105: Thermoset ethylene propylene rubber (EPR).
- **Insulation Shield:**  
MV-90/MV-105 shielded  
Semi conducting cross-linked polyethylene (XLPE).
- **Metallic Shield:**  
MV-90/MV-105 shielded  
Copper wires shield:  
Solid soft annealed uncoated copper wires per ASTM B3, helically applied and uniformly spaced.  
Copper tape shield:  
Soft annealed uncoated copper tape, 5 mil thick, 25% minimum overlap.
- **Jacket:**  
Black sunlight resistance and flame retardant polyvinyl chloride (PVC) compound.

## Properties

- Rated as Sunlight Resistance for CT use 1/0 AWG and larger  
Oil Resistance I jacket  
Flame retardant (PVC jacked)
- **MV-90 / MV-105 shielded:**  
ICEA S-93-639/NEMA WC74  
5 kV – 46 kV Shielded Power Cables  
ICEA S-97-682  
Standard for Utility Shielded Power Cables  
Rated 5 kV – 46 kV  
AIEC CS8  
Specification for Extruded Dielectric, Shielded Power Cables Rated 5 kV – 46 kV
- **MV-90 non-shielded:**  
ICEA S-96-659/NEMA WC71  
Standard for non-shielded cables  
Rated 2001-5000 volts for use in the Distribution of Electrical Energy

### Optional:

- Halogen free
- EPR/CPE as FT4 rated

## Application

MV-90/ MV-105 shielded: Primary power and distribution circuits in industrial and commercial installations, power circuits in generating plants where line to ground fault current are within shield capabilities. May be used in wet or dry locations, installed in raceways, duct, and open air, aerially or directly buried as permitted by NEC. MV-90 non-shielded: Per NEC, use is limited to 2400 V. For use in industrial and utility applications, for dry locations, in accordance with NEC.

## Aluminium MV-90 non-shielded 2,4 KV

XLPE Insulated

100% Insulation Level

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 8                 | 711136       | 711660          | 0,39            | –                         | 94                           |
| 6                 | 711137       | 711661          | 0,42            | 74                        | 131                          |
| 4                 | 711138       | 711662          | 0,47            | 97                        | 187                          |
| 2                 | 711139       | 711663          | 0,52            | 131                       | 273                          |
| 1                 | 711140       | 711664          | 0,55            | 151                       | 331                          |
| 1/0               | 711141       | 711665          | 0,59            | 178                       | 405                          |
| 2/0               | 711142       | 711666          | 0,63            | 212                       | 498                          |
| 3/0               | 711143       | 711667          | 0,68            | 254                       | 614                          |
| 4/0               | 711144       | 711668          | 0,73            | 305                       | 760                          |
| 250               | 711145       | 711669          | 0,81            | 361                       | 898                          |
| 350               | 711146       | 711670          | 0,90            | 474                       | 1227                         |
| 500               | 711147       | 711671          | 1,02            | 641                       | 1715                         |
| 750               | 711148       | 711672          | 1,22            | 928                       | 2539                         |
| 1000              | 711149       | 711673          | 1,38            | 1197                      | 3344                         |

EPR /PVC Insulated

100%/133% Insulation Levels

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711150       | 711674          | 0,59            | –                         | 208                          |
| 711151       | 711675          | 0,63            | 197                       | 254                          |
| 711152       | 711676          | 0,67            | 231                       | 321                          |
| 711153       | 711677          | 0,72            | 279                       | 422                          |
| 711154       | 711678          | 0,76            | 308                       | 488                          |
| 711155       | 711679          | 0,79            | 345                       | 572                          |
| 711156       | 711680          | 0,83            | 389                       | 675                          |
| 711157       | 711681          | 0,91            | 470                       | 831                          |
| 711158       | 711682          | 0,96            | 537                       | 991                          |
| 711159       | 711683          | 1,08            | 660                       | 1198                         |
| 711160       | 711684          | 1,18            | 806                       | 1559                         |
| 711161       | 711685          | 1,30            | 1012                      | 2088                         |
| 711162       | 711686          | 1,54            | 1434                      | 3047                         |
| 711163       | 711687          | 1,96            | 1760                      | 3910                         |

Dimensions and specifications may be changed without prior notice.

# MV-90 / MV-105 ALUMINIUM / COPPER UL listed



## MV-90/MV-105 Aluminium Shielded 5KV, 100% /133% Insulation Levels

MV-90 XLPE/PVC

CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 8                       | 711164          | 711688             | -                     | -                            | -                               |
| 6                       | 711165          | 711689             | 0,59                  | 188                          | 245                             |
| 4                       | 711166          | 711690             | 0,64                  | 221                          | 311                             |
| 2                       | 711167          | 711691             | 0,69                  | 267                          | 410                             |
| 1                       | 711168          | 711692             | 0,72                  | 295                          | 475                             |
| 1/0                     | 711169          | 711693             | 0,76                  | 331                          | 558                             |
| 2/0                     | 711170          | 711694             | 0,80                  | 373                          | 659                             |
| 3/0                     | 711171          | 711695             | 0,89                  | 460                          | 821                             |
| 4/0                     | 711172          | 711696             | 0,94                  | 526                          | 980                             |
| 250                     | 711173          | 711697             | 0,99                  | 586                          | 1124                            |
| 350                     | 711174          | 711698             | 1,09                  | 724                          | 1477                            |
| 500                     | 711175          | 711699             | 1,21                  | 921                          | 1996                            |
| 750                     | 711176          | 711700             | 1,41                  | 1266                         | 2879                            |
| 1000                    | 711177          | 711701             | 1,57                  | 1573                         | 3723                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711178          | 711702             | -                     | -                            | -                               |
| 711179          | 711703             | 0,63                  | 172                          | 229                             |
| 711180          | 711704             | 0,68                  | 202                          | 291                             |
| 711181          | 711705             | 0,73                  | 250                          | 392                             |
| 711182          | 711706             | 0,76                  | 275                          | 455                             |
| 711183          | 711707             | 0,80                  | 308                          | 535                             |
| 711184          | 711708             | 0,88                  | 382                          | 668                             |
| 711185          | 711709             | 0,93                  | 433                          | 793                             |
| 711186          | 711710             | 0,98                  | 494                          | 949                             |
| 711187          | 711711             | 1,03                  | 559                          | 1096                            |
| 711188          | 711712             | 1,13                  | 689                          | 1443                            |
| 711189          | 711713             | 1,25                  | 877                          | 1952                            |
| 711190          | 711714             | 1,45                  | 1215                         | 2828                            |
| 711191          | 711715             | 1,61                  | 1510                         | 3660                            |

MV-105 EPR/PVC

CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 8                       | 711192          | 711716             | -                     | -                            | -                               |
| 6                       | 711193          | 711717             | 0,6                   | 204                          | 260                             |
| 4                       | 711194          | 711718             | 0,65                  | 238                          | 328                             |
| 2                       | 711195          | 711719             | 0,70                  | 287                          | 430                             |
| 1                       | 711196          | 711720             | 0,73                  | 316                          | 496                             |
| 1/0                     | 711197          | 711721             | 0,77                  | 354                          | 581                             |
| 2/0                     | 711198          | 711722             | 0,81                  | 398                          | 684                             |
| 3/0                     | 711199          | 711723             | 0,90                  | 488                          | 849                             |
| 4/0                     | 711200          | 711724             | 0,95                  | 556                          | 1011                            |
| 250                     | 711201          | 711725             | 1,01                  | 619                          | 1157                            |
| 350                     | 711202          | 711726             | 1,10                  | 761                          | 1515                            |
| 500                     | 711203          | 711727             | 1,22                  | 964                          | 2039                            |
| 750                     | 711204          | 711728             | 1,43                  | 1318                         | 2931                            |
| 1000                    | 711205          | 711729             | 1,58                  | 1633                         | 3783                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711206          | 711730             | -                     | -                            | -                               |
| 711207          | 711731             | 0,65                  | 188                          | 244                             |
| 711208          | 711732             | 0,69                  | 219                          | 309                             |
| 711209          | 711733             | 0,76                  | 280                          | 423                             |
| 711210          | 711734             | 0,79                  | 307                          | 487                             |
| 711211          | 711735             | 0,83                  | 342                          | 568                             |
| 711212          | 711736             | 0,91                  | 419                          | 705                             |
| 711213          | 711737             | 0,96                  | 472                          | 832                             |
| 711214          | 711738             | 1,01                  | 535                          | 990                             |
| 711215          | 711739             | 1,06                  | 602                          | 1140                            |
| 711216          | 711740             | 1,16                  | 737                          | 1490                            |
| 711217          | 711741             | 1,28                  | 930                          | 2005                            |
| 711218          | 711742             | 1,50                  | 1292                         | 2905                            |
| 711219          | 711743             | 1,65                  | 1599                         | 3749                            |

## MV-90 XLPE/PVC Shielded 8KV Aluminium

100% Insulation Level

CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 6                       | 711220          | 711744             | 0,65                  | 214                          | 270                             |
| 4                       | 711221          | 711745             | 0,69                  | 248                          | 338                             |
| 2                       | 711222          | 711746             | 0,75                  | 296                          | 438                             |
| 1                       | 711223          | 711747             | 0,78                  | 325                          | 504                             |
| 1/0                     | 711224          | 711748             | 0,81                  | 362                          | 588                             |
| 2/0                     | 711225          | 711749             | 0,89                  | 440                          | 726                             |
| 3/0                     | 711226          | 711750             | 0,94                  | 496                          | 857                             |
| 4/0                     | 711227          | 711751             | 0,99                  | 563                          | 1018                            |
| 250                     | 711228          | 711752             | 1,05                  | 625                          | 1163                            |
| 300                     | 711229          | 711753             | 1,10                  | 697                          | 1341                            |
| 350                     | 711230          | 711754             | 1,14                  | 766                          | 1519                            |
| 400                     | 711231          | 711755             | 1,19                  | 834                          | 1694                            |
| 500                     | 711232          | 711756             | 1,29                  | 991                          | 2066                            |
| 600                     | 711233          | 711757             | 1,37                  | 1129                         | 2419                            |
| 750                     | 711234          | 711758             | 1,47                  | 1318                         | 2931                            |
| 1000                    | 711235          | 711759             | 1,62                  | 1630                         | 3780                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711284          | 711808             | 0,68                  | 200                          | 257                             |
| 711285          | 711809             | 0,73                  | 231                          | 321                             |
| 711286          | 711810             | 0,78                  | 279                          | 422                             |
| 711287          | 711811             | 0,81                  | 305                          | 485                             |
| 711288          | 711812             | 0,89                  | 374                          | 601                             |
| 711289          | 711813             | 0,93                  | 416                          | 703                             |
| 711290          | 711814             | 0,98                  | 469                          | 829                             |
| 711291          | 711815             | 1,03                  | 532                          | 986                             |
| 711292          | 711816             | 1,08                  | 598                          | 1136                            |
| 711293          | 711817             | 1,13                  | 666                          | 1310                            |
| 711294          | 711818             | 1,18                  | 732                          | 1485                            |
| 711295          | 711819             | 1,22                  | 797                          | 1657                            |
| 711296          | 711820             | 1,32                  | 946                          | 2021                            |
| 711297          | 711821             | 1,41                  | 1085                         | 2376                            |
| 711298          | 711822             | 1,50                  | 1267                         | 2880                            |
| 711299          | 711823             | 1,66                  | 1568                         | 3718                            |

133% Insulation Level

CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 6                       | 711236          | 711760             | 0,7                   | 241                          | 297                             |
| 4                       | 711237          | 711761             | 0,74                  | 276                          | 366                             |
| 2                       | 711238          | 711762             | 0,80                  | 326                          | 469                             |
| 1                       | 711239          | 711763             | 0,83                  | 356                          | 536                             |
| 1/0                     | 711240          | 711764             | 0,90                  | 429                          | 656                             |
| 2/0                     | 711241          | 711765             | 0,94                  | 476                          | 762                             |
| 3/0                     | 711242          | 711766             | 0,99                  | 533                          | 894                             |
| 4/0                     | 711243          | 711767             | 1,04                  | 601                          | 1056                            |
| 250                     | 711244          | 711768             | 1,10                  | 666                          | 1203                            |
| 300                     | 711245          | 711769             | 1,15                  | 739                          | 1383                            |
| 350                     | 711246          | 711770             | 1,19                  | 809                          | 1563                            |
| 400                     | 711247          | 711771             | 1,24                  | 879                          | 1739                            |
| 500                     | 711248          | 711772             | 1,34                  | 1039                         | 2114                            |
| 600                     | 711249          | 711773             | 1,42                  | 1180                         | 2470                            |
| 750                     | 711250          | 711774             | 1,52                  | 1372                         | 2985                            |
| 1000                    | 711251          | 711775             | 1,67                  | 1688                         | 3838                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711300          | 711824             | 0,73                  | 224                          | 280                             |
| 711301          | 711825             | 0,78                  | 256                          | 345                             |
| 711302          | 711826             | 0,87                  | 339                          | 482                             |
| 711303          | 711827             | 0,90                  | 368                          | 548                             |
| 711304          | 711828             | 0,94                  | 405                          | 631                             |
| 711305          | 711829             | 0,98                  | 448                          | 734                             |
| 711306          | 711830             | 1,03                  | 502                          | 863                             |
| 711307          | 711831             | 1,08                  | 566                          | 1021                            |
| 711308          | 711832             | 1,13                  | 635                          | 1172                            |
| 711309          | 711833             | 1,18                  | 704                          | 1349                            |
| 711310          | 711834             | 1,23                  | 771                          | 1524                            |
| 711311          | 711835             | 1,27                  | 838                          | 1698                            |
| 711312          | 711836             | 1,37                  | 990                          | 2066                            |
| 711313          | 711837             | 1,46                  | 1132                         | 2423                            |
| 711314          | 711838             | 1,56                  | 1317                         | 2930                            |
| 711315          | 711839             | 1,77                  | 1726                         | 3876                            |

Dimensions and specifications may be changed without prior notice.

# MV-90 / MV-105 ALUMINIUM / COPPER UL listed



## MV-105 EPR/PVC Shielded 8KV Aluminium

100% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 6                 | 711252       | 711776          | 0,65            | 234                       | 291                          |
| 4                 | 711253       | 711777          | 0,70            | 271                       | 361                          |
| 2                 | 711254       | 711778          | 0,75            | 322                       | 465                          |
| 1                 | 711255       | 711779          | 0,78            | 352                       | 532                          |
| 1/0               | 711256       | 711780          | 0,82            | 392                       | 618                          |
| 2/0               | 711257       | 711781          | 0,90            | 473                       | 760                          |
| 3/0               | 711258       | 711782          | 0,95            | 532                       | 893                          |
| 4/0               | 711259       | 711783          | 1,00            | 602                       | 1057                         |
| 250               | 711260       | 711784          | 1,06            | 667                       | 1205                         |
| 300               | 711261       | 711785          | 1,11            | 742                       | 1386                         |
| 350               | 711262       | 711786          | 1,15            | 814                       | 1567                         |
| 400               | 711263       | 711787          | 1,20            | 885                       | 1744                         |
| 500               | 711264       | 711788          | 1,30            | 1047                      | 2122                         |
| 600               | 711265       | 711789          | 1,38            | 1189                      | 2480                         |
| 750               | 711266       | 711790          | 1,48            | 1384                      | 2997                         |
| 1000              | 711267       | 711791          | 1,63            | 1705                      | 3855                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711316       | 711840          | 0,70            | 215                       | 271                          |
| 711317       | 711841          | 0,74            | 248                       | 338                          |
| 711318       | 711842          | 0,81            | 311                       | 454                          |
| 711319       | 711843          | 0,84            | 339                       | 519                          |
| 711320       | 711844          | 0,92            | 412                       | 639                          |
| 711321       | 711845          | 0,96            | 456                       | 743                          |
| 711322       | 711846          | 1,01            | 511                       | 872                          |
| 711323       | 711847          | 1,06            | 577                       | 1032                         |
| 711324       | 711848          | 1,12            | 647                       | 1184                         |
| 711325       | 711849          | 1,17            | 717                       | 1362                         |
| 711326       | 711850          | 1,21            | 785                       | 1539                         |
| 711327       | 711851          | 1,25            | 853                       | 1713                         |
| 711328       | 711852          | 1,35            | 1007                      | 2082                         |
| 711329       | 711853          | 1,44            | 1163                      | 2353                         |
| 711330       | 711854          | 1,55            | 1354                      | 2967                         |
| 711331       | 711855          | 1,77            | 1773                      | 3923                         |

133% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 6                 | 711268       | 711792          | 0,71            | 267                       | 324                          |
| 4                 | 711269       | 711793          | 0,75            | 306                       | 395                          |
| 2                 | 711270       | 711794          | 0,80            | 359                       | 502                          |
| 1                 | 711271       | 711795          | 0,88            | 425                       | 605                          |
| 1/0               | 711272       | 711796          | 0,91            | 468                       | 694                          |
| 2/0               | 711273       | 711797          | 0,95            | 517                       | 803                          |
| 3/0               | 711274       | 711798          | 1,00            | 577                       | 938                          |
| 4/0               | 711275       | 711799          | 1,05            | 650                       | 1104                         |
| 250               | 711276       | 711800          | 1,11            | 718                       | 1255                         |
| 300               | 711277       | 711801          | 1,16            | 794                       | 1439                         |
| 350               | 711278       | 711802          | 1,20            | 868                       | 1621                         |
| 400               | 711279       | 711803          | 1,25            | 941                       | 1801                         |
| 500               | 711280       | 711804          | 1,35            | 1107                      | 2182                         |
| 600               | 711281       | 711805          | 1,43            | 1253                      | 2544                         |
| 750               | 711282       | 711806          | 1,53            | 1452                      | 3065                         |
| 1000              | 711283       | 711807          | 1,74            | 1883                      | 4033                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711332       | 711856          | 0,75            | 244                       | 300                          |
| 711333       | 711857          | 0,79            | 279                       | 368                          |
| 711334       | 711858          | 0,90            | 380                       | 523                          |
| 711335       | 711859          | 0,94            | 411                       | 591                          |
| 711336       | 711860          | 0,97            | 450                       | 677                          |
| 711337       | 711861          | 1,01            | 496                       | 782                          |
| 711338       | 711862          | 1,06            | 553                       | 914                          |
| 711339       | 711863          | 1,11            | 621                       | 1076                         |
| 711340       | 711864          | 1,17            | 693                       | 1231                         |
| 711341       | 711865          | 1,22            | 765                       | 1410                         |
| 711342       | 711866          | 1,26            | 836                       | 1589                         |
| 711343       | 711867          | 1,31            | 905                       | 1765                         |
| 711344       | 711868          | 1,41            | 1063                      | 2139                         |
| 711345       | 711869          | 1,49            | 1223                      | 2513                         |
| 711346       | 711870          | 1,60            | 1419                      | 3032                         |
| 711347       | 711871          | 1,82            | 1847                      | 3997                         |

## MV-90 XLPE/PVC Shielded 15KV Aluminium

100% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 2                 | 711348       | 711872          | 0,91            | 406                       | 549                          |
| 1                 | 711349       | 711873          | 0,94            | 438                       | 618                          |
| 1/0               | 711350       | 711874          | 0,97            | 480                       | 707                          |
| 2/0               | 711351       | 711875          | 1,10            | 528                       | 814                          |
| 3/0               | 711352       | 711876          | 1,06            | 587                       | 948                          |
| 4/0               | 711353       | 711877          | 1,11            | 658                       | 1113                         |
| 250               | 711354       | 711878          | 1,17            | 725                       | 1262                         |
| 300               | 711355       | 711879          | 1,22            | 800                       | 1445                         |
| 350               | 711356       | 711880          | 1,29            | 897                       | 1651                         |
| 400               | 711357       | 711881          | 1,33            | 970                       | 1830                         |
| 500               | 711358       | 711882          | 1,41            | 1109                      | 2184                         |
| 600               | 711359       | 711883          | 1,49            | 1253                      | 2544                         |
| 750               | 711360       | 711884          | 1,59            | 1449                      | 3062                         |
| 1000              | 711361       | 711885          | 1,80            | 1879                      | 4029                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711404       | 711928          | 0,94            | 382                       | 524                          |
| 711405       | 711929          | 0,97            | 412                       | 591                          |
| 711406       | 711930          | 1,01            | 450                       | 677                          |
| 711407       | 711931          | 1,05            | 495                       | 781                          |
| 711408       | 711932          | 1,10            | 551                       | 912                          |
| 711409       | 711933          | 1,15            | 618                       | 1073                         |
| 711410       | 711934          | 1,20            | 689                       | 1226                         |
| 711411       | 711935          | 1,25            | 760                       | 1405                         |
| 711412       | 711936          | 1,32            | 852                       | 1606                         |
| 711413       | 711937          | 1,37            | 922                       | 1782                         |
| 711414       | 711938          | 1,44            | 1055                      | 2130                         |
| 711415       | 711939          | 1,53            | 1201                      | 2491                         |
| 711416       | 711940          | 1,62            | 1390                      | 3003                         |
| 711417       | 711941          | 1,84            | 1810                      | 3960                         |

133% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 2                 | 711362       | 711886          | 1,00            | 472                       | 615                          |
| 1                 | 711363       | 711887          | 1,03            | 506                       | 686                          |
| 1/0               | 711364       | 711888          | 1,06            | 549                       | 776                          |
| 2/0               | 711365       | 711889          | 1,10            | 600                       | 886                          |
| 3/0               | 711366       | 711890          | 1,15            | 662                       | 1023                         |
| 4/0               | 711367       | 711891          | 1,20            | 736                       | 1191                         |
| 250               | 711368       | 711892          | 1,28            | 830                       | 1368                         |
| 300               | 711369       | 711893          | 1,33            | 909                       | 1554                         |
| 350               | 711370       | 711894          | 1,38            | 985                       | 1738                         |
| 400               | 711371       | 711895          | 1,42            | 1060                      | 1920                         |
| 500               | 711372       | 711896          | 1,50            | 1203                      | 2279                         |
| 600               | 711373       | 711897          | 1,58            | 1353                      | 2643                         |
| 750               | 711374       | 711898          | 1,74            | 1656                      | 3269                         |
| 1000              | 711375       | 711899          | 1,92            | 2047                      | 4197                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711418       | 711942          | 1,03            | 441                       | 583                          |
| 711419       | 711943          | 1,06            | 472                       | 652                          |
| 711420       | 711944          | 1,10            | 513                       | 740                          |
| 711421       | 711945          | 1,14            | 561                       | 847                          |
| 711422       | 711946          | 1,19            | 619                       | 980                          |
| 711423       | 711947          | 1,24            | 689                       | 1144                         |
| 711424       | 711948          | 1,32            | 785                       | 1323                         |
| 711425       | 711949          | 1,37            | 861                       | 1505                         |
| 711426       | 711950          | 1,41            | 933                       | 1687                         |
| 711427       | 711951          | 1,46            | 1005                      | 1865                         |
| 711428       | 711952          | 1,53            | 1142                      | 2218                         |
| 711429       | 711953          | 1,62            | 1293                      | 2584                         |
| 711430       | 711954          | 1,78            | 1592                      | 3205                         |
| 711431       | 711955          | 1,96            | 1968                      | 4118                         |

Dimensions and specifications may be changed without prior notice.

# MV-90 / MV-105 ALUMINIUM / COPPER UL listed



## MV-105 EPR/PVC Shielded 15KV Aluminium

100% Insulation Level

CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 2                 | 711376       | 711900          | 0,92            | 451                       | 593                          |
| 1                 | 711377       | 711901          | 0,95            | 486                       | 666                          |
| 1/0               | 711378       | 711902          | 0,99            | 530                       | 757                          |
| 2/0               | 711379       | 711903          | 1,03            | 582                       | 868                          |
| 3/0               | 711380       | 711904          | 1,07            | 645                       | 1006                         |
| 4/0               | 711381       | 711905          | 1,12            | 720                       | 1175                         |
| 250               | 711382       | 711906          | 1,18            | 791                       | 1329                         |
| 300               | 711383       | 711907          | 1,23            | 871                       | 1515                         |
| 350               | 711384       | 711908          | 1,30            | 973                       | 1726                         |
| 400               | 711385       | 711909          | 1,34            | 1049                      | 1909                         |
| 500               | 711386       | 711910          | 1,42            | 1195                      | 2270                         |
| 600               | 711387       | 711911          | 1,51            | 1346                      | 2637                         |
| 750               | 711388       | 711912          | 1,60            | 1551                      | 3163                         |
| 1000              | 711389       | 711913          | 1,82            | 1995                      | 4145                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711432       | 711956          | 0,98            | 437                       | 580                          |
| 711433       | 711957          | 1,01            | 470                       | 649                          |
| 711434       | 711958          | 1,04            | 511                       | 738                          |
| 711435       | 711959          | 1,08            | 560                       | 846                          |
| 711436       | 711960          | 1,13            | 619                       | 980                          |
| 711437       | 711961          | 1,18            | 690                       | 1145                         |
| 711438       | 711962          | 1,24            | 766                       | 1303                         |
| 711439       | 711963          | 1,29            | 841                       | 1486                         |
| 711440       | 711964          | 1,36            | 938                       | 1691                         |
| 711441       | 711965          | 1,40            | 1010                      | 1870                         |
| 711442       | 711966          | 1,48            | 1150                      | 2225                         |
| 711443       | 711967          | 1,58            | 1305                      | 2569                         |
| 711444       | 711968          | 1,69            | 1508                      | 3121                         |
| 711445       | 711969          | 1,91            | 1951                      | 4101                         |

133% Insulation Level

CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 2                 | 711390       | 711914          | 1,01            | 532                       | 675                          |
| 1                 | 711391       | 711915          | 1,04            | 569                       | 749                          |
| 1/0               | 711392       | 711916          | 1,08            | 616                       | 843                          |
| 2/0               | 711393       | 711917          | 1,12            | 671                       | 957                          |
| 3/0               | 711394       | 711918          | 1,16            | 738                       | 1099                         |
| 4/0               | 711395       | 711919          | 1,22            | 817                       | 1272                         |
| 250               | 711396       | 711920          | 1,29            | 918                       | 1456                         |
| 300               | 711397       | 711921          | 1,34            | 1002                      | 1647                         |
| 350               | 711398       | 711922          | 1,39            | 1083                      | 1837                         |
| 400               | 711399       | 711923          | 1,43            | 1163                      | 2023                         |
| 500               | 711400       | 711924          | 1,51            | 1314                      | 2389                         |
| 600               | 711401       | 711925          | 1,60            | 1472                      | 2763                         |
| 750               | 711402       | 711926          | 1,76            | 1789                      | 3402                         |
| 1000              | 711403       | 711927          | 1,94            | 2197                      | 4347                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711446       | 711970          | 1,07            | 511                       | 654                          |
| 711447       | 711971          | 1,10            | 546                       | 726                          |
| 711448       | 711972          | 1,14            | 591                       | 817                          |
| 711449       | 711973          | 1,18            | 642                       | 928                          |
| 711450       | 711974          | 1,22            | 705                       | 1066                         |
| 711451       | 711975          | 1,27            | 780                       | 1235                         |
| 711452       | 711976          | 1,35            | 883                       | 1421                         |
| 711453       | 711977          | 1,40            | 964                       | 1608                         |
| 711454       | 711978          | 1,45            | 1041                      | 1794                         |
| 711455       | 711979          | 1,49            | 1117                      | 1977                         |
| 711456       | 711980          | 1,57            | 1262                      | 2338                         |
| 711457       | 711981          | 1,67            | 1424                      | 2715                         |
| 711458       | 711982          | 1,85            | 1746                      | 3359                         |
| 711459       | 711983          | 2,03            | 2144                      | 4294                         |

## MV-90 XLPE/PVC Shielded 25KV Aluminium

100% Insulation Level

CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1                 | 711460       | 711984          | 1,10            | 570                       | 749                          |
| 1/0               | 711461       | 711985          | 1,14            | 616                       | 841                          |
| 2/0               | 711462       | 711986          | 1,18            | 668                       | 953                          |
| 3/0               | 711463       | 711987          | 1,23            | 733                       | 1092                         |
| 4/0               | 711464       | 711988          | 1,30            | 834                       | 1288                         |
| 250               | 711465       | 711989          | 1,36            | 907                       | 1444                         |
| 300               | 711466       | 711990          | 1,41            | 989                       | 1633                         |
| 350               | 711467       | 711991          | 1,45            | 1067                      | 1820                         |
| 400               | 711468       | 711992          | 1,49            | 1144                      | 2003                         |
| 500               | 711469       | 711993          | 1,57            | 1292                      | 2366                         |
| 600               | 711470       | 711994          | 1,66            | 1445                      | 2735                         |
| 750               | 711471       | 711995          | 1,82            | 1758                      | 3370                         |
| 1000              | 711472       | 711996          | 2,00            | 2158                      | 4307                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711512       | 712036          | 1,14            | 535                       | 715                          |
| 711513       | 712037          | 1,18            | 577                       | 804                          |
| 711514       | 712038          | 1,22            | 627                       | 913                          |
| 711515       | 712039          | 1,27            | 688                       | 1048                         |
| 711516       | 712040          | 1,34            | 783                       | 1238                         |
| 711517       | 712041          | 1,40            | 861                       | 1399                         |
| 711518       | 712042          | 1,45            | 939                       | 1583                         |
| 711519       | 712043          | 1,49            | 1014                      | 1767                         |
| 711520       | 712044          | 1,54            | 1087                      | 1947                         |
| 711521       | 712045          | 1,61            | 1229                      | 2304                         |
| 711522       | 712046          | 1,76            | 1487                      | 2778                         |
| 711523       | 712047          | 1,86            | 1692                      | 3305                         |
| 711524       | 712048          | 2,04            | 2078                      | 4228                         |

133% Insulation Level

CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1                 | 711473       | 711997          | 1,23            | 675                       | 854                          |
| 1/0               | 711474       | 711998          | 1,29            | 747                       | 974                          |
| 2/0               | 711475       | 711999          | 1,33            | 804                       | 1090                         |
| 3/0               | 711476       | 712000          | 1,37            | 872                       | 1233                         |
| 4/0               | 711477       | 712001          | 1,43            | 953                       | 1408                         |
| 250               | 711478       | 712002          | 1,48            | 1031                      | 1569                         |
| 300               | 711479       | 712003          | 1,53            | 1116                      | 1761                         |
| 350               | 711480       | 712004          | 1,58            | 1198                      | 1951                         |
| 400               | 711481       | 712005          | 1,62            | 1278                      | 2138                         |
| 500               | 711482       | 712006          | 1,76            | 1534                      | 2610                         |
| 600               | 711483       | 712007          | 1,88            | 1748                      | 3039                         |
| 750               | 711484       | 712008          | 1,97            | 1969                      | 3582                         |
| 1000              | 711485       | 712009          | 2,12            | 2333                      | 4483                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711525       | 712049          | -               | -                         | -                            |
| 711526       | 712050          | 1,32            | 702                       | 929                          |
| 711527       | 712051          | 1,36            | 756                       | 1042                         |
| 711528       | 712052          | 1,41            | 821                       | 1181                         |
| 711529       | 712053          | 1,46            | 898                       | 1353                         |
| 711530       | 712054          | 1,52            | 980                       | 1517                         |
| 711531       | 712055          | 1,57            | 1061                      | 1706                         |
| 711532       | 712056          | 1,61            | 1139                      | 1893                         |
| 711533       | 712057          | 1,66            | 1216                      | 2076                         |
| 711534       | 712058          | 1,79            | 1469                      | 2544                         |
| 711535       | 712059          | 1,91            | 1682                      | 2972                         |
| 711536       | 712060          | 2,01            | 1896                      | 3509                         |
| 711537       | 712061          | 2,16            | 2248                      | 4398                         |

Dimensions and specifications may be changed without prior notice.

# MV-90 / MV-105 ALUMINIUM / COPPER UL listed



## MV-105 EPR/PVC Shielded 25KV Aluminium

100% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1                 | 711486       | 712010          | 1,21            | 649                       | 829                          |
| 1/0               | 711487       | 712011          | 1,16            | 699                       | 926                          |
| 2/0               | 711488       | 712012          | 1,20            | 757                       | 1043                         |
| 3/0               | 711489       | 712013          | 1,25            | 827                       | 1187                         |
| 4/0               | 711490       | 712014          | 1,32            | 935                       | 1390                         |
| 250               | 711491       | 712015          | 1,38            | 1016                      | 1553                         |
| 300               | 711492       | 712016          | 1,43            | 1103                      | 1748                         |
| 350               | 711493       | 712017          | 1,47            | 1178                      | 1940                         |
| 400               | 711494       | 712018          | 1,52            | 1269                      | 2129                         |
| 500               | 711495       | 712019          | 1,59            | 1426                      | 2501                         |
| 600               | 711496       | 712020          | 1,68            | 1590                      | 2881                         |
| 750               | 711497       | 712021          | 1,84            | 1918                      | 3531                         |
| 1000              | 711498       | 712022          | 2,02            | 2338                      | 4488                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711538       | 712062          | 1,18            | 624                       | 804                          |
| 711539       | 712063          | 1,22            | 671                       | 898                          |
| 711540       | 712064          | 1,26            | 726                       | 1012                         |
| 711541       | 712065          | 1,30            | 792                       | 1153                         |
| 711542       | 712066          | 1,38            | 895                       | 1349                         |
| 711543       | 712067          | 1,43            | 983                       | 1521                         |
| 711544       | 712068          | 1,48            | 1066                      | 1711                         |
| 711545       | 712069          | 1,53            | 1147                      | 1900                         |
| 711546       | 712070          | 1,57            | 1226                      | 2086                         |
| 711547       | 712071          | 1,65            | 1376                      | 2452                         |
| 711548       | 712072          | 1,82            | 1649                      | 2940                         |
| 711549       | 712073          | 1,93            | 1875                      | 3488                         |
| 711550       | 712074          | 2,11            | 2286                      | 4436                         |

133% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1                 | 711499       | 712023          | 1,23            | 713                       | 910                          |
| 1/0               | 711500       | 712024          | 1,30            | 859                       | 1086                         |
| 2/0               | 711501       | 712025          | 1,34            | 922                       | 1208                         |
| 3/0               | 711502       | 712026          | 1,39            | 997                       | 1358                         |
| 4/0               | 711503       | 712027          | 1,44            | 1086                      | 1541                         |
| 250               | 711504       | 712028          | 1,50            | 1172                      | 1709                         |
| 300               | 711505       | 712029          | 1,55            | 1264                      | 1909                         |
| 350               | 711506       | 712030          | 1,59            | 1353                      | 2106                         |
| 400               | 711507       | 712031          | 1,64            | 1440                      | 2300                         |
| 500               | 711508       | 712032          | 1,78            | 1710                      | 2786                         |
| 600               | 711509       | 712033          | 1,90            | 1939                      | 3229                         |
| 750               | 711510       | 712034          | 1,99            | 2174                      | 3787                         |
| 1000              | 711511       | 712035          | 2,14            | 2561                      | 4711                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711551       | 712075          | 1,3             | 746                       | 926                          |
| 711552       | 712076          | 1,36            | 820                       | 1047                         |
| 711553       | 712077          | 1,4             | 879                       | 1165                         |
| 711554       | 712078          | 1,45            | 951                       | 1312                         |
| 711555       | 712079          | 1,5             | 1036                      | 1491                         |
| 711556       | 712080          | 1,56            | 1130                      | 1668                         |
| 711557       | 712081          | 1,61            | 1219                      | 1863                         |
| 711558       | 712082          | 1,65            | 1304                      | 2057                         |
| 711559       | 712083          | 1,7             | 1387                      | 2247                         |
| 711560       | 712084          | 1,83            | 1655                      | 2730                         |
| 711561       | 712085          | 1,97            | 1882                      | 3173                         |
| 711562       | 712086          | 2,08            | 2122                      | 3735                         |
| 711563       | 712087          | 2,23            | 2501                      | 4651                         |

## MV-90 XLPE/PVC Shielded 35KV Aluminium

100% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1/0               | 711564       | 712088          | 1,34            | 795                       | 1022                         |
| 2/0               | 711565       | 712089          | 1,38            | 853                       | 1139                         |
| 3/0               | 711566       | 712090          | 1,42            | 923                       | 1284                         |
| 4/0               | 711567       | 712091          | 1,48            | 1006                      | 1461                         |
| 250               | 711568       | 712092          | 1,53            | 1085                      | 1623                         |
| 300               | 711569       | 712093          | 1,58            | 1172                      | 1817                         |
| 350               | 711570       | 712094          | 1,63            | 1255                      | 2009                         |
| 400               | 711571       | 712095          | 1,67            | 1337                      | 2197                         |
| 500               | 711572       | 712096          | 1,81            | 1598                      | 2674                         |
| 600               | 711573       | 712097          | 1,93            | 1816                      | 3107                         |
| 750               | 711574       | 712098          | 2,02            | 2040                      | 3653                         |
| 1000              | 711575       | 712099          | 2,17            | 2409                      | 4559                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711612       | 712136          | 1,37            | 746                       | 973                          |
| 711613       | 712137          | 1,41            | 801                       | 1087                         |
| 711614       | 712138          | 1,46            | 868                       | 1228                         |
| 711615       | 712139          | 1,51            | 947                       | 1401                         |
| 711616       | 712140          | 1,57            | 1030                      | 1568                         |
| 711617       | 712141          | 1,62            | 1113                      | 1758                         |
| 711618       | 712142          | 1,66            | 1193                      | 1946                         |
| 711619       | 712143          | 1,77            | 1375                      | 2235                         |
| 711620       | 712144          | 1,84            | 1529                      | 2604                         |
| 711621       | 712145          | 1,96            | 1746                      | 3036                         |
| 711622       | 712146          | 2,06            | 1963                      | 3576                         |
| 711623       | 712147          | 2,21            | 2320                      | 4470                         |

133% Insulation Level  
CU-Tape Shielded

| Size AWG or kcmil | Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|-------------------|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 1/0               | 711576       | 712100          | 1,49            | 949                       | 1176                         |
| 2/0               | 711577       | 712101          | 1,53            | 1010                      | 1296                         |
| 3/0               | 711578       | 712102          | 1,57            | 1085                      | 1446                         |
| 4/0               | 711579       | 712103          | 1,63            | 1173                      | 1627                         |
| 250               | 711580       | 712104          | 1,74            | 1359                      | 1897                         |
| 300               | 711581       | 712105          | 1,79            | 1454                      | 2098                         |
| 350               | 711582       | 712106          | 1,84            | 1544                      | 2297                         |
| 400               | 711583       | 712107          | 1,91            | 1681                      | 2541                         |
| 500               | 711584       | 712108          | 1,99            | 1850                      | 2926                         |
| 600               | 711585       | 712109          | 2,08            | 2029                      | 3320                         |
| 750               | 711586       | 712110          | 2,17            | 2262                      | 3875                         |
| 1000              | 711587       | 712111          | 2,32            | 2645                      | 4795                         |

CU Wire Shielded

| Part no. ALU | Part no. copper | Approx. OD inch | ALU Weight approx. lb/kft | Copper Weight approx. lb/kft |
|--------------|-----------------|-----------------|---------------------------|------------------------------|
| 711624       | 712148          | 1,52            | 889                       | 1116                         |
| 711625       | 712149          | 1,56            | 947                       | 1223                         |
| 711626       | 712150          | 1,61            | 1018                      | 1379                         |
| 711627       | 712151          | 1,66            | 1102                      | 1557                         |
| 711628       | 712152          | 1,78            | 1295                      | 1832                         |
| 711629       | 712153          | 1,83            | 1385                      | 2030                         |
| 711630       | 712154          | 1,87            | 1472                      | 2225                         |
| 711631       | 712155          | 1,95            | 1604                      | 2464                         |
| 711632       | 712156          | 2,02            | 1767                      | 2843                         |
| 711633       | 712157          | 2,11            | 1947                      | 3238                         |
| 711634       | 712158          | 2,21            | 2175                      | 3787                         |
| 711635       | 712159          | 2,36            | 2545                      | 4695                         |

Dimensions and specifications may be changed without prior notice.



# MV-90 / MV-105 ALUMINIUM/COPPER UL listed



## MV-105 EPR/PVC Shielded 35KV Aluminium

100% Insulation Level  
CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 1/0                     | 711588          | 712112             | 1,36                  | 920                          | 1147                            |
| 2/0                     | 711589          | 712113             | 1,40                  | 984                          | 1270                            |
| 3/0                     | 711590          | 712114             | 1,44                  | 1061                         | 1422                            |
| 4/0                     | 711591          | 712115             | 1,49                  | 1153                         | 1607                            |
| 250                     | 711592          | 712116             | 1,55                  | 1241                         | 1778                            |
| 300                     | 711593          | 712117             | 1,60                  | 1335                         | 1980                            |
| 350                     | 711594          | 712118             | 1,65                  | 1426                         | 2179                            |
| 400                     | 711595          | 712119             | 1,75                  | 1619                         | 2479                            |
| 500                     | 711596          | 712120             | 1,83                  | 1791                         | 2867                            |
| 600                     | 711597          | 712121             | 1,95                  | 2025                         | 3315                            |
| 750                     | 711598          | 712122             | 2,04                  | 2264                         | 3877                            |
| 1000                    | 711599          | 712123             | 2,19                  | 2658                         | 4808                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711636          | 712160             | 1,41                  | 881                          | 1108                            |
| 711637          | 712161             | 1,45                  | 942                          | 1228                            |
| 711638          | 712162             | 1,50                  | 1016                         | 1376                            |
| 711639          | 712163             | 1,55                  | 1103                         | 1558                            |
| 711640          | 712164             | 1,61                  | 1199                         | 1737                            |
| 711641          | 712165             | 1,66                  | 1290                         | 1934                            |
| 711642          | 712166             | 1,77                  | 1482                         | 2236                            |
| 711643          | 712167             | 1,81                  | 1580                         | 2430                            |
| 711644          | 712168             | 1,89                  | 1736                         | 2812                            |
| 711645          | 712169             | 2,02                  | 1969                         | 3260                            |
| 711646          | 712170             | 2,13                  | 2214                         | 3827                            |
| 711647          | 712171             | 2,28                  | 2599                         | 4749                            |

133% Insulation Level  
CU-Tape Shielded

| Size<br>AWG or<br>kcmil | Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-------------------------|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 1/0                     | 711600          | 712124             | 1,51                  | 1115                         | 1341                            |
| 2/0                     | 711601          | 712125             | 1,55                  | 1184                         | 1470                            |
| 3/0                     | 711602          | 712126             | 1,60                  | 1267                         | 1628                            |
| 4/0                     | 711603          | 712127             | 1,65                  | 1365                         | 1820                            |
| 250                     | 711604          | 712128             | 1,76                  | 1565                         | 2103                            |
| 300                     | 711605          | 712129             | 1,81                  | 1669                         | 2314                            |
| 350                     | 711606          | 712130             | 1,86                  | 1769                         | 2522                            |
| 400                     | 711607          | 712131             | 1,94                  | 1919                         | 2776                            |
| 500                     | 711608          | 712132             | 2,01                  | 2100                         | 3176                            |
| 600                     | 711609          | 712133             | 2,10                  | 2296                         | 3586                            |
| 750                     | 711610          | 712134             | 2,19                  | 2548                         | 4161                            |
| 1000                    | 711611          | 712135             | 2,35                  | 2960                         | 5110                            |

CU Wire Shielded

| Part no.<br>ALU | Part no.<br>copper | Approx.<br>OD<br>inch | ALU Weight<br>approx. lb/kft | Copper Weight<br>approx. lb/kft |
|-----------------|--------------------|-----------------------|------------------------------|---------------------------------|
| 711648          | 712172             | 1,57                  | 1064                         | 1291                            |
| 711649          | 712173             | 1,61                  | 1130                         | 1416                            |
| 711650          | 712174             | 1,65                  | 1210                         | 1570                            |
| 711651          | 712175             | 1,77                  | 1409                         | 1864                            |
| 711652          | 712176             | 1,82                  | 1516                         | 2053                            |
| 711653          | 712177             | 1,87                  | 1616                         | 2260                            |
| 711654          | 712178             | 1,92                  | 1711                         | 2465                            |
| 711655          | 712179             | 1,99                  | 1853                         | 2713                            |
| 711656          | 712180             | 2,07                  | 2031                         | 3106                            |
| 711657          | 712181             | 2,17                  | 2229                         | 3519                            |
| 711658          | 712182             | 2,29                  | 2487                         | 4100                            |
| 711659          | 712183             | 2,44                  | 2892                         | 5042                            |

Dimensions and specifications may be changed without prior notice.





**JZ-500 HMMH-C**

JZ-500

JZ-600-Y-CY UL/CSA

F-CY-JZ

**HELUTHERM® 145 MULTI**

H07 RN-F

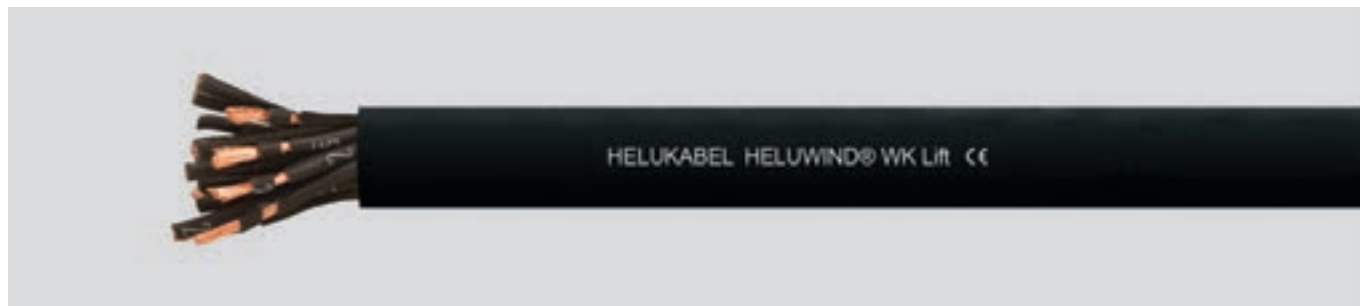
MEGAFLEX® 500

# ■ CONTROL CABLES

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# HELUWIND® WK Lift

UV resistant, halogen-free



## Technical data

- **Temperature range**  
flexing -35°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
3000 V
- **Insulation resistance**  
min. 100 MΩ x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper, fine wire conductor, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Bunch-construction with low torsion
- Outer sheath of special PUR, extruded as filler with pressure
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Low adhesion
- Ozon- and UV resistant
- Oil resistant
- Better chemical resistance
- Tear resistance
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de). For each application is an individual assessment and selection by the technical department necessary.

## Optional:

- with 600V
- UL recognized or UL listed

## Application

WK Lift was designed for power supply applications and control of service lifts in wind turbines. The construction of the cable must be designed for the application cable trolley system or pot cable version. Please note the assembly instruction for untwisted laying without torsion for cables with moving and reeling application. The max. free hanging height depends on cross-section and number of cores. For certain weight loads and lift heights a supporting braid must be integrated into the cable.

# JZ-500

flexible, number coded, meter marking



## Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering (also available in other colours on request)
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- Conditional drag chain compatible
- Conditional suitability for torsion
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- We supply any "desired length" of stranded cores without outer sheath, core insulation colour acc. RAL 9005 with number combination acc. customers requirement.
- Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:

**F-CY-JZ,  
F-CY-OZ (LiY-CY),  
Y-CY-JB,  
Y-CY-JZ**

## Application

These cables are appropriate for flexible use with medium mechanical stresses, and free movement without tensile stress or forced movements in dry, moist and wet rooms but not open air. Suitable to be used as measuring and control cables in tool machines, conveyor belts, assembly lines, plant engineering, AC technology, steel production and other manufacturing environments. Selected PVC compounds guarantee good flexibility as well as an economic and fast installation.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|---------|
| 10001    | 2 x 0,5                                | 4,8             | 9,6                 | 40,0                | 20      | 10183    | 16 G 0,5                               | 10,0            | 76,0                | 175,0               | 20      |
| 10002    | 3 G 0,5                                | 5,1             | 14,4                | 46,0                | 20      | 10016    | 18 G 0,5                               | 10,7            | 86,0                | 196,0               | 20      |
| 10003    | 3 x 0,5                                | 5,1             | 14,4                | 46,0                | 20      | 10017    | 20 G 0,5                               | 11,3            | 96,0                | 215,0               | 20      |
| 10004    | 4 G 0,5                                | 5,5             | 19,0                | 56,0                | 20      | 10018    | 21 G 0,5                               | 11,3            | 101,0               | 240,0               | 20      |
| 10005    | 4 x 0,5                                | 5,5             | 19,0                | 56,0                | 20      | 10019    | 25 G 0,5                               | 12,6            | 120,0               | 270,0               | 20      |
| 10006    | 5 G 0,5                                | 6,2             | 24,0                | 65,0                | 20      | 10020    | 30 G 0,5                               | 13,5            | 144,0               | 310,0               | 20      |
| 10007    | 5 x 0,5                                | 6,2             | 24,0                | 65,0                | 20      | 10021    | 32 G 0,5                               | 14,0            | 154,0               | 323,0               | 20      |
| 10008    | 6 G 0,5                                | 6,7             | 29,0                | 75,0                | 20      | 10022    | 34 G 0,5                               | 14,7            | 163,0               | 362,0               | 20      |
| 10009    | 7 G 0,5                                | 6,7             | 33,6                | 80,0                | 20      | 10023    | 40 G 0,5                               | 15,3            | 192,0               | 434,0               | 20      |
| 10010    | 7 x 0,5                                | 6,7             | 33,6                | 80,0                | 20      | 10024    | 42 G 0,5                               | 15,8            | 202,0               | 449,0               | 20      |
| 10011    | 8 G 0,5                                | 7,7             | 38,0                | 97,0                | 20      | 10025    | 50 G 0,5                               | 17,3            | 240,0               | 513,0               | 20      |
| 10172    | 8 x 0,5                                | 7,7             | 38,0                | 97,0                | 20      | 10169    | 52 G 0,5                               | 17,3            | 252,0               | 534,0               | 20      |
| 10012    | 10 G 0,5                               | 8,6             | 48,0                | 116,0               | 20      | 10026    | 61 G 0,5                               | 18,5            | 293,0               | 625,0               | 20      |
| 10013    | 12 G 0,5                               | 9,1             | 58,0                | 135,0               | 20      | 10027    | 65 G 0,5                               | 19,8            | 312,0               | 682,0               | 20      |
| 10014    | 12 x 0,5                               | 8,7             | 58,0                | 135,0               | 20      | 10028    | 80 G 0,5                               | 21,3            | 384,0               | 780,0               | 20      |
| 10015    | 14 G 0,5                               | 9,5             | 67,0                | 150,0               | 20      | 10029    | 100 G 0,5                              | 23,8            | 480,0               | 980,0               | 20      |

Continuation ▶



# JZ-500

flexible, number coded, meter marking



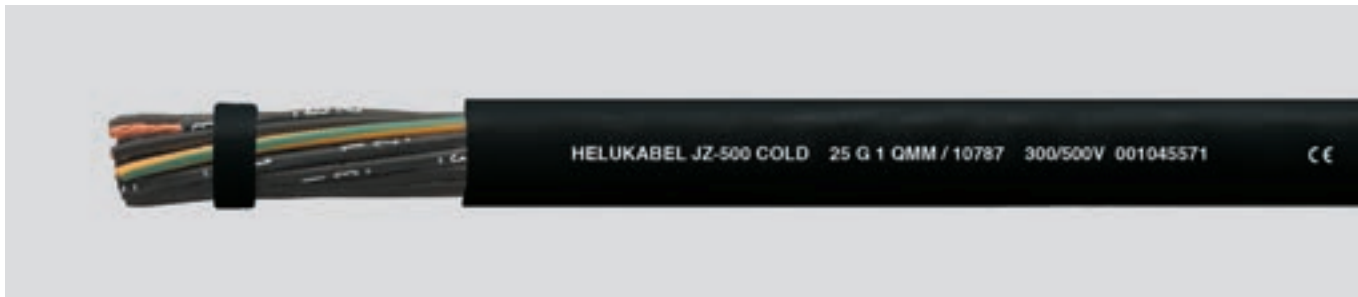
| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 10030    | 2 x 0,75                              | 5,3             | 14,4                | 46,0                | 19      |
| 10031    | 3 G 0,75                              | 5,6             | 21,6                | 54,0                | 19      |
| 10032    | 3 x 0,75                              | 5,6             | 21,6                | 54,0                | 19      |
| 10033    | 4 G 0,75                              | 6,3             | 28,8                | 66,0                | 19      |
| 10034    | 4 x 0,75                              | 6,3             | 29,0                | 66,0                | 19      |
| 10035    | 5 G 0,75                              | 6,9             | 36,0                | 80,0                | 19      |
| 10036    | 5 x 0,75                              | 6,9             | 36,0                | 80,0                | 19      |
| 10037    | 6 G 0,75                              | 7,7             | 43,0                | 99,0                | 19      |
| 10177    | 6 x 0,75                              | 7,7             | 43,0                | 99,0                | 19      |
| 10038    | 7 G 0,75                              | 7,7             | 50,0                | 110,0               | 19      |
| 10039    | 7 x 0,75                              | 7,7             | 50,0                | 110,0               | 19      |
| 10040    | 8 G 0,75                              | 8,5             | 58,0                | 130,0               | 19      |
| 10173    | 8 x 0,75                              | 8,5             | 58,0                | 130,0               | 19      |
| 10041    | 9 G 0,75                              | 9,8             | 65,0                | 153,0               | 19      |
| 10042    | 10 G 0,75                             | 9,8             | 72,0                | 162,0               | 19      |
| 10043    | 12 G 0,75                             | 10,1            | 86,0                | 179,0               | 19      |
| 10044    | 12 x 0,75                             | 10,1            | 86,0                | 179,0               | 19      |
| 10045    | 14 G 0,75                             | 10,8            | 101,0               | 214,0               | 19      |
| 10046    | 15 G 0,75                             | 11,4            | 108,0               | 218,0               | 19      |
| 10047    | 18 G 0,75                             | 12,2            | 130,0               | 257,0               | 19      |
| 10533    | 19 G 0,75                             | 12,2            | 137,0               | 264,0               | 19      |
| 10048    | 20 G 0,75                             | 12,8            | 144,0               | 286,0               | 19      |
| 10049    | 21 G 0,75                             | 12,8            | 151,0               | 320,0               | 19      |
| 10050    | 25 G 0,75                             | 14,3            | 180,0               | 365,0               | 19      |
| 10534    | 27 G 0,75                             | 14,8            | 195,0               | 382,0               | 19      |
| 10051    | 32 G 0,75                             | 15,9            | 230,0               | 455,0               | 19      |
| 10052    | 34 G 0,75                             | 16,7            | 245,0               | 510,0               | 19      |
| 10182    | 37 G 0,75                             | 16,7            | 266,0               | 537,0               | 19      |
| 10053    | 40 G 0,75                             | 17,3            | 288,0               | 595,0               | 19      |
| 10054    | 41 G 0,75                             | 18,2            | 296,0               | 607,0               | 19      |
| 10055    | 42 G 0,75                             | 18,2            | 302,0               | 612,0               | 19      |
| 10056    | 50 G 0,75                             | 19,8            | 360,0               | 735,0               | 19      |
| 10057    | 61 G 0,75                             | 21,2            | 439,0               | 845,0               | 19      |
| 10178    | 65 G 0,75                             | 22,6            | 468,0               | 895,0               | 19      |
| 10058    | 80 G 0,75                             | 24,3            | 576,0               | 1070,0              | 19      |
| 10059    | 100 G 0,75                            | 27,1            | 720,0               | 1322,0              | 19      |
| 10060    | 2 x 1                                 | 5,6             | 19,2                | 60,0                | 18      |
| 10061    | 3 G 1                                 | 6,1             | 29,0                | 72,0                | 18      |
| 10062    | 3 x 1                                 | 6,1             | 29,0                | 72,0                | 18      |
| 10063    | 4 G 1                                 | 6,7             | 38,0                | 86,0                | 18      |
| 10064    | 4 x 1                                 | 6,7             | 38,0                | 86,0                | 18      |
| 10065    | 5 G 1                                 | 7,5             | 48,0                | 104,0               | 18      |
| 10066    | 5 x 1                                 | 7,5             | 48,0                | 104,0               | 18      |
| 10067    | 6 G 1                                 | 8,1             | 58,0                | 125,0               | 18      |
| 10068    | 7 G 1                                 | 8,1             | 67,0                | 141,0               | 18      |
| 10069    | 7 x 1                                 | 8,1             | 67,0                | 141,0               | 18      |
| 10070    | 8 G 1                                 | 9,2             | 77,0                | 175,0               | 18      |
| 10071    | 9 G 1                                 | 10,6            | 86,0                | 200,0               | 18      |
| 10180    | 10 G 1                                | 10,6            | 96,0                | 217,0               | 18      |
| 10170    | 10 x 1                                | 10,6            | 96,0                | 217,0               | 18      |
| 10072    | 12 G 1                                | 10,9            | 115,0               | 230,0               | 18      |
| 10073    | 12 x 1                                | 10,9            | 115,0               | 230,0               | 18      |
| 10074    | 14 G 1                                | 11,5            | 134,0               | 271,0               | 18      |
| 10075    | 16 G 1                                | 12,3            | 154,0               | 300,0               | 18      |
| 10076    | 18 G 1                                | 12,9            | 173,0               | 343,0               | 18      |
| 10174    | 18 x 1                                | 12,9            | 173,0               | 343,0               | 18      |
| 10197    | 19 G 1                                | 12,9            | 182,0               | 355,0               | 18      |
| 10077    | 20 G 1                                | 13,8            | 192,0               | 375,0               | 18      |
| 10184    | 20 x 1                                | 13,8            | 192,0               | 375,0               | 18      |
| 10179    | 21 G 1                                | 13,8            | 205,0               | 420,0               | 18      |
| 10175    | 24 G 1                                | 15,4            | 230,0               | 440,0               | 18      |
| 10078    | 25 G 1                                | 15,4            | 240,0               | 485,0               | 18      |
| 10176    | 25 x 1                                | 15,4            | 240,0               | 485,0               | 18      |
| 10196    | 26 G 1                                | 15,4            | 252,0               | 500,0               | 18      |
| 10198    | 27 G 1                                | 15,7            | 259,0               | 534,0               | 18      |
| 10168    | 30 x 1                                | 16,5            | 308,0               | 550,0               | 18      |
| 10079    | 34 G 1                                | 17,9            | 326,0               | 650,0               | 18      |
| 10080    | 36 G 1                                | 17,9            | 346,0               | 668,0               | 18      |
| 10199    | 37 G 1                                | 17,9            | 355,0               | 701,0               | 18      |
| 10081    | 40 G 1                                | 18,6            | 384,0               | 755,0               | 18      |
| 10167    | 40 x 1                                | 18,6            | 384,0               | 755,0               | 18      |
| 10082    | 41 G 1                                | 19,5            | 394,0               | 770,0               | 18      |
| 10083    | 42 G 1                                | 19,5            | 403,0               | 810,0               | 18      |
| 10084    | 50 G 1                                | 21,3            | 480,0               | 936,0               | 18      |
| 10085    | 56 G 1                                | 22,1            | 538,0               | 920,0               | 18      |
| 10086    | 61 G 1                                | 22,7            | 586,0               | 1100,0              | 18      |
| 10087    | 65 G 1                                | 24,3            | 628,0               | 1180,0              | 18      |
| 10088    | 80 G 1                                | 26,3            | 768,0               | 1294,0              | 18      |
| 10089    | 100 G 1                               | 29,3            | 960,0               | 1644,0              | 18      |
| 10090    | 2 x 1,5                               | 6,4             | 29,0                | 70,0                | 16      |
| 10091    | 3 G 1,5                               | 6,8             | 43,0                | 90,0                | 16      |
| 10092    | 3 x 1,5                               | 6,8             | 43,0                | 90,0                | 16      |
| 10093    | 4 G 1,5                               | 7,6             | 58,0                | 109,0               | 16      |
| 10094    | 4 x 1,5                               | 7,6             | 58,0                | 109,0               | 16      |
| 10095    | 5 G 1,5                               | 8,3             | 72,0                | 131,0               | 16      |
| 10096    | 5 x 1,5                               | 8,3             | 72,0                | 131,0               | 16      |
| 10097    | 6 G 1,5                               | 9,2             | 86,0                | 157,0               | 16      |

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|---------------------------------------|-----------------|---------------------|---------------------|-----------|
| 10098    | 7 G 1,5                               | 9,2             | 101,0               | 184,0               | 16        |
| 10099    | 7 x 1,5                               | 9,2             | 101,0               | 184,0               | 16        |
| 10100    | 8 G 1,5                               | 10,5            | 115,0               | 216,0               | 16        |
| 10101    | 9 G 1,5                               | 12,0            | 129,0               | 259,0               | 16        |
| 10181    | 10 G 1,5                              | 12,0            | 144,0               | 275,0               | 16        |
| 10102    | 11 G 1,5                              | 12,0            | 158,0               | 300,0               | 16        |
| 10103    | 12 G 1,5                              | 12,4            | 173,0               | 309,0               | 16        |
| 10104    | 12 x 1,5                              | 12,4            | 173,0               | 309,0               | 16        |
| 10105    | 14 G 1,5                              | 13,0            | 202,0               | 345,0               | 16        |
| 10106    | 16 G 1,5                              | 13,9            | 230,0               | 386,0               | 16        |
| 10107    | 18 G 1,5                              | 14,8            | 259,0               | 440,0               | 16        |
| 10185    | 19 G 1,5                              | 14,8            | 279,0               | 445,0               | 16        |
| 10108    | 20 G 1,5                              | 15,6            | 288,0               | 490,0               | 16        |
| 10109    | 21 G 1,5                              | 15,6            | 302,0               | 555,0               | 16        |
| 10110    | 25 G 1,5                              | 17,6            | 360,0               | 620,0               | 16        |
| 10535    | 27 G 1,5                              | 18,0            | 389,0               | 670,0               | 16        |
| 10111    | 32 G 1,5                              | 19,5            | 461,0               | 790,0               | 16        |
| 10112    | 34 x 1,5                              | 20,2            | 490,0               | 830,0               | 16        |
| 10536    | 37 G 1,5                              | 20,2            | 533,0               | 892,0               | 16        |
| 10113    | 41 G 1,5                              | 22,2            | 591,0               | 996,0               | 16        |
| 10114    | 42 G 1,5                              | 22,2            | 605,0               | 1007,0              | 16        |
| 10115    | 50 G 1,5                              | 24,2            | 720,0               | 1250,0              | 16        |
| 10116    | 56 G 1,5                              | 25,1            | 806,0               | 1332,0              | 16        |
| 10117    | 61 G 1,5                              | 25,8            | 878,0               | 1440,0              | 16        |
| 10187    | 65 G 1,5                              | 27,8            | 936,0               | 1602,0              | 16        |
| 10118    | 80 G 1,5                              | 29,8            | 1152,0              | 1871,0              | 16        |
| 10119    | 100 G 1,5                             | 33,2            | 1440,0              | 2353,0              | 16        |
| 10120    | 2 x 2,5                               | 7,8             | 48,0                | 112,0               | 14        |
| 10121    | 3 G 2,5                               | 8,3             | 72,0                | 148,0               | 14        |
| 10122    | 3 x 2,5                               | 8,3             | 72,0                | 148,0               | 14        |
| 10123    | 4 G 2,5                               | 9,3             | 96,0                | 178,0               | 14        |
| 10124    | 4 x 2,5                               | 9,3             | 96,0                | 178,0               | 14        |
| 10125    | 5 G 2,5                               | 10,1            | 120,0               | 221,0               | 14        |
| 10126    | 5 x 2,5                               | 10,1            | 120,0               | 221,0               | 14        |
| 10127    | 7 G 2,5                               | 11,2            | 168,0               | 306,0               | 14        |
| 10128    | 7 x 2,5                               | 11,2            | 168,0               | 306,0               | 14        |
| 10129    | 8 G 2,5                               | 12,8            | 192,0               | 363,0               | 14        |
| 10548    | 10 G 2,5                              | 14,8            | 240,0               | 429,0               | 14        |
| 10130    | 12 G 2,5                              | 15,3            | 288,0               | 498,0               | 14        |
| 10131    | 14 G 2,5                              | 16,2            | 336,0               | 569,0               | 14        |
| 10132    | 18 G 2,5                              | 18,2            | 432,0               | 764,0               | 14        |
| 10133    | 21 G 2,5                              | 19,4            | 504,0               | 914,0               | 14        |
| 10134    | 25 G 2,5                              | 21,6            | 600,0               | 1044,0              | 14        |
| 10135    | 34 G 2,5                              | 25,2            | 816,0               | 1470,0              | 14        |
| 10136    | 42 G 2,5                              | 27,4            | 1008,0              | 1790,0              | 14        |
| 10137    | 50 G 2,5                              | 30,1            | 1200,0              | 2095,0              | 14        |
| 10138    | 61 G 2,5                              | 32,2            | 1464,0              | 2750,0              | 14        |
| 10139    | 100 G 2,5                             | 41,4            | 2400,0              | 4450,0              | 14        |
| 10140    | 2 x 4                                 | 9,2             | 77,0                | 195,0               | 12        |
| 10141    | 3 G 4                                 | 9,8             | 115,0               | 230,0               | 12        |
| 10142    | 4 G 4                                 | 10,9            | 154,0               | 295,0               | 12        |
| 10143    | 5 G 4                                 | 12,1            | 192,0               | 361,0               | 12        |
| 10144    | 7 G 4                                 | 13,4            | 269,0               | 458,0               | 12        |
| 10145    | 8 G 4                                 | 15,2            | 307,0               | 590,0               | 12        |
| 10549    | 10 G 4                                | 17,6            | 384,0               | 687,0               | 12        |
| 10146    | 12 G 4                                | 18,2            | 461,0               | 790,0               | 12        |
| 10147    | 3 G 6                                 | 11,9            | 173,0               | 355,0               | 10        |
| 10148    | 4 G 6                                 | 13,2            | 230,0               | 424,0               | 10        |
| 10149    | 5 G 6                                 | 14,7            | 288,0               | 525,0               | 10        |
| 10150    | 7 G 6                                 | 16,2            | 403,0               | 625,0               | 10        |
| 10151    | 3 G 10                                | 14,9            | 288,0               | 540,0               | 8         |
| 10152    | 4 G 10                                | 16,6            | 384,0               | 701,0               | 8         |
| 10153    | 5 G 10                                | 18,3            | 480,0               | 858,0               | 8         |
| 10154    | 7 G 10                                | 20,2            | 672,0               | 1106,0              | 8         |
| 10190    | 3 G 16                                | 18,5            | 461,0               | 827,0               | 6         |
| 10155    | 4 G 16                                | 20,6            | 614,0               | 1035,0              | 6         |
| 10156    | 5 G 16                                | 22,8            | 768,0               | 1259,0              | 6         |
| 10157    | 7 G 16                                | 25,2            | 1075,0              | 1780,0              | 6         |
| 10191    | 3 G 25                                | 22,5            | 720,0               | 1186,0              | 4         |
| 10158    | 4 G 25                                | 25,2            | 960,0               | 1582,0              | 4         |
| 10159    | 5 G 25                                | 27,9            | 1200,0              | 1999,0              | 4         |
| 10160    | 7 G 25                                | 30,8            | 1680,0              | 2825,0              | 4         |
| 10192    | 3 G 35                                | 25,3            | 1008,0              | 1585,0              | 2         |
| 10161    | 4 G 35                                | 28,1            | 1344,0              | 2105,0              | 2         |
| 10162    | 5 G 35                                | 31,0            | 1680,0              | 2633,0              | 2         |
| 10193    | 3 G 50                                | 30,0            | 1440,0              | 2550,0              | 1         |
| 10163    | 4 G 50                                | 33,3            | 1920,0              | 2940,0              | 1         |
| 10188    | 5 G 50                                | 37,0            | 2400,0              | 2936,0              | 1         |
| 10194    | 3 G 70                                | 34,2            | 2016,0              | 3180,0              | 2/0       |
| 10164    | 4 G 70                                | 38,2            | 2688,0              | 4090,0              | 2/0       |
| 10189    | 5 G 70                                | 42,4            | 3360,0              | 5443,0              | 2/0       |
| 10195    | 3 G 95                                | 39,8            | 2736,0              | 4680,0              | 3/0       |
| 10165    | 4 G 95                                | 44,2            | 3648,0              | 5540,0              | 3/0       |
| 10333    | 5 G 95                                | 49,0            | 4560,0              | 6931,0              | 3/0       |
| 10166    | 4 G 120                               | 49,4            | 4608,0              | 7000,0              | 4/0       |
| 13139    | 4 G 150                               | 54,7            | 5760,0              | 8340,0              | 300 kcmil |
| 13140    | 4 G 185                               | 62,7            | 7104,0              | 9904,0              | 350 kcmil |

Dimensions and specifications may be changed without prior notice. (RA01)

# JZ-500 COLD

flexible at low temperature, number coded, meter marking



## Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Y14
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of cold flexible special PVC
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

This cold-flexible PVC hose cable is used under average stress for flexible applications with free movement, without tensile load and without forced motion guide in dry, moist, wet rooms and outside, as measuring and control cable at machine tools, conveyor belts and transport belts, production streets, in plant construction, in air condition construction and in refrigerated warehouses. Selected PVC mixtures guarantee good flexibility, efficient and fast installation.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 10750    | 2 x 0,5                               | 4,8             | 9,6                 | 40,0                | 20      |
| 10751    | 3 G 0,75                              | 5,6             | 21,6                | 54,0                | 19      |
| 10752    | 3 x 0,75                              | 5,6             | 21,6                | 54,0                | 19      |
| 10753    | 4 G 0,75                              | 6,3             | 28,8                | 66,0                | 19      |
| 10754    | 4 x 0,75                              | 6,3             | 29,0                | 66,0                | 19      |
| 10755    | 5 G 0,75                              | 6,9             | 36,0                | 80,0                | 19      |
| 10756    | 5 x 0,75                              | 6,9             | 36,0                | 80,0                | 19      |
| 10757    | 7 G 0,75                              | 7,5             | 50,0                | 110,0               | 19      |
| 10758    | 7 x 0,75                              | 7,5             | 50,0                | 110,0               | 19      |
| 10759    | 12 G 0,75                             | 9,8             | 86,0                | 179,0               | 19      |
| 10760    | 18 G 0,75                             | 12,2            | 130,0               | 257,0               | 19      |
| 10761    | 25 G 0,75                             | 14,3            | 180,0               | 365,0               | 19      |
| 10762    | 2 x 1                                 | 5,6             | 19,2                | 60,0                | 18      |
| 10763    | 3 G 1                                 | 5,9             | 29,0                | 72,0                | 18      |
| 10764    | 3 x 1                                 | 5,9             | 29,0                | 72,0                | 18      |
| 10765    | 4 G 1                                 | 6,6             | 38,4                | 86,0                | 18      |
| 10766    | 4 x 1                                 | 6,6             | 38,4                | 86,0                | 18      |
| 10767    | 5 G 1                                 | 7,3             | 48,0                | 104,0               | 18      |
| 10768    | 5 x 1                                 | 7,3             | 48,0                | 104,0               | 18      |
| 10769    | 7 G 1                                 | 8,1             | 67,0                | 141,0               | 18      |
| 10770    | 7 x 1                                 | 8,1             | 67,0                | 141,0               | 18      |
| 10771    | 12 G 1                                | 10,4            | 115,0               | 230,0               | 18      |
| 10772    | 18 G 1                                | 12,9            | 173,0               | 343,0               | 18      |
| 10773    | 25 G 1                                | 15,4            | 240,0               | 485,0               | 18      |

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 10774    | 2 x 1,5                               | 6,4             | 29,0                | 70,0                | 16      |
| 10775    | 3 G 1,5                               | 6,8             | 43,0                | 90,0                | 16      |
| 10776    | 3 x 1,5                               | 6,8             | 43,0                | 90,0                | 16      |
| 10777    | 4 G 1,5                               | 7,4             | 58,0                | 109,0               | 16      |
| 10778    | 4 x 1,5                               | 7,4             | 58,0                | 109,0               | 16      |
| 10779    | 5 G 1,5                               | 8,3             | 72,0                | 131,0               | 16      |
| 10780    | 5 x 1,5                               | 8,3             | 72,0                | 131,0               | 16      |
| 10781    | 6 G 1,5                               | 9,2             | 86,0                | 157,0               | 16      |
| 10782    | 7 G 1,5                               | 9,2             | 101,0               | 184,0               | 16      |
| 10783    | 7 x 1,5                               | 9,2             | 101,0               | 184,0               | 16      |
| 10784    | 12 G 1,5                              | 11,8            | 173,0               | 309,0               | 16      |
| 10785    | 18 G 1,5                              | 14,6            | 259,0               | 440,0               | 16      |
| 10786    | 25 G 1,5                              | 17,4            | 360,0               | 620,0               | 16      |
| 10787    | 2 x 2,5                               | 7,8             | 48,0                | 112,0               | 14      |
| 10788    | 3 G 2,5                               | 8,3             | 72,0                | 148,0               | 14      |
| 10789    | 3 x 2,5                               | 8,3             | 72,0                | 148,0               | 14      |
| 10790    | 4 G 2,5                               | 9,2             | 96,0                | 178,0               | 14      |
| 10791    | 4 x 2,5                               | 9,2             | 96,0                | 178,0               | 14      |
| 10792    | 5 G 2,5                               | 10,1            | 120,0               | 221,0               | 14      |
| 10793    | 5 x 2,5                               | 10,1            | 120,0               | 221,0               | 14      |
| 10794    | 7 G 2,5                               | 11,2            | 168,0               | 306,0               | 14      |
| 10795    | 7 x 2,5                               | 11,2            | 168,0               | 306,0               | 14      |
| 10796    | 4 G 6                                 | 13,0            | 230,0               | 424,0               | 10      |
| 10797    | 5 G 6                                 | 14,5            | 288,0               | 525,0               | 10      |

Dimensions and specifications may be changed without prior notice. (RA01)

# F-CY-JZ

flexible, Cu-screened, EMC-preferred type, meter marking



## Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -10°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Mutual capacitance**  
acc. to different cross sections  
0,5 up to 2,5 mm<sup>2</sup>:  
core/core approx. 150 nF/km  
core/screen approx. 270 nF/km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Foil separator
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

## JZ-500

## Application

For use as a data cable in control circuits, in tool-making and machine industries as well as a signal cable in computer systems and electronics. The more usual PVC inner sheath has been replaced in these cables by a stabilising foil separator, thus reducing the total diameter of the cables considerably and thereby reducing the bending radius, total weight etc. The high covering percentage of the copper screening offers interference-free signal transfer etc. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above application.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 16320    | 2 x 0,5                                | 5,7             | 35,0                | 45,0                | 20      |
| 16321    | 3 G 0,5                                | 6,0             | 42,0                | 55,0                | 20      |
| 16322    | 4 G 0,5                                | 6,5             | 47,0                | 61,0                | 20      |
| 16323    | 5 G 0,5                                | 6,9             | 56,0                | 74,0                | 20      |
| 16324    | 6 G 0,5                                | 7,6             | 67,0                | 89,0                | 20      |
| 16325    | 7 G 0,5                                | 7,6             | 69,0                | 98,0                | 20      |
| 16326    | 8 G 0,5                                | 8,4             | 80,0                | 117,0               | 20      |
| 16327    | 10 G 0,5                               | 9,5             | 94,0                | 135,0               | 20      |
| 16328    | 12 G 0,5                               | 9,8             | 108,0               | 157,0               | 20      |
| 16329    | 14 G 0,5                               | 10,4            | 116,0               | 190,0               | 20      |
| 16330    | 16 G 0,5                               | 10,9            | 129,0               | 210,0               | 20      |
| 16331    | 18 G 0,5                               | 11,4            | 145,0               | 217,0               | 20      |
| 16332    | 20 G 0,5                               | 12,2            | 172,0               | 240,0               | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 16333    | 21 G 0,5                               | 12,2            | 188,0               | 250,0               | 20      |
| 16334    | 24 G 0,5                               | 13,7            | 235,0               | 300,0               | 20      |
| 16335    | 25 G 0,5                               | 13,7            | 240,0               | 314,0               | 20      |
| 16336    | 30 G 0,5                               | 14,4            | 295,0               | 360,0               | 20      |
| 16337    | 32 G 0,5                               | 15,1            | 301,0               | 425,0               | 20      |
| 16165    | 34 G 0,5                               | 15,6            | 312,0               | 433,0               | 20      |
| 16338    | 36 G 0,5                               | 15,6            | 318,0               | 446,0               | 20      |
| 16339    | 40 G 0,5                               | 16,4            | 343,0               | 475,0               | 20      |
| 16490    | 41 G 0,5                               | 17,0            | 348,0               | 486,0               | 20      |
| 16340    | 50 G 0,5                               | 18,5            | 406,0               | 573,0               | 20      |
| 16341    | 61 G 0,5                               | 19,6            | 508,0               | 653,0               | 20      |
| 16342    | 80 G 0,5                               | 22,5            | 680,0               | 784,0               | 20      |
| 16343    | 100 G 0,5                              | 25,0            | 804,0               | 995,0               | 20      |

Continuation ▶

# F-CY-JZ

flexible, Cu-screened, EMC-preferred type, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|---------|
| 16344    | 2 x 0,75                               | 6,2             | 40,0                | 59,0                | 19      | 16394    | 3 G 1,5                                | 7,7             | 80,0                | 100,0               | 16      |
| 16345    | 3 G 0,75                               | 6,6             | 52,0                | 66,0                | 19      | 16395    | 4 G 1,5                                | 8,3             | 97,0                | 126,0               | 16      |
| 16346    | 4 G 0,75                               | 7,1             | 60,0                | 77,0                | 19      | 16396    | 5 G 1,5                                | 9,2             | 119,0               | 160,0               | 16      |
| 16347    | 5 G 0,75                               | 7,8             | 71,0                | 93,0                | 19      | 16397    | 7 G 1,5                                | 9,9             | 147,0               | 208,0               | 16      |
| 16348    | 6 G 0,75                               | 8,4             | 80,0                | 113,0               | 19      | 16398    | 8 G 1,5                                | 11,2            | 170,0               | 244,0               | 16      |
| 16349    | 7 G 0,75                               | 8,4             | 91,0                | 130,0               | 19      | 16399    | 10 G 1,5                               | 12,7            | 193,0               | 315,0               | 16      |
| 16350    | 8 G 0,75                               | 9,5             | 110,0               | 145,0               | 19      | 16400    | 12 G 1,5                               | 13,5            | 267,0               | 338,0               | 16      |
| 16351    | 10 G 0,75                              | 10,7            | 137,0               | 180,0               | 19      | 16401    | 14 G 1,5                               | 14,1            | 283,0               | 383,0               | 16      |
| 16353    | 12 G 0,75                              | 11,1            | 142,0               | 202,0               | 19      | 16402    | 16 G 1,5                               | 15,0            | 315,0               | 424,0               | 16      |
| 16354    | 14 G 0,75                              | 11,5            | 180,0               | 225,0               | 19      | 16403    | 18 G 1,5                               | 15,7            | 374,0               | 479,0               | 16      |
| 16355    | 16 G 0,75                              | 12,3            | 200,0               | 275,0               | 19      | 16449    | 19 G 1,5                               | 15,7            | 386,0               | 508,0               | 16      |
| 16356    | 18 G 0,75                              | 12,9            | 212,0               | 292,0               | 19      | 16404    | 20 G 1,5                               | 16,7            | 396,0               | 545,0               | 16      |
| 16447    | 19 G 0,75                              | 12,9            | 230,0               | 308,0               | 19      | 16405    | 21 G 1,5                               | 16,7            | 425,0               | 560,0               | 16      |
| 16357    | 20 G 0,75                              | 13,9            | 238,0               | 320,0               | 19      | 16406    | 24 G 1,5                               | 18,5            | 458,0               | 690,0               | 16      |
| 16358    | 21 G 0,75                              | 13,9            | 246,0               | 378,0               | 19      | 16407    | 25 G 1,5                               | 18,5            | 526,0               | 705,0               | 16      |
| 16359    | 24 G 0,75                              | 15,4            | 270,0               | 435,0               | 19      | 16450    | 27 G 1,5                               | 19,1            | 531,0               | 774,0               | 16      |
| 16360    | 25 G 0,75                              | 15,4            | 281,0               | 415,0               | 19      | 16408    | 28 G 1,5                               | 19,7            | 541,0               | 810,0               | 16      |
| 16361    | 27 G 0,75                              | 15,7            | 304,0               | 435,0               | 19      | 16409    | 30 G 1,5                               | 19,7            | 555,0               | 830,0               | 16      |
| 16362    | 30 G 0,75                              | 16,4            | 320,0               | 450,0               | 19      | 16410    | 35 G 1,5                               | 21,3            | 645,0               | 890,0               | 16      |
| 16363    | 32 G 0,75                              | 17,0            | 342,0               | 484,0               | 19      | 16451    | 37 G 1,5                               | 21,3            | 674,0               | 945,0               | 16      |
| 16166    | 34 G 0,75                              | 17,8            | 345,0               | 502,0               | 19      | 16411    | 40 G 1,5                               | 22,3            | 725,0               | 1060,0              | 16      |
| 16364    | 36 G 0,75                              | 17,8            | 350,0               | 535,0               | 19      | 16493    | 41 G 1,5                               | 23,1            | 801,0               | 1071,0              | 16      |
| 16448    | 37 G 0,75                              | 17,8            | 361,0               | 592,0               | 19      | 16412    | 50 G 1,5                               | 25,5            | 885,0               | 1290,0              | 16      |
| 16365    | 40 G 0,75                              | 18,4            | 369,0               | 610,0               | 19      | 16413    | 61 G 1,5                               | 27,1            | 1100,0              | 1705,0              | 16      |
| 16491    | 41 G 0,75                              | 19,3            | 400,0               | 622,0               | 19      | 16414    | 80 G 1,5                               | 31,1            | 1324,0              | 2010,0              | 16      |
| 16366    | 50 G 0,75                              | 21,0            | 461,0               | 777,0               | 19      | 16415    | 100 G 1,5                              | 34,5            | 1641,0              | 2505,0              | 16      |
| 16367    | 61 G 0,75                              | 22,3            | 540,0               | 900,0               | 19      | 16416    | 2 x 2,5                                | 8,5             | 96,0                | 130,0               | 14      |
| 16368    | 80 G 0,75                              | 25,7            | 711,0               | 1210,0              | 19      | 16417    | 3 G 2,5                                | 9,2             | 144,0               | 167,0               | 14      |
| 16369    | 100 G 0,75                             | 28,5            | 900,0               | 1445,0              | 19      | 16418    | 4 G 2,5                                | 10,0            | 148,0               | 195,0               | 14      |
| 16370    | 2 x 1                                  | 6,5             | 50,0                | 65,0                | 18      | 16419    | 5 G 2,5                                | 11,0            | 181,0               | 223,0               | 14      |
| 16371    | 3 G 1                                  | 6,9             | 60,0                | 80,0                | 18      | 16420    | 7 G 2,5                                | 12,1            | 255,0               | 344,0               | 14      |
| 16372    | 4 G 1                                  | 7,6             | 71,0                | 98,0                | 18      | 16421    | 10 G 2,5                               | 15,7            | 340,0               | 460,0               | 14      |
| 16373    | 5 G 1                                  | 8,2             | 88,0                | 127,0               | 18      | 16438    | 12 G 2,5                               | 16,4            | 441,0               | 570,0               | 14      |
| 16374    | 6 G 1                                  | 9,0             | 97,0                | 144,0               | 18      | 16452    | 18 G 2,5                               | 19,3            | 570,0               | 681,0               | 14      |
| 16375    | 7 G 1                                  | 9,0             | 111,0               | 158,0               | 18      | 16422    | 2 x 4                                  | 10,5            | 120,0               | 185,0               | 12      |
| 16376    | 8 G 1                                  | 10,0            | 127,0               | 197,0               | 18      | 16423    | 3 G 4                                  | 11,1            | 174,0               | 240,0               | 12      |
| 16377    | 10 G 1                                 | 11,3            | 150,0               | 232,0               | 18      | 16424    | 4 G 4                                  | 12,3            | 230,0               | 310,0               | 12      |
| 16378    | 12 G 1                                 | 11,9            | 184,0               | 260,0               | 18      | 16425    | 5 G 4                                  | 13,8            | 273,0               | 385,0               | 12      |
| 16379    | 14 G 1                                 | 12,4            | 196,0               | 302,0               | 18      | 16426    | 7 G 4                                  | 15,1            | 316,0               | 500,0               | 12      |
| 16380    | 16 G 1                                 | 13,0            | 209,0               | 346,0               | 18      | 16427    | 2 x 6                                  | 11,9            | 173,0               | 268,0               | 10      |
| 16381    | 18 G 1                                 | 14,0            | 260,0               | 380,0               | 18      | 16428    | 3 G 6                                  | 12,6            | 240,0               | 330,0               | 10      |
| 16352    | 19 G 1                                 | 14,0            | 280,0               | 412,0               | 18      | 16429    | 4 G 6                                  | 14,2            | 305,0               | 415,0               | 10      |
| 16382    | 20 G 1                                 | 14,9            | 317,0               | 440,0               | 18      | 16430    | 5 G 6                                  | 15,6            | 439,0               | 509,0               | 10      |
| 16383    | 24 G 1                                 | 16,5            | 320,0               | 493,0               | 18      | 16431    | 7 G 6                                  | 17,1            | 505,0               | 672,0               | 10      |
| 16384    | 25 G 1                                 | 16,5            | 349,0               | 534,0               | 18      | 16432    | 2 x 10                                 | 15,3            | 255,0               | 425,0               | 8       |
| 16439    | 27 G 1                                 | 16,9            | 400,0               | 562,0               | 18      | 16433    | 3 G 10                                 | 16,5            | 350,0               | 500,0               | 8       |
| 16385    | 28 G 1                                 | 17,6            | 408,0               | 595,0               | 18      | 16434    | 4 G 10                                 | 18,2            | 535,0               | 783,0               | 8       |
| 16386    | 30 G 1                                 | 17,6            | 441,0               | 616,0               | 18      | 16435    | 5 G 10                                 | 20,0            | 592,0               | 856,0               | 8       |
| 16387    | 34 G 1                                 | 19,0            | 486,0               | 741,0               | 18      | 16436    | 7 G 10                                 | 22,1            | 810,0               | 1305,0              | 8       |
| 16446    | 37 G 1                                 | 19,0            | 519,0               | 790,0               | 18      | 16458    | 3 G 16                                 | 19,0            | 585,0               | 795,0               | 6       |
| 16388    | 40 G 1                                 | 19,7            | 510,0               | 835,0               | 18      | 16440    | 4 G 16                                 | 21,0            | 740,0               | 880,0               | 6       |
| 16492    | 41 G 1                                 | 20,6            | 531,0               | 843,0               | 18      | 16437    | 5 G 16                                 | 23,1            | 895,0               | 1295,0              | 6       |
| 16389    | 50 G 1                                 | 22,4            | 625,0               | 1025,0              | 18      | 16441    | 4 G 25                                 | 26,4            | 1140,0              | 1570,0              | 4       |
| 16390    | 61 G 1                                 | 23,8            | 702,0               | 1205,0              | 18      | 16442    | 5 G 25                                 | 29,0            | 1380,0              | 1965,0              | 4       |
| 16391    | 80 G 1                                 | 27,4            | 920,0               | 1445,0              | 18      | 16443    | 4 G 35                                 | 29,0            | 1576,0              | 2070,0              | 2       |
| 16392    | 100 G 1                                | 30,6            | 1120,0              | 1613,0              | 18      | 16444    | 5 G 35                                 | 32,3            | 1930,0              | 2690,0              | 2       |
| 16393    | 2 x 1,5                                | 7,1             | 63,0                | 88,0                | 16      | 16445    | 4 G 50                                 | 34,8            | 2155,0              | 3015,0              | 1       |

Dimensions and specifications may be changed without prior notice. (RA01)

# Y-CY-JZ

flexible, Cu-screened, transparent, EMC-preferred type, meter marking



## Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Mutual capacitance**  
acc. to different cross sections  
0,5 up to 2,5 mm<sup>2</sup>:  
core/core approx. 150 nF/km  
core/screen approx. 270 nF/km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Inner sheath of PVC, grey
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour: transparent
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YEconductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

**JZ-500**

## Application

For use as a data and control cable in machinery, computer systems etc. as well as a signal cable for electronics. The high level of screening ensures a high degree of interference protection. The screening density assures disturbancefree transmission of all signals and impulses. The PVC-inner sheaths of those cables raise the mechanical stress. The applied clear transparent PVC outer sheath accentuates the optical view of the tinned copper braid.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 16200    | 2 x 0,5                                | 7,0             | 41,0                | 67,0                | 20      |
| 16201    | 3 G 0,5                                | 7,3             | 45,0                | 83,0                | 20      |
| 16169    | 3 x 0,5                                | 7,3             | 45,0                | 83,0                | 20      |
| 16202    | 4 G 0,5                                | 7,9             | 54,0                | 94,0                | 20      |
| 16170    | 4 x 0,5                                | 7,9             | 54,0                | 94,0                | 20      |
| 16203    | 5 G 0,5                                | 8,4             | 66,0                | 108,0               | 20      |
| 16171    | 5 x 0,5                                | 8,4             | 66,0                | 108,0               | 20      |
| 16204    | 6 G 0,5                                | 9,1             | 73,0                | 125,0               | 20      |
| 16205    | 7 G 0,5                                | 9,1             | 79,0                | 136,0               | 20      |
| 17172    | 7 x 0,5                                | 9,1             | 79,0                | 136,0               | 20      |
| 16206    | 8 G 0,5                                | 9,7             | 82,0                | 150,0               | 20      |
| 16207    | 10 G 0,5                               | 10,7            | 107,0               | 170,0               | 20      |
| 16208    | 12 G 0,5                               | 11,5            | 137,0               | 195,0               | 20      |
| 16209    | 14 G 0,5                               | 12,2            | 142,0               | 223,0               | 20      |
| 16210    | 16 G 0,5                               | 12,7            | 147,0               | 250,0               | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 16211    | 18 G 0,5                               | 13,5            | 156,0               | 277,0               | 20      |
| 16212    | 20 G 0,5                               | 14,2            | 173,0               | 310,0               | 20      |
| 16315    | 21 G 0,5                               | 14,2            | 189,0               | 331,0               | 20      |
| 16213    | 24 G 0,5                               | 15,5            | 236,0               | 390,0               | 20      |
| 16214    | 25 G 0,5                               | 15,7            | 250,0               | 407,0               | 20      |
| 16215    | 30 G 0,5                               | 16,2            | 297,0               | 520,0               | 20      |
| 16216    | 32 G 0,5                               | 17,0            | 312,0               | 550,0               | 20      |
| 16217    | 36 G 0,5                               | 17,7            | 320,0               | 585,0               | 20      |
| 16218    | 40 G 0,5                               | 18,4            | 345,0               | 654,0               | 20      |
| 16453    | 41 G 0,5                               | 18,9            | 348,0               | 671,0               | 20      |
| 16219    | 50 G 0,5                               | 20,7            | 407,0               | 740,0               | 20      |
| 16220    | 61 G 0,5                               | 22,0            | 520,0               | 850,0               | 20      |
| 16221    | 80 G 0,5                               | 25,0            | 690,0               | 1080,0              | 20      |
| 16222    | 100 G 0,5                              | 27,4            | 805,0               | 1350,0              | 20      |

Continuation ▶

# Y-CY-JZ

flexible, Cu-screened, transparent, EMC-preferred type, meter marking



| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|----------|---------------------------------------|-----------------|---------------------|---------------------|-----------|
| 16223    | 2 x 0,75                              | 7,7             | 46,0                | 87,0                | 19      | 16181    | 4 x 1,5                               | 9,8             | 99,0                | 168,0               | 16        |
| 16224    | 3 G 0,75                              | 8,0             | 57,0                | 98,0                | 19      | 16274    | 5 G 1,5                               | 10,8            | 123,0               | 202,0               | 16        |
| 16173    | 3 x 0,75                              | 8,0             | 57,0                | 98,0                | 19      | 16182    | 5 x 1,5                               | 10,8            | 123,0               | 202,0               | 16        |
| 16225    | 4 G 0,75                              | 8,5             | 63,0                | 113,0               | 19      | 16275    | 7 G 1,5                               | 11,7            | 148,0               | 304,0               | 16        |
| 16196    | 4 x 0,75                              | 8,5             | 63,0                | 113,0               | 19      | 16183    | 7 x 1,5                               | 11,7            | 148,0               | 304,0               | 16        |
| 16226    | 5 G 0,75                              | 9,3             | 76,0                | 130,0               | 19      | 16276    | 8 G 1,5                               | 12,6            | 172,0               | 336,0               | 16        |
| 16174    | 5 x 0,75                              | 9,3             | 76,0                | 130,0               | 19      | 16277    | 10 G 1,5                              | 14,2            | 198,0               | 420,0               | 16        |
| 16227    | 6 G 0,75                              | 9,9             | 82,0                | 156,0               | 19      | 16278    | 12 G 1,5                              | 14,9            | 274,0               | 434,0               | 16        |
| 16228    | 7 G 0,75                              | 9,9             | 100,0               | 184,0               | 19      | 16279    | 14 G 1,5                              | 15,8            | 294,0               | 480,0               | 16        |
| 16175    | 7 x 0,75                              | 9,9             | 100,0               | 184,0               | 19      | 16280    | 16 G 1,5                              | 16,7            | 318,0               | 525,0               | 16        |
| 16229    | 8 G 0,75                              | 10,6            | 112,0               | 221,0               | 19      | 16281    | 18 G 1,5                              | 17,4            | 386,0               | 640,0               | 16        |
| 16230    | 10 G 0,75                             | 11,8            | 140,0               | 270,0               | 19      | 16282    | 20 G 1,5                              | 18,5            | 401,0               | 690,0               | 16        |
| 16231    | 12 G 0,75                             | 12,7            | 175,0               | 292,0               | 19      | 16317    | 21 G 1,5                              | 18,5            | 447,0               | 720,0               | 16        |
| 16232    | 14 G 0,75                             | 13,3            | 190,0               | 315,0               | 19      | 16283    | 24 G 1,5                              | 20,4            | 487,0               | 770,0               | 16        |
| 16233    | 16 G 0,75                             | 14,1            | 204,0               | 335,0               | 19      | 16284    | 25 G 1,5                              | 20,8            | 531,0               | 805,0               | 16        |
| 16234    | 18 G 0,75                             | 14,9            | 240,0               | 358,0               | 19      | 16285    | 28 G 1,5                              | 21,4            | 562,0               | 900,0               | 16        |
| 16235    | 20 G 0,75                             | 15,4            | 262,0               | 420,0               | 19      | 16286    | 30 G 1,5                              | 21,6            | 598,0               | 950,0               | 16        |
| 16316    | 21 G 0,75                             | 15,4            | 274,0               | 454,0               | 19      | 16287    | 35 G 1,5                              | 23,2            | 685,0               | 1100,0              | 16        |
| 16236    | 24 G 0,75                             | 17,3            | 291,0               | 480,0               | 19      | 16288    | 40 G 1,5                              | 24,5            | 759,0               | 1350,0              | 16        |
| 16237    | 25 G 0,75                             | 17,5            | 306,0               | 508,0               | 19      | 16456    | 41 G 1,5                              | 25,0            | 840,0               | 1381,0              | 16        |
| 16238    | 27 G 0,75                             | 17,7            | 326,0               | 535,0               | 19      | 16289    | 50 G 1,5                              | 27,4            | 997,0               | 1675,0              | 16        |
| 16239    | 30 G 0,75                             | 18,3            | 340,0               | 640,0               | 19      | 16290    | 61 G 1,5                              | 29,2            | 1120,0              | 1800,0              | 16        |
| 16240    | 32 G 0,75                             | 18,9            | 349,0               | 688,0               | 19      | 16291    | 80 G 1,5                              | 33,4            | 1360,0              | 2300,0              | 16        |
| 16241    | 36 G 0,75                             | 19,7            | 358,0               | 730,0               | 19      | 16292    | 100 G 1,5                             | 36,8            | 1690,0              | 2600,0              | 16        |
| 16242    | 40 G 0,75                             | 20,4            | 371,0               | 950,0               | 19      | 16293    | 2 x 2,5                               | 10,1            | 110,0               | 180,0               | 14        |
| 16454    | 41 G 0,75                             | 21,0            | 403,0               | 971,0               | 19      | 16294    | 3 G 2,5                               | 10,8            | 148,0               | 216,0               | 14        |
| 16243    | 50 G 0,75                             | 23,2            | 470,0               | 1100,0              | 19      | 16295    | 4 G 2,5                               | 11,5            | 169,0               | 267,0               | 14        |
| 16244    | 61 G 0,75                             | 24,6            | 550,0               | 1290,0              | 19      | 16296    | 5 G 2,5                               | 12,8            | 220,0               | 347,0               | 14        |
| 16245    | 80 G 0,75                             | 28,3            | 715,0               | 1510,0              | 19      | 16297    | 7 G 2,5                               | 14,0            | 284,0               | 407,0               | 14        |
| 16246    | 100 G 0,75                            | 31,1            | 910,0               | 1640,0              | 19      | 16298    | 10 G 2,5                              | 16,8            | 369,0               | 660,0               | 14        |
| 16248    | 2 x 1                                 | 8,0             | 54,0                | 97,0                | 18      | 16318    | 12 G 2,5                              | 17,9            | 470,0               | 722,0               | 14        |
| 16249    | 3 G 1                                 | 8,3             | 64,0                | 103,0               | 18      | 16299    | 2 x 4                                 | 11,6            | 124,0               | 302,0               | 12        |
| 16176    | 3 x 1                                 | 8,3             | 64,0                | 103,0               | 18      | 16300    | 3 G 4                                 | 12,5            | 178,0               | 340,0               | 12        |
| 16250    | 4 G 1                                 | 9,0             | 76,0                | 146,0               | 18      | 16301    | 4 G 4                                 | 13,7            | 234,0               | 410,0               | 12        |
| 16177    | 4 x 1                                 | 9,0             | 76,0                | 146,0               | 18      | 16302    | 5 G 4                                 | 14,9            | 284,0               | 502,0               | 12        |
| 16251    | 5 G 1                                 | 9,7             | 89,0                | 169,0               | 18      | 16303    | 7 G 4                                 | 16,2            | 321,0               | 638,0               | 12        |
| 16178    | 5 x 1                                 | 9,7             | 89,0                | 169,0               | 18      | 16304    | 2 x 6                                 | 13,7            | 176,0               | 350,0               | 10        |
| 16252    | 6 G 1                                 | 10,3            | 101,0               | 199,0               | 18      | 16305    | 3 G 6                                 | 14,4            | 245,0               | 450,0               | 10        |
| 16253    | 7 G 1                                 | 10,3            | 114,0               | 219,0               | 18      | 16306    | 4 G 6                                 | 15,7            | 316,0               | 559,0               | 10        |
| 16179    | 7 x 1                                 | 10,3            | 114,0               | 219,0               | 18      | 16307    | 5 G 6                                 | 17,3            | 442,0               | 702,0               | 10        |
| 16254    | 8 G 1                                 | 11,2            | 130,0               | 270,0               | 18      | 16308    | 7 G 6                                 | 19,0            | 530,0               | 907,0               | 10        |
| 16255    | 10 G 1                                | 12,6            | 156,0               | 330,0               | 18      | 16309    | 2 x 10                                | 16,6            | 260,0               | 500,0               | 8         |
| 16256    | 12 G 1                                | 13,3            | 186,0               | 350,0               | 18      | 16310    | 3 G 10                                | 17,6            | 367,0               | 750,0               | 8         |
| 16257    | 14 G 1                                | 14,1            | 198,0               | 400,0               | 18      | 16311    | 4 G 10                                | 19,4            | 549,0               | 1020,0              | 8         |
| 16258    | 16 G 1                                | 14,8            | 214,0               | 422,0               | 18      | 16312    | 5 G 10                                | 21,3            | 604,0               | 1115,0              | 8         |
| 16259    | 18 G 1                                | 15,6            | 284,0               | 514,0               | 18      | 16313    | 7 G 10                                | 23,4            | 820,0               | 1500,0              | 8         |
| 16260    | 20 G 1                                | 16,4            | 325,0               | 545,0               | 18      | 16460    | 4 G 16                                | 23,4            | 807,0               | 1380,0              | 6         |
| 16261    | 24 G 1                                | 18,2            | 366,0               | 640,0               | 18      | 16314    | 5 G 16                                | 26,0            | 940,0               | 1553,0              | 6         |
| 16262    | 25 G 1                                | 18,5            | 387,0               | 689,0               | 18      | 16461    | 4 G 25                                | 28,3            | 1169,0              | 1890,0              | 4         |
| 16263    | 28 G 1                                | 19,1            | 421,0               | 710,0               | 18      | 16462    | 5 G 25                                | 31,5            | 1420,0              | 2270,0              | 4         |
| 16264    | 30 G 1                                | 19,2            | 457,0               | 762,0               | 18      | 16463    | 4 G 35                                | 32,9            | 1680,0              | 2390,0              | 2         |
| 16265    | 34 G 1                                | 20,9            | 500,0               | 910,0               | 18      | 16464    | 5 G 35                                | 36,9            | 2020,0              | 2885,0              | 2         |
| 16266    | 40 G 1                                | 21,5            | 536,0               | 1070,0              | 18      | 16465    | 4 G 50                                | 38,6            | 2370,0              | 3315,0              | 1         |
| 16455    | 41 G 1                                | 22,2            | 578,0               | 1092,0              | 18      | 16157    | 5 G 50                                | 43,5            | 2880,0              | 4150,0              | 1         |
| 16267    | 50 G 1                                | 24,8            | 681,0               | 1315,0              | 18      | 16466    | 4 G 70                                | 46,1            | 3257,0              | 4600,0              | 2/0       |
| 16268    | 61 G 1                                | 26,0            | 710,0               | 1370,0              | 18      | 16158    | 5 G 70                                | 50,5            | 4032,0              | 5750,0              | 2/0       |
| 16269    | 80 G 1                                | 30,0            | 940,0               | 1610,0              | 18      | 16467    | 4 G 95                                | 51,1            | 4060,0              | 6060,0              | 3/0       |
| 16270    | 100 G 1                               | 33,1            | 1180,0              | 1840,0              | 18      | 16159    | 5 G 95                                | 56,0            | 5244,0              | 7580,0              | 3/0       |
| 16271    | 2 x 1,5                               | 8,6             | 64,0                | 130,0               | 16      | 16468    | 4 G 120                               | 56,5            | 5231,0              | 7315,0              | 4/0       |
| 16272    | 3 G 1,5                               | 9,2             | 82,0                | 152,0               | 16      | 16160    | 5 G 120                               | 62,1            | 6624,0              | 9150,0              | 4/0       |
| 16180    | 3 x 1,5                               | 9,2             | 82,0                | 152,0               | 16      | 16167    | 4 G 150                               | 64,6            | 7760,0              | 9680,0              | 300 kcmil |
| 16273    | 4 G 1,5                               | 9,8             | 99,0                | 168,0               | 16      | 16168    | 5 G 150                               | 70,6            | 8496,0              | 10170,0             | 300 kcmil |

Dimensions and specifications may be changed without prior notice. (RA01)



# JZ-500 HMH

flexible control cable, halogen-free, extremely fire resistant<sup>1)</sup>, oil resistant<sup>1)</sup>, meter marking



## Technical data

- Halogen-free flexible control cable adapted to  
DIN VDE 0285-525-2-51 /  
DIN EN 50525-2-51 and  
DIN VDE 0285-525-3-11 /  
DIN EN 50525-3-11
- **Temperature range**  
flexing -15°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 12,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type T16 to  
DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293  
black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of halogen-free polymer compound type TM7 to  
DIN VDE 0207-363-8 / DIN EN 50363-8
- Outer Sheath colour: grey (RAL 7001)
- With meter marking
- **LS0H**= Low Smoke Zero Halogen

## Properties

- <sup>1)</sup> For the critical applications we advise for consultation
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3-24, BS 4066 part 3,  
DIN EN 60332-3-24, IEC 60332-3-24  
(previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2  
(equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2,  
DIN EN 60754-2, IEC 60754-2  
(previously DIN VDE 0482-267-2-2)
- Halogen-free acc. to  
DIN VDE 0482-754-1,  
DIN EN 60754-1, IEC 60754-1  
(previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2,  
IEC 61034-1+2, BS 7622 part 1+2

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Please note "cleanroom qualified" when ordering.
- Screened analogue type:  
**JZ-500 HMH-C**

## Application

Used as measuring, monitoring and control cables in tool machinery, conveyor belts, production lines, in plant, in air-conditioning, in foundries and steel mills. For fixed installation or flexible application, casual, not constantly recurring free movement without forced motion and without tensile stress, for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations and on plaster.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11201    | 2 x 0,5                                | 4,8             | 9,6                 | 43,0                | 20      |
| 11202    | 3 G 0,5                                | 5,1             | 14,4                | 50,0                | 20      |
| 11332    | 3 x 0,5                                | 5,1             | 14,4                | 50,0                | 20      |
| 11203    | 4 G 0,5                                | 5,6             | 19,0                | 60,0                | 20      |
| 11333    | 4 x 0,5                                | 5,5             | 19,0                | 60,0                | 20      |
| 11204    | 5 G 0,5                                | 6,2             | 24,0                | 71,0                | 20      |
| 11334    | 5 x 0,5                                | 6,2             | 24,0                | 71,0                | 20      |
| 11205    | 7 G 0,5                                | 6,7             | 33,6                | 84,0                | 20      |
| 11206    | 8 G 0,5                                | 7,4             | 38,0                | 101,0               | 20      |
| 11207    | 10 G 0,5                               | 8,3             | 48,0                | 121,0               | 20      |
| 11208    | 12 G 0,5                               | 8,7             | 58,0                | 142,0               | 20      |
| 11209    | 16 G 0,5                               | 10,0            | 76,0                | 183,0               | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11210    | 18 G 0,5                               | 10,7            | 86,0                | 204,0               | 20      |
| 11211    | 20 G 0,5                               | 11,3            | 96,0                | 227,0               | 20      |
| 11212    | 25 G 0,5                               | 12,6            | 120,0               | 283,0               | 20      |
| 11213    | 30 G 0,5                               | 13,5            | 144,0               | 324,0               | 20      |
| 11214    | 34 G 0,5                               | 14,3            | 163,0               | 367,0               | 20      |
| 11215    | 37 G 0,5                               | 14,5            | 178,0               | 381,0               | 20      |
| 11216    | 41 G 0,5                               | 15,8            | 197,0               | 417,0               | 20      |
| 11217    | 42 G 0,5                               | 15,8            | 202,0               | 454,0               | 20      |
| 11218    | 50 G 0,5                               | 17,5            | 240,0               | 519,0               | 20      |
| 11219    | 61 G 0,5                               | 18,5            | 293,0               | 635,0               | 20      |
| 11220    | 65 G 0,5                               | 19,4            | 312,0               | 694,0               | 20      |

Continuation ▶

# JZ-500 HMH

flexible control cable, halogen-free, extremely fire resistant, oil resistant<sup>1)</sup>, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|---------|
| 11221    | 2 x 0,75                               | 5,3             | 14,4                | 47,0                | 19      | 11277    | 2 x 2,5                                | 7,8             | 48,0                | 118,0               | 14      |
| 11222    | 3 G 0,75                               | 5,6             | 21,6                | 56,0                | 19      | 11278    | 3 G 2,5                                | 8,3             | 72,0                | 151,0               | 14      |
| 11335    | 3 x 0,75                               | 5,6             | 21,6                | 56,0                | 19      | 11279    | 4 G 2,5                                | 9,2             | 96,0                | 181,0               | 14      |
| 11223    | 4 G 0,75                               | 6,3             | 29,0                | 69,0                | 19      | 11280    | 5 G 2,5                                | 10,1            | 120,0               | 224,0               | 14      |
| 11336    | 4 x 0,75                               | 6,3             | 29,0                | 69,0                | 19      | 11281    | 7 G 2,5                                | 11,2            | 168,0               | 316,0               | 14      |
| 11224    | 5 G 0,75                               | 6,9             | 36,0                | 83,0                | 19      | 11282    | 8 G 2,5                                | 12,3            | 192,0               | 370,0               | 14      |
| 11337    | 5 x 0,75                               | 6,9             | 36,0                | 83,0                | 19      | 11283    | 10 G 2,5                               | 14,0            | 240,0               | 451,0               | 14      |
| 11225    | 7 G 0,75                               | 7,5             | 50,0                | 114,0               | 19      | 11284    | 12 G 2,5                               | 14,8            | 288,0               | 499,0               | 14      |
| 11338    | 7 x 0,75                               | 7,5             | 50,0                | 114,0               | 19      | 11285    | 16 G 2,5                               | 17,1            | 384,0               | 720,0               | 14      |
| 11226    | 8 G 0,75                               | 8,3             | 58,0                | 136,0               | 19      | 11286    | 18 G 2,5                               | 18,2            | 432,0               | 769,0               | 14      |
| 11227    | 10 G 0,75                              | 9,2             | 72,0                | 172,0               | 19      | 11287    | 20 G 2,5                               | 19,2            | 480,0               | 911,0               | 14      |
| 11228    | 12 G 0,75                              | 9,8             | 86,0                | 183,0               | 19      | 11288    | 25 G 2,5                               | 21,6            | 600,0               | 1047,0              | 14      |
| 11229    | 16 G 0,75                              | 11,4            | 115,0               | 241,0               | 19      | 11289    | 30 G 2,5                               | 23,0            | 720,0               | 1280,0              | 14      |
| 11230    | 18 G 0,75                              | 12,2            | 130,0               | 266,0               | 19      | 11290    | 2 x 4                                  | 9,3             | 77,0                | 199,0               | 12      |
| 11231    | 20 G 0,75                              | 12,7            | 144,0               | 291,0               | 19      | 11291    | 3 G 4                                  | 9,8             | 115,0               | 247,0               | 12      |
| 11232    | 25 G 0,75                              | 14,3            | 180,0               | 374,0               | 19      | 11292    | 4 G 4                                  | 10,9            | 154,0               | 299,0               | 12      |
| 11233    | 30 G 0,75                              | 15,3            | 216,0               | 450,0               | 19      | 11293    | 5 G 4                                  | 12,1            | 192,0               | 369,0               | 12      |
| 11234    | 34 G 0,75                              | 16,5            | 245,0               | 517,0               | 19      | 11294    | 7 G 4                                  | 13,2            | 269,0               | 463,0               | 12      |
| 11235    | 37 G 0,75                              | 16,7            | 260,0               | 541,0               | 19      | 11295    | 8 G 4                                  | 14,7            | 307,0               | 601,0               | 12      |
| 11236    | 41 G 0,75                              | 18,1            | 296,0               | 611,0               | 19      | 11296    | 10 G 4                                 | 17,5            | 384,0               | 698,0               | 12      |
| 11237    | 42 G 0,75                              | 18,1            | 302,0               | 621,0               | 19      | 11297    | 12 G 4                                 | 17,7            | 461,0               | 790,0               | 12      |
| 11238    | 50 G 0,75                              | 19,8            | 360,0               | 742,0               | 19      | 11298    | 16 G 4                                 | 20,3            | 614,0               | 1130,0              | 12      |
| 11239    | 61 G 0,75                              | 21,2            | 439,0               | 853,0               | 19      | 11299    | 18 G 4                                 | 21,6            | 691,0               | 1280,0              | 12      |
| 11240    | 65 G 0,75                              | 21,8            | 468,0               | 909,0               | 19      | 11300    | 2 x 6                                  | 11,0            | 115,0               | 266,0               | 10      |
| 11241    | 2 x 1                                  | 5,6             | 19,2                | 63,0                | 18      | 11301    | 3 G 6                                  | 11,9            | 173,0               | 360,0               | 10      |
| 11242    | 3 G 1                                  | 5,9             | 29,0                | 74,0                | 18      | 11302    | 4 G 6                                  | 13,0            | 230,0               | 429,0               | 10      |
| 11339    | 3 x 1                                  | 5,9             | 29,0                | 74,0                | 18      | 11303    | 5 G 6                                  | 14,5            | 288,0               | 529,0               | 10      |
| 11243    | 4 G 1                                  | 6,6             | 38,4                | 90,0                | 18      | 11304    | 7 G 6                                  | 16,2            | 403,0               | 631,0               | 10      |
| 11340    | 4 x 1                                  | 6,6             | 38,4                | 90,0                | 18      | 11305    | 2 x 10                                 | 13,8            | 192,0               | 440,0               | 8       |
| 11244    | 5 G 1                                  | 7,3             | 48,0                | 109,0               | 18      | 11306    | 3 G 10                                 | 14,9            | 288,0               | 550,0               | 8       |
| 11245    | 7 G 1                                  | 8,1             | 67,0                | 151,0               | 18      | 11307    | 4 G 10                                 | 16,5            | 384,0               | 708,0               | 8       |
| 11246    | 8 G 1                                  | 8,8             | 77,0                | 184,0               | 18      | 11308    | 5 G 10                                 | 18,3            | 480,0               | 862,0               | 8       |
| 11247    | 10 G 1                                 | 9,8             | 96,0                | 224,0               | 18      | 11309    | 7 G 10                                 | 20,2            | 672,0               | 1124,0              | 8       |
| 11248    | 12 G 1                                 | 10,4            | 115,0               | 243,0               | 18      | 11310    | 2 x 16                                 | 16,8            | 307,0               | 642,0               | 6       |
| 11249    | 16 G 1                                 | 12,3            | 154,0               | 314,0               | 18      | 11311    | 3 G 16                                 | 18,3            | 461,0               | 830,0               | 6       |
| 11250    | 18 G 1                                 | 12,9            | 173,0               | 361,0               | 18      | 11312    | 4 G 16                                 | 20,1            | 614,0               | 1060,0              | 6       |
| 11251    | 20 G 1                                 | 13,8            | 192,0               | 387,0               | 18      | 11313    | 5 G 16                                 | 22,6            | 768,0               | 1270,0              | 6       |
| 11252    | 25 G 1                                 | 15,4            | 240,0               | 496,0               | 18      | 11314    | 7 G 16                                 | 24,8            | 1075,0              | 1794,0              | 6       |
| 11253    | 34 G 1                                 | 17,7            | 326,0               | 670,0               | 18      | 11315    | 3 G 25                                 | 22,3            | 720,0               | 1190,0              | 4       |
| 11254    | 37 G 1                                 | 17,9            | 355,0               | 713,0               | 18      | 11316    | 4 G 25                                 | 25,0            | 960,0               | 1594,0              | 4       |
| 11255    | 41 G 1                                 | 19,5            | 394,0               | 784,0               | 18      | 11317    | 5 G 25                                 | 27,7            | 1200,0              | 2014,0              | 4       |
| 11256    | 42 G 1                                 | 19,5            | 403,0               | 824,0               | 18      | 11318    | 3 G 35                                 | 25,9            | 1008,0              | 1590,0              | 2       |
| 11257    | 50 G 1                                 | 21,3            | 480,0               | 952,0               | 18      | 11319    | 4 G 35                                 | 28,7            | 1344,0              | 2200,0              | 2       |
| 11258    | 61 G 1                                 | 22,5            | 586,0               | 1140,0              | 18      | 11320    | 5 G 35                                 | 31,9            | 1680,0              | 2693,0              | 2       |
| 11259    | 65 G 1                                 | 23,6            | 628,0               | 1201,0              | 18      | 11321    | 3 G 50                                 | 30,8            | 1440,0              | 2571,0              | 1       |
| 11260    | 2 x 1,5                                | 6,4             | 29,0                | 70,0                | 16      | 11322    | 4 G 50                                 | 34,1            | 1920,0              | 3087,0              | 1       |
| 11261    | 3 G 1,5                                | 6,8             | 43,0                | 94,0                | 16      | 11323    | 5 G 50                                 | 38,1            | 2400,0              | 3980,0              | 1       |
| 11341    | 3 x 1,5                                | 6,8             | 43,0                | 94,0                | 16      | 11324    | 3 G 70                                 | 36,4            | 2016,0              | 3207,0              | 2/0     |
| 11262    | 4 G 1,5                                | 7,4             | 58,0                | 112,0               | 16      | 11325    | 4 G 70                                 | 40,2            | 2688,0              | 4077,0              | 2/0     |
| 11263    | 5 G 1,5                                | 8,3             | 72,0                | 141,0               | 16      | 11326    | 5 G 70                                 | 44,7            | 3360,0              | 5501,0              | 2/0     |
| 11264    | 7 G 1,5                                | 9,2             | 101,0               | 191,0               | 16      | 11327    | 3 G 95                                 | 41,3            | 2736,0              | 4708,0              | 3/0     |
| 11265    | 8 G 1,5                                | 10,0            | 115,0               | 224,0               | 16      | 11328    | 4 G 95                                 | 46,0            | 3648,0              | 5590,0              | 3/0     |
| 11266    | 10 G 1,5                               | 10,9            | 144,0               | 282,0               | 16      | 11329    | 5 G 95                                 | 50,7            | 4560,0              | 6972,0              | 3/0     |
| 11267    | 12 G 1,5                               | 11,8            | 173,0               | 311,0               | 16      | 11330    | 3 G 120                                | 47,0            | 3456,0              | 5515,0              | 4/0     |
| 11268    | 16 G 1,5                               | 13,9            | 230,0               | 392,0               | 16      | 11331    | 4 G 120                                | 51,0            | 4608,0              | 7100,0              | 4/0     |
| 11269    | 18 G 1,5                               | 14,6            | 259,0               | 450,0               | 16      |          |  |                 |                     |                     |         |
| 11270    | 20 G 1,5                               | 15,6            | 288,0               | 497,0               | 16      |          |  |                 |                     |                     |         |
| 11271    | 25 G 1,5                               | 17,4            | 360,0               | 630,0               | 16      |          |  |                 |                     |                     |         |
| 11272    | 34 G 1,5                               | 20,2            | 490,0               | 842,0               | 16      |          |  |                 |                     |                     |         |
| 11273    | 37 G 1,5                               | 20,2            | 533,0               | 897,0               | 16      |          |  |                 |                     |                     |         |
| 11274    | 50 G 1,5                               | 24,2            | 720,0               | 1277,0              | 16      |          |  |                 |                     |                     |         |
| 11275    | 61 G 1,5                               | 25,8            | 878,0               | 1460,0              | 16      |          |  |                 |                     |                     |         |
| 11276    | 65 G 1,5                               | 26,8            | 936,0               | 1612,0              | 16      |          |  |                 |                     |                     |         |

Dimensions and specifications may be changed without prior notice. (RA03)

# JZ-500 HMH-C

flexible control cable, halogen-free, extremely fire resistant, oil resistant<sup>1)</sup>,  
Cu-screened, EMC-preferred type, meter marking



## Technical data

- Halogen-free core flexible control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range**  
flexing -15°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 12,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type T16 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free polymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour: grey (RAL 7001)
- With meter marking
- **LSOH**= Low Smoke Zero Halogen

## Properties

- <sup>1)</sup>We recommend you for critical applications a consultation
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

### JZ-500 HMH

## Application

Halogen-free, flame retardant control cables are used for instrumentation and control cables in tooling machinery, conveyor and transportation belts, production lines, in plant construction, air-conditioning systems as well as in iron and steel works. For fixed installation or for flexing applications, for casual, not constantly recurring free movement without forced motion and without tensile stress for medium mechanical loads. The cable is suitable for use in dry, damp and wet environments and on plaster. An interference-free transmission of signals and pulse is assured by the high degree of screening.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11656    | 2 x 0,5                                | 5,7             | 35,0                | 46,0                | 20      |
| 11657    | 3 G 0,5                                | 5,9             | 42,0                | 56,0                | 20      |
| 11342    | 3 x 0,5                                | 5,9             | 42,0                | 56,0                | 20      |
| 11658    | 4 G 0,5                                | 6,4             | 47,0                | 62,0                | 20      |
| 11343    | 4 x 0,5                                | 6,4             | 47,0                | 62,0                | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11659    | 5 G 0,5                                | 6,9             | 56,0                | 75,0                | 20      |
| 11660    | 7 G 0,5                                | 7,6             | 69,0                | 98,0                | 20      |
| 11663    | 12 G 0,5                               | 9,7             | 108,0               | 158,0               | 20      |
| 11665    | 18 G 0,5                               | 11,5            | 145,0               | 216,0               | 20      |
| 11667    | 25 G 0,5                               | 13,7            | 240,0               | 315,0               | 20      |

Continuation ▶

# JZ-500 HMH-C

flexible control cable, halogen-free, extremely fire resistant, oil resistant<sup>1)</sup>,  
Cu-screened, EMC-preferred type, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|-----------|
| 11678    | 2 x 0,75                               | 6,1             | 40,0                | 60,0                | 19      | 11766    | 2 x 4                                  | 10,0            | 120,0               | 184,0               | 12        |
| 11679    | 3 G 0,75                               | 6,3             | 52,0                | 68,0                | 19      | 11768    | 3 G 4                                  | 10,6            | 174,0               | 238,0               | 12        |
| 11344    | 3 x 0,75                               | 6,3             | 52,0                | 68,0                | 19      | 11769    | 4 G 4                                  | 11,6            | 230,0               | 305,0               | 12        |
| 11680    | 4 G 0,75                               | 6,8             | 60,0                | 78,0                | 19      | 11770    | 5 G 4                                  | 12,8            | 273,0               | 388,0               | 12        |
| 11345    | 4 x 0,75                               | 6,8             | 60,0                | 78,0                | 19      | 11771    | 7 G 4                                  | 14,2            | 316,0               | 504,0               | 12        |
| 11681    | 5 G 0,75                               | 7,4             | 71,0                | 95,0                | 19      | 11781    | 2 G 6                                  | 11,7            | 173,0               | 270,0               | 10        |
| 11346    | 5 x 0,75                               | 7,4             | 71,0                | 95,0                | 19      | 11782    | 3 G 6                                  | 12,5            | 240,0               | 328,0               | 10        |
| 11682    | 7 G 0,75                               | 8,2             | 91,0                | 130,0               | 19      | 11783    | 4 G 6                                  | 13,8            | 305,0               | 416,0               | 10        |
| 11347    | 7 x 0,75                               | 8,2             | 91,0                | 130,0               | 19      | 11784    | 5 G 6                                  | 15,4            | 439,0               | 510,0               | 10        |
| 11685    | 12 G 0,75                              | 10,5            | 142,0               | 203,0               | 19      | 11785    | 7 G 6                                  | 17,0            | 505,0               | 670,0               | 10        |
| 11687    | 18 G 0,75                              | 12,7            | 212,0               | 290,0               | 19      | 11786    | 2 x 10                                 | 14,5            | 255,0               | 420,0               | 8         |
| 11689    | 25 G 0,75                              | 15,0            | 281,0               | 413,0               | 19      | 11787    | 3 G 10                                 | 15,6            | 350,0               | 495,0               | 8         |
| 11700    | 2 x 1                                  | 6,4             | 50,0                | 66,0                | 18      | 11788    | 4 G 10                                 | 17,2            | 535,0               | 785,0               | 8         |
| 11701    | 3 G 1                                  | 6,7             | 60,0                | 80,0                | 18      | 11789    | 5 G 10                                 | 19,1            | 592,0               | 855,0               | 8         |
| 11348    | 3 x 1                                  | 6,7             | 60,0                | 80,0                | 18      | 11790    | 7 G 10                                 | 21,2            | 810,0               | 1308,0              | 8         |
| 11702    | 4 G 1                                  | 7,2             | 71,0                | 100,0               | 18      | 11793    | 4 G 16                                 | 20,3            | 740,0               | 882,0               | 6         |
| 11349    | 4 x 1                                  | 7,2             | 71,0                | 100,0               | 18      | 11794    | 5 G 16                                 | 22,2            | 895,0               | 1293,0              | 6         |
| 11703    | 5 G 1                                  | 8,0             | 88,0                | 130,0               | 18      | 11812    | 7 G 16                                 | 24,8            | 1282,0              | 2149,0              | 6         |
| 11704    | 7 G 1                                  | 8,7             | 111,0               | 160,0               | 18      | 11795    | 3 G 25                                 | 22,5            | 1070,0              | 1432,0              | 4         |
| 11707    | 12 G 1                                 | 11,4            | 184,0               | 260,0               | 18      | 11796    | 4 G 25                                 | 25,0            | 1140,0              | 1911,0              | 4         |
| 11709    | 18 G 1                                 | 13,6            | 260,0               | 382,0               | 18      | 11797    | 5 G 25                                 | 27,5            | 1380,0              | 2414,0              | 4         |
| 11711    | 25 G 1                                 | 16,2            | 349,0               | 540,0               | 18      | 11798    | 3 G 35                                 | 25,7            | 1240,0              | 1914,0              | 2         |
| 11722    | 2 x 1,5                                | 7,0             | 63,0                | 88,0                | 16      | 11799    | 4 G 35                                 | 28,5            | 1576,0              | 2542,0              | 2         |
| 11723    | 3 G 1,5                                | 7,4             | 80,0                | 100,0               | 16      | 11800    | 5 G 35                                 | 31,7            | 1930,0              | 3180,0              | 2         |
| 11350    | 3 x 1,5                                | 7,4             | 80,0                | 100,0               | 16      | 11801    | 3 G 50                                 | 30,8            | 1675,0              | 3080,0              | 1         |
| 11724    | 4 G 1,5                                | 8,1             | 97,0                | 125,0               | 16      | 11802    | 4 G 50                                 | 34,1            | 2155,0              | 3550,0              | 1         |
| 11725    | 5 G 1,5                                | 9,0             | 119,0               | 158,0               | 16      | 11803    | 5 G 50                                 | 38,1            | 2794,0              | 4753,0              | 1         |
| 11726    | 7 G 1,5                                | 9,8             | 147,0               | 210,0               | 16      | 11804    | 3 G 70                                 | 36,0            | 2288,0              | 3840,0              | 2/0       |
| 11729    | 12 G 1,5                               | 12,8            | 267,0               | 340,0               | 16      | 11805    | 4 G 70                                 | 40,0            | 3120,0              | 4939,0              | 2/0       |
| 11731    | 18 G 1,5                               | 15,6            | 374,0               | 480,0               | 16      | 11806    | 5 G 70                                 | 44,5            | 3705,0              | 6572,0              | 2/0       |
| 11733    | 25 G 1,5                               | 18,4            | 526,0               | 702,0               | 16      | 11807    | 3 G 95                                 | 41,1            | 3010,0              | 5651,0              | 3/0       |
| 11744    | 2 x 2,5                                | 8,4             | 96,0                | 132,0               | 14      | 11808    | 4 G 95                                 | 45,6            | 4043,0              | 6690,0              | 3/0       |
| 11745    | 3 G 2,5                                | 8,8             | 144,0               | 168,0               | 14      | 11809    | 5 G 95                                 | 50,7            | 5026,0              | 8370,0              | 3/0       |
| 11746    | 4 G 2,5                                | 9,8             | 148,0               | 195,0               | 14      | 11810    | 3 G 120                                | 45,2            | 3812,0              | 6342,0              | 4/0       |
| 11747    | 5 G 2,5                                | 10,8            | 181,0               | 222,0               | 14      | 11811    | 4 G 120                                | 50,1            | 5069,0              | 8453,0              | 4/0       |
| 11748    | 7 G 2,5                                | 11,9            | 255,0               | 345,0               | 14      | 11813    | 4 G 185                                | 63,0            | 8040,0              | 10800,0             | 350 kcmil |
| 11751    | 12 G 2,5                               | 15,8            | 441,0               | 572,0               | 14      |          |  |                 |                     |                     |           |

Dimensions and specifications may be changed without prior notice. (RA03)

# MEGAFLEX® 500

halogen-free, flame retardant, oil resistant, UV resistant, flexible, meter marking



## Technical data

- Halogen-free flexible control cable adapted to  
DIN VDE 0285-525-3-11 /  
DIN EN 50525-3-11,  
to UL Style 20939, UL Std.758
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage** 3000 V
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flexibility**  
Alternate bending test acc. to  
DIN VDE 0473-396 / DIN EN 50396

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen free  
special polymer
- Core identification to DIN VDE 0293  
black cores with continuous white  
numbering
- GN-YE conductor, 3 cores and above  
in the outer layer
- Cores stranded in layers with  
optimal lay length
- Outer sheath of halogen-free  
special polymer
- Sheath colour: grey (RAL 7001)
- With meter marking
- **LSOH**= Low Smoke Zero Halogen

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Also available as a 0,6/1 kV cable  
MEGAFLEX® 600
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:

### MEGAFLEX® 500-C

## Properties

- Highly flame retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Hydrolysis resistant
- Flexible, abrasion- and wear-resistant
- Ozone-resistant, recyclable
- The materials used during manufacturing  
are cadmium-free, contain no silicone  
and are free from substances harmful  
to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24,  
BS 4066 part 3, DIN EN 60332-3-24,  
IEC 60332-3-24 (previously DIN VDE 0472  
part 804 test method C)
- Self-extinguishing and flame retardant  
acc. to DIN VDE 0482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2  
(equivalent DIN VDE 0472 part 804  
test method B), CSA FT1
- Corrosiveness of combustion gases  
acc. to NF X 10-702
- Halogen-free acc. to  
DIN VDE 0482-754-1,  
DIN EN 60754-1, IEC 60754-1  
(previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482  
part 1034-1+2, DIN EN 61034-1+2,  
IEC 61034-1+2, BS 7622 part 1+2
- Oil resistant to DIN VDE 0473-811-404/  
DIN EN 60811-404
- Hydrolysis resistant to DIN EN 61234-1
- Ozone resistant to  
DIN VDE 0473-811-403/DIN EN 60811-403

## Application

For fixed installation or flexible application, with free movements without forcing which do not constantly recur and without tensile stress, for high mechanical strain. As a measuring and control cable primarily in machinery and plant construction, in air-conditioning systems, at the warehouse and conveyor systems, in ship-building and in the renewable energies such as in the construction of wind power stations.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|----------|--|---------|--------------------|---------------------------|---------------------------|
| 13344    | 2 x 0,5                                      | 20      | 5,0                | 9,6                       | 43,0                      |
| 13345    | 3 G 0,5                                      | 20      | 5,3                | 14,4                      | 50,0                      |
| 13346    | 3 x 0,5                                      | 20      | 5,3                | 14,4                      | 50,0                      |
| 13347    | 4 G 0,5                                      | 20      | 5,7                | 19,0                      | 60,0                      |
| 13348    | 4 x 0,5                                      | 20      | 5,7                | 19,0                      | 60,0                      |
| 13349    | 5 G 0,5                                      | 20      | 6,2                | 24,0                      | 71,0                      |
| 13350    | 5 x 0,5                                      | 20      | 6,2                | 24,0                      | 71,0                      |
| 13351    | 7 G 0,5                                      | 20      | 7,4                | 33,6                      | 84,0                      |

| Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|----------|--|---------|--------------------|---------------------------|---------------------------|
| 13352    | 8 G 0,5                                      | 20      | 8,0                | 38,0                      | 101,0                     |
| 13353    | 10 G 0,5                                     | 20      | 8,8                | 48,0                      | 121,0                     |
| 13354    | 12 G 0,5                                     | 20      | 9,1                | 58,0                      | 142,0                     |
| 13355    | 16 G 0,5                                     | 20      | 10,0               | 76,0                      | 183,0                     |
| 13356    | 18 G 0,5                                     | 20      | 10,7               | 86,0                      | 204,0                     |
| 13357    | 20 G 0,5                                     | 20      | 11,2               | 96,0                      | 227,0                     |
| 13359    | 25 G 0,5                                     | 20      | 12,7               | 120,0                     | 283,0                     |
| 13360    | 30 G 0,5                                     | 20      | 13,5               | 144,0                     | 324,0                     |

Continuation ▶

# MEGAFLEX® 500

halogen-free, flame retardant, oil resistant, UV resistant, flexible, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 13361    | 34 G 0,5                               | 20      | 14,5            | 163,0               | 367,0               |
| 13362    | 37 G 0,5                               | 20      | 14,5            | 178,0               | 381,0               |
| 13363    | 41 G 0,5                               | 20      | 15,8            | 197,0               | 417,0               |
| 13364    | 42 G 0,5                               | 20      | 15,8            | 202,0               | 454,0               |
| 13365    | 50 G 0,5                               | 20      | 17,3            | 240,0               | 519,0               |
| 13366    | 61 G 0,5                               | 20      | 18,5            | 293,0               | 635,0               |
| 13367    | 65 G 0,5                               | 20      | 19,4            | 312,0               | 694,0               |
| 13368    | 2 x 0,75                               | 19      | 5,4             | 14,4                | 47,0                |
| 13369    | 3 G 0,75                               | 19      | 5,7             | 21,6                | 56,0                |
| 13370    | 3 x 0,75                               | 19      | 5,7             | 21,6                | 56,0                |
| 13371    | 4 G 0,75                               | 19      | 6,2             | 29,0                | 69,0                |
| 13372    | 4 x 0,75                               | 19      | 6,2             | 29,0                | 69,0                |
| 13373    | 5 G 0,75                               | 19      | 6,8             | 36,0                | 83,0                |
| 13374    | 5 x 0,75                               | 19      | 6,8             | 36,0                | 83,0                |
| 13375    | 7 G 0,75                               | 19      | 8,1             | 50,0                | 114,0               |
| 13376    | 7 x 0,75                               | 19      | 8,1             | 50,0                | 114,0               |
| 13377    | 8 G 0,75                               | 19      | 8,9             | 58,0                | 136,0               |
| 13378    | 10 G 0,75                              | 19      | 9,6             | 72,0                | 172,0               |
| 13379    | 12 G 0,75                              | 19      | 9,9             | 86,0                | 183,0               |
| 13380    | 16 G 0,75                              | 19      | 11,2            | 115,0               | 241,0               |
| 13381    | 18 G 0,75                              | 19      | 11,9            | 130,0               | 266,0               |
| 13382    | 20 G 0,75                              | 19      | 12,6            | 144,0               | 291,0               |
| 13383    | 25 G 0,75                              | 19      | 14,1            | 180,0               | 374,0               |
| 13384    | 30 G 0,75                              | 19      | 15,4            | 216,0               | 450,0               |
| 13385    | 34 G 0,75                              | 19      | 16,4            | 245,0               | 517,0               |
| 13386    | 37 G 0,75                              | 19      | 16,4            | 260,0               | 541,0               |
| 13387    | 41 G 0,75                              | 19      | 17,6            | 296,0               | 611,0               |
| 13388    | 42 G 0,75                              | 19      | 17,6            | 302,0               | 621,0               |
| 13389    | 50 G 0,75                              | 19      | 19,8            | 360,0               | 742,0               |
| 13390    | 61 G 0,75                              | 19      | 20,9            | 439,0               | 853,0               |
| 13392    | 65 G 0,75                              | 19      | 21,8            | 468,0               | 909,0               |
| 13393    | 2 x 1                                  | 18      | 5,7             | 19,2                | 63,0                |
| 13394    | 3 G 1                                  | 18      | 6,0             | 29,0                | 74,0                |
| 13395    | 3 x 1                                  | 18      | 6,0             | 29,0                | 74,0                |
| 13396    | 4 G 1                                  | 18      | 6,6             | 38,4                | 90,0                |
| 13397    | 4 x 1                                  | 18      | 6,6             | 38,4                | 90,0                |
| 13398    | 5 G 1                                  | 18      | 7,2             | 48,0                | 109,0               |
| 13399    | 7 G 1                                  | 18      | 8,6             | 67,0                | 151,0               |
| 13400    | 8 G 1                                  | 18      | 9,4             | 77,0                | 184,0               |
| 13401    | 10 G 1                                 | 18      | 10,4            | 96,0                | 224,0               |
| 13402    | 12 G 1                                 | 18      | 10,7            | 115,0               | 243,0               |
| 13403    | 16 G 1                                 | 18      | 12,0            | 154,0               | 314,0               |
| 13404    | 18 G 1                                 | 18      | 12,7            | 173,0               | 361,0               |
| 13405    | 20 G 1                                 | 18      | 13,5            | 192,0               | 387,0               |
| 13406    | 25 G 1                                 | 18      | 15,2            | 240,0               | 496,0               |
| 13407    | 34 G 1                                 | 18      | 17,4            | 326,0               | 670,0               |
| 13408    | 37 G 1                                 | 18      | 17,4            | 355,0               | 713,0               |
| 13409    | 41 G 1                                 | 18      | 18,9            | 394,0               | 784,0               |
| 13410    | 42 G 1                                 | 18      | 18,9            | 403,0               | 824,0               |
| 13411    | 50 G 1                                 | 18      | 21,0            | 480,0               | 952,0               |
| 13412    | 61 G 1                                 | 18      | 22,2            | 586,0               | 1140,0              |
| 13413    | 65 G 1                                 | 18      | 23,2            | 628,0               | 1201,0              |
| 13414    | 2 x 1,5                                | 16      | 6,3             | 29,0                | 70,0                |
| 13415    | 3 G 1,5                                | 16      | 6,6             | 43,0                | 94,0                |
| 13416    | 3 x 1,5                                | 16      | 6,6             | 43,0                | 94,0                |
| 13417    | 4 G 1,5                                | 16      | 7,2             | 58,0                | 112,0               |
| 13418    | 5 G 1,5                                | 16      | 7,9             | 72,0                | 141,0               |
| 13419    | 7 G 1,5                                | 16      | 9,5             | 101,0               | 191,0               |
| 13420    | 8 G 1,5                                | 16      | 10,4            | 115,0               | 224,0               |
| 13421    | 10 G 1,5                               | 16      | 11,3            | 144,0               | 282,0               |
| 13422    | 12 G 1,5                               | 16      | 11,7            | 173,0               | 311,0               |
| 13423    | 16 G 1,5                               | 16      | 13,3            | 230,0               | 392,0               |
| 13425    | 18 G 1,5                               | 16      | 14,0            | 259,0               | 450,0               |
| 13426    | 20 G 1,5                               | 16      | 14,9            | 288,0               | 497,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 13427    | 25 G 1,5                               | 16        | 16,8            | 360,0               | 630,0               |
| 13428    | 34 G 1,5                               | 16        | 19,4            | 490,0               | 842,0               |
| 13429    | 37 G 1,5                               | 16        | 19,4            | 533,0               | 897,0               |
| 13430    | 50 G 1,5                               | 16        | 23,4            | 720,0               | 1277,0              |
| 13431    | 61 G 1,5                               | 16        | 24,8            | 878,0               | 1460,0              |
| 13432    | 65 G 1,5                               | 16        | 25,8            | 936,0               | 1612,0              |
| 13433    | 2 x 2,5                                | 14        | 7,6             | 48,0                | 118,0               |
| 13434    | 3 G 2,5                                | 14        | 8,3             | 72,0                | 151,0               |
| 13435    | 4 G 2,5                                | 14        | 9,1             | 96,0                | 181,0               |
| 13436    | 5 G 2,5                                | 14        | 10,2            | 120,0               | 224,0               |
| 13437    | 7 G 2,5                                | 14        | 12,1            | 168,0               | 316,0               |
| 13438    | 8 G 2,5                                | 14        | 13,2            | 192,0               | 370,0               |
| 13439    | 10 G 2,5                               | 14        | 14,6            | 240,0               | 451,0               |
| 13440    | 12 G 2,5                               | 14        | 15,2            | 288,0               | 499,0               |
| 13441    | 16 G 2,5                               | 14        | 16,8            | 384,0               | 720,0               |
| 13442    | 18 G 2,5                               | 14        | 18,1            | 432,0               | 769,0               |
| 13443    | 20 G 2,5                               | 14        | 19,0            | 480,0               | 911,0               |
| 13444    | 25 G 2,5                               | 14        | 22,2            | 600,0               | 1047,0              |
| 13445    | 30 G 2,5                               | 14        | 22,9            | 720,0               | 1280,0              |
| 13446    | 2 x 4                                  | 12        | 9,2             | 77,0                | 199,0               |
| 13447    | 3 G 4                                  | 12        | 9,9             | 115,0               | 247,0               |
| 13448    | 4 G 4                                  | 12        | 11,0            | 154,0               | 299,0               |
| 13449    | 5 G 4                                  | 12        | 12,1            | 192,0               | 369,0               |
| 13450    | 7 G 4                                  | 12        | 13,3            | 269,0               | 463,0               |
| 13451    | 8 G 4                                  | 12        | 15,9            | 307,0               | 601,0               |
| 13452    | 10 G 4                                 | 12        | 17,3            | 384,0               | 698,0               |
| 13453    | 12 G 4                                 | 12        | 18,3            | 461,0               | 790,0               |
| 13454    | 16 G 4                                 | 12        | 20,2            | 614,0               | 1130,0              |
| 13455    | 18 G 4                                 | 12        | 21,8            | 691,0               | 1280,0              |
| 13456    | 2 x 6                                  | 10        | 10,8            | 115,0               | 266,0               |
| 13457    | 3 G 6                                  | 10        | 11,7            | 173,0               | 360,0               |
| 13458    | 4 G 6                                  | 10        | 13,0            | 230,0               | 429,0               |
| 13459    | 5 G 6                                  | 10        | 14,5            | 288,0               | 529,0               |
| 13460    | 7 G 6                                  | 10        | 16,0            | 403,0               | 631,0               |
| 13461    | 2 x 10                                 | 8         | 14,0            | 192,0               | 440,0               |
| 13462    | 3 G 10                                 | 8         | 15,0            | 288,0               | 550,0               |
| 13463    | 4 G 10                                 | 8         | 16,8            | 384,0               | 708,0               |
| 13464    | 5 G 10                                 | 8         | 18,7            | 480,0               | 862,0               |
| 13465    | 7 G 10                                 | 8         | 20,6            | 672,0               | 1124,0              |
| 13466    | 2 x 16                                 | 6         | 16,5            | 307,0               | 642,0               |
| 13467    | 3 G 16                                 | 6         | 17,6            | 461,0               | 830,0               |
| 13468    | 4 G 16                                 | 6         | 19,7            | 641,0               | 1060,0              |
| 13469    | 5 G 16                                 | 6         | 21,9            | 768,0               | 1270,0              |
| 13470    | 7 G 16                                 | 6         | 24,4            | 1075,0              | 1794,0              |
| 13471    | 3 G 25                                 | 4         | 22,5            | 720,0               | 1190,0              |
| 13472    | 4 G 25                                 | 4         | 25,2            | 960,0               | 1594,0              |
| 13473    | 5 G 25                                 | 4         | 27,9            | 1200,0              | 2014,0              |
| 13474    | 3 G 35                                 | 2         | 26,3            | 1008,0              | 1590,0              |
| 13475    | 4 G 35                                 | 2         | 28,5            | 1344,0              | 2200,0              |
| 13476    | 5 G 35                                 | 2         | 31,2            | 1680,0              | 2693,0              |
| 13477    | 3 G 50                                 | 1         | 30,2            | 1440,0              | 2571,0              |
| 13478    | 4 G 50                                 | 1         | 34,0            | 1920,0              | 3087,0              |
| 13479    | 5 G 50                                 | 1         | 37,8            | 2400,0              | 3980,0              |
| 13480    | 3 G 70                                 | 2/0       | 37,0            | 2016,0              | 3207,0              |
| 13481    | 4 G 70                                 | 2/0       | 41,5            | 2688,0              | 4077,0              |
| 13482    | 5 G 70                                 | 2/0       | 46,2            | 3360,0              | 5501,0              |
| 13483    | 3 G 95                                 | 3/0       | 41,4            | 2736,0              | 4708,0              |
| 13484    | 4 G 95                                 | 3/0       | 46,2            | 3648,0              | 5590,0              |
| 13485    | 5 G 95                                 | 3/0       | 51,5            | 4560,0              | 6972,0              |
| 13486    | 3 G 120                                | 4/0       | 45,7            | 3456,0              | 5515,0              |
| 13487    | 4 G 120                                | 4/0       | 51,2            | 4608,0              | 7100,0              |
| 13488    | 3 G 150                                | 300 kcmil | 52,8            | 4320,0              | 6279,0              |
| 13489    | 4 G 150                                | 300 kcmil | 58,3            | 5760,0              | 7781,0              |

Dimensions and specifications may be changed without prior notice. (RA03)



# MEGAFLEX® 500-C

halogen-free, flame retardant, oil resistant, UV resistant, flexible, screened,  
EMC-preferred types, meter marking



## Technical data

- Halogen-free flexible control cable adapted to  
DIN VDE 0285-525-3-11 /  
DIN EN 50525-3-11,  
to UL Style 20939, UL Std.758
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 4x cable Ø
- **Flexibility**  
Alternate bending test acc. to  
DIN VDE 0473-396 / DIN EN 50396

## Cable structure

- Bare copper, fine wire conductor, to  
DIN VDE 0295 cl.5, BS 6360 cl.5 and  
IEC 60228 cl.5
- Core insulation of halogen-free  
special polymer
- Core identification to DIN VDE 0293  
black cores with continuous white  
numbering
- GN-YE conductor, 3 cores and above  
in the outer layer
- Cores stranded in layers with  
optimal lay length
- Separating foil
- Tinned copper braided screen,  
approx. 85% coverage
- Outer sheath of halogen-free  
special polymer
- Sheath colour: grey (RAL 7001)
- With meter marking
- **LSOH**= Low Smoke Zero Halogen

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**MEGAFLEX® 500**

## Properties

- Halogen-free
- Highly flame retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Flexible, abrasion and wear resistant
- Ozone-resistant
- Recycleable
- The materials used during manufacturing  
are cadmium-free, contain no silicone  
and are free from substances harmful  
to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24,  
BS 4066 part 3, DIN EN 60332-3-24,  
IEC 60332-3-24 (previously DIN VDE 0472  
part 804 test method C)
- Self-extinguishing and flame retardant  
acc. to DIN VDE 0482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2  
(equivalent DIN VDE 0472 part 804  
test method B), CSA FT1
- Corrosiveness of combustion gases acc. to  
NF X 10-702
- Halogen-free acc. to  
DIN VDE 0482-754-1,  
DIN EN 60754-1, IEC 60754-1  
(previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482  
part 1034-1+2, DIN EN 61034-1+2,  
IEC 61034-1+2, BS 7622 part 1+2
- Oil resistant to DIN VDE 0473-811-404 /  
DIN EN 60811-404
- Hydrolysis resistant to DIN EN 61234-1
- Ozone resistant to DIN VDE 0473-811-403/  
DIN EN 60811-403

## Application

For fixed installation or flexible application that does not permanently recurring free movement without forced motion and without tensile stress, for high mechanical strain. As a measuring and control cable e. g. in machine and plant engineering, air conditioning in the warehouse and materials handling, shipbuilding and in the newable energies such as wind power stations.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|----------|--|---------|--------------------|---------------------------|---------------------------|
| 13500    | 2 x 0,5                                      | 20      | 5,7                | 35,0                      | 46,0                      |
| 13501    | 3 G 0,5                                      | 20      | 6,0                | 42,0                      | 56,0                      |
| 13502    | 3 x 0,5                                      | 20      | 6,0                | 42,0                      | 56,0                      |
| 13503    | 4 G 0,5                                      | 20      | 6,5                | 47,0                      | 62,0                      |
| 13504    | 4 x 0,5                                      | 20      | 6,5                | 47,0                      | 62,0                      |
| 13505    | 5 G 0,5                                      | 20      | 7,0                | 56,0                      | 75,0                      |
| 13506    | 5 x 0,5                                      | 20      | 7,0                | 56,0                      | 75,0                      |
| 13507    | 7 G 0,5                                      | 20      | 7,9                | 69,0                      | 98,0                      |

| Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|----------|--|---------|--------------------|---------------------------|---------------------------|
| 13508    | 8 G 0,5                                      | 20      | 8,5                | 80,0                      | 116,0                     |
| 13509    | 10 G 0,5                                     | 20      | 9,3                | 94,0                      | 135,0                     |
| 13510    | 12 G 0,5                                     | 20      | 9,6                | 108,0                     | 158,0                     |
| 13511    | 16 G 0,5                                     | 20      | 10,7               | 129,0                     | 210,0                     |
| 13512    | 18 G 0,5                                     | 20      | 11,2               | 145,0                     | 216,0                     |
| 13514    | 20 G 0,5                                     | 20      | 11,9               | 172,0                     | 240,0                     |
| 13515    | 25 G 0,5                                     | 20      | 13,4               | 240,0                     | 315,0                     |

Continuation ▶

# MEGAFLEX® 500-C

halogen-free, flame retardant, oil resistant, UV resistant, flexible, screened,  
EMC-preferred types, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 13516    | 2 x 0,75                               | 19      | 6,1             | 40,0                | 60,0                |
| 13517    | 3 G 0,75                               | 19      | 6,4             | 52,0                | 68,0                |
| 13518    | 3 x 0,75                               | 19      | 6,4             | 52,0                | 68,0                |
| 13519    | 4 G 0,75                               | 19      | 6,9             | 60,0                | 78,0                |
| 13520    | 4 x 0,75                               | 19      | 6,9             | 60,0                | 78,0                |
| 13521    | 5 G 0,75                               | 19      | 7,4             | 71,0                | 95,0                |
| 13522    | 5 x 0,75                               | 19      | 7,4             | 71,0                | 95,0                |
| 13523    | 7 G 0,75                               | 19      | 8,6             | 91,0                | 130,0               |
| 13524    | 7 x 0,75                               | 19      | 8,6             | 91,0                | 130,0               |
| 13525    | 8 G 0,75                               | 19      | 9,4             | 110,0               | 145,0               |
| 13526    | 10 G 0,75                              | 19      | 10,2            | 137,0               | 180,0               |
| 13527    | 12 G 0,75                              | 19      | 10,4            | 142,0               | 203,0               |
| 13528    | 16 G 0,75                              | 19      | 11,6            | 200,0               | 275,0               |
| 13529    | 18 G 0,75                              | 19      | 12,4            | 212,0               | 290,0               |
| 13530    | 20 G 0,75                              | 19      | 12,9            | 238,0               | 320,0               |
| 13531    | 25 G 0,75                              | 19      | 14,8            | 281,0               | 413,0               |
| 13532    | 2 x 1                                  | 18      | 6,4             | 50,0                | 66,0                |
| 13533    | 3 G 1                                  | 18      | 6,7             | 60,0                | 80,0                |
| 13534    | 3 x 1                                  | 18      | 6,7             | 60,0                | 80,0                |
| 13535    | 4 G 1                                  | 18      | 7,3             | 71,0                | 100,0               |
| 13536    | 4 x 1                                  | 18      | 7,3             | 71,0                | 100,0               |
| 13537    | 5 G 1                                  | 18      | 7,8             | 88,0                | 130,0               |
| 13538    | 7 G 1                                  | 18      | 9,1             | 111,0               | 160,0               |
| 13539    | 8 G 1                                  | 18      | 9,9             | 127,0               | 197,0               |
| 13540    | 10 G 1                                 | 18      | 10,8            | 150,0               | 232,0               |
| 13541    | 12 G 1                                 | 18      | 11,2            | 184,0               | 260,0               |
| 13542    | 16 G 1                                 | 18      | 12,3            | 209,0               | 346,0               |
| 13543    | 18 G 1                                 | 18      | 13,2            | 260,0               | 382,0               |
| 13544    | 20 G 1                                 | 18      | 13,8            | 317,0               | 440,0               |
| 13545    | 25 G 1                                 | 18      | 15,8            | 349,0               | 540,0               |
| 13546    | 2 x 1,5                                | 16      | 7,0             | 63,0                | 88,0                |
| 13547    | 3 G 1,5                                | 16      | 7,3             | 80,0                | 100,0               |
| 13548    | 3 x 1,5                                | 16      | 7,3             | 80,0                | 100,0               |
| 13549    | 4 G 1,5                                | 16      | 7,9             | 97,0                | 125,0               |
| 13550    | 5 G 1,5                                | 16      | 8,6             | 119,0               | 158,0               |
| 13552    | 7 G 1,5                                | 16      | 10,2            | 147,0               | 210,0               |
| 13554    | 8 G 1,5                                | 16      | 11,1            | 170,0               | 244,0               |
| 13556    | 10 G 1,5                               | 16      | 12,0            | 193,0               | 315,0               |
| 13557    | 12 G 1,5                               | 16      | 12,5            | 267,0               | 340,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 13558    | 16 G 1,5                               | 16        | 13,8            | 315,0               | 424,0               |
| 13559    | 18 G 1,5                               | 16        | 15,0            | 374,0               | 480,0               |
| 13560    | 20 G 1,5                               | 16        | 15,7            | 396,0               | 545,0               |
| 13561    | 25 G 1,5                               | 16        | 18,0            | 526,0               | 702,0               |
| 13562    | 2 x 2,5                                | 14        | 8,3             | 96,0                | 132,0               |
| 13563    | 3 G 2,5                                | 14        | 9,0             | 144,0               | 168,0               |
| 13565    | 4 G 2,5                                | 14        | 9,8             | 148,0               | 195,0               |
| 13566    | 5 G 2,5                                | 14        | 10,9            | 181,0               | 256,0               |
| 13567    | 7 G 2,5                                | 14        | 12,9            | 255,0               | 345,0               |
| 13568    | 8 G 2,5                                | 17        | 13,8            | 285,0               | 390,0               |
| 13569    | 10 G 2,5                               | 14        | 15,8            | 340,0               | 482,0               |
| 13570    | 12 G 2,5                               | 14        | 15,9            | 441,0               | 572,0               |
| 13571    | 2 x 4                                  | 12        | 9,8             | 120,0               | 220,0               |
| 13572    | 3 G 4                                  | 12        | 10,6            | 174,0               | 251,0               |
| 13573    | 4 G 4                                  | 12        | 11,5            | 230,0               | 305,0               |
| 13574    | 5 G 4                                  | 12        | 12,7            | 273,0               | 388,0               |
| 13575    | 7 G 4                                  | 12        | 13,9            | 316,0               | 504,0               |
| 13576    | 2 x 6                                  | 10        | 11,5            | 173,0               | 270,0               |
| 13577    | 3 G 6                                  | 10        | 12,4            | 240,0               | 351,0               |
| 13578    | 4 G 6                                  | 10        | 13,8            | 305,0               | 464,0               |
| 13579    | 5 G 6                                  | 10        | 15,7            | 439,0               | 546,0               |
| 13580    | 7 G 6                                  | 10        | 16,6            | 505,0               | 670,0               |
| 13581    | 2 x 10                                 | 8         | 14,9            | 255,0               | 461,0               |
| 13582    | 3 G 10                                 | 8         | 15,9            | 350,0               | 574,0               |
| 13583    | 4 G 10                                 | 8         | 17,8            | 535,0               | 785,0               |
| 13584    | 5 G 10                                 | 8         | 19,6            | 592,0               | 914,0               |
| 13585    | 7 G 10                                 | 8         | 21,6            | 810,0               | 1308,0              |
| 13586    | 2 x 16                                 | 6         | 17,3            | 422,0               | 670,0               |
| 13587    | 3 G 16                                 | 6         | 18,5            | 585,0               | 911,0               |
| 13588    | 4 G 16                                 | 6         | 20,8            | 740,0               | 1105,0              |
| 13589    | 5 G 16                                 | 6         | 22,9            | 895,0               | 1293,0              |
| 13590    | 7 G 16                                 | 6         | 25,0            | 1282,0              | 2149,0              |
| 13591    | 4 G 25                                 | 4         | 26,2            | 1140,0              | 1911,0              |
| 13592    | 4 G 35                                 | 2         | 30,4            | 1576,0              | 2542,0              |
| 13593    | 4 G 50                                 | 1         | 34,6            | 2155,0              | 3550,0              |
| 13594    | 4 G 70                                 | 2/0       | 41,3            | 3120,0              | 4939,0              |
| 13595    | 4 G 95                                 | 3/0       | 46,2            | 4043,0              | 6690,0              |
| 13596    | 4 G 120                                | 4/0       | 51,0            | 5069,0              | 8453,0              |
| 13597    | 4 G 150                                | 300 kcmil | 59,0            | 5792,0              | 9104,0              |

Dimensions and specifications may be changed without prior notice. (RA03)

# JZ-600

flexible, number coded, 0,6/1 kV, meter marking



## Technical data

- Special PVC control cable adapted to DIN VDE 0262 and DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation wall thickness for 1 kV
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293  
black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:

### JZ-600-Y-CY

## Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burria (suitable from an outer diameter of 18,0 mm for direct burial) or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 10550    | 2 x 0,5                                | 6,2             | 9,6                 | 56,0                | 20      |
| 10551    | 3 G 0,5                                | 6,5             | 14,0                | 68,0                | 20      |
| 10552    | 3 x 0,5                                | 6,5             | 14,0                | 68,0                | 20      |
| 10553    | 4 G 0,5                                | 7,1             | 19,0                | 100,0               | 20      |
| 10554    | 4 x 0,5                                | 7,1             | 19,0                | 100,0               | 20      |
| 10555    | 5 G 0,5                                | 7,9             | 24,0                | 117,0               | 20      |
| 10556    | 5 x 0,5                                | 7,9             | 24,0                | 117,0               | 20      |
| 10557    | 6 G 0,5                                | 8,5             | 29,0                | 126,0               | 20      |
| 10558    | 7 G 0,5                                | 8,5             | 34,0                | 138,0               | 20      |
| 10559    | 7 x 0,5                                | 8,5             | 34,0                | 138,0               | 20      |
| 10560    | 8 G 0,5                                | 9,5             | 38,0                | 150,0               | 20      |
| 10561    | 8 x 0,5                                | 9,5             | 38,0                | 150,0               | 20      |
| 10562    | 10 G 0,5                               | 10,8            | 48,0                | 176,0               | 20      |
| 10563    | 12 G 0,5                               | 11,3            | 58,0                | 200,0               | 20      |
| 10564    | 12 x 0,5                               | 11,3            | 58,0                | 200,0               | 20      |
| 10565    | 14 G 0,5                               | 12,1            | 67,0                | 230,0               | 20      |
| 10566    | 16 G 0,5                               | 12,7            | 76,0                | 250,0               | 20      |
| 10567    | 18 G 0,5                               | 13,5            | 86,0                | 276,0               | 20      |
| 10568    | 20 G 0,5                               | 14,2            | 96,0                | 293,0               | 20      |
| 10569    | 21 G 0,5                               | 14,2            | 96,0                | 305,0               | 20      |
| 10570    | 25 G 0,5                               | 15,8            | 120,0               | 335,0               | 20      |
| 10571    | 30 G 0,5                               | 16,9            | 144,0               | 348,0               | 20      |
| 10572    | 32 G 0,5                               | 18,5            | 154,0               | 355,0               | 20      |
| 10573    | 34 G 0,5                               | 18,7            | 163,0               | 520,0               | 20      |
| 10574    | 40 G 0,5                               | 20,1            | 192,0               | 590,0               | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 10575    | 42 G 0,5                               | 20,1            | 202,0               | 595,0               | 20      |
| 10576    | 50 G 0,5                               | 21,7            | 240,0               | 715,0               | 20      |
| 10577    | 52 G 0,5                               | 21,7            | 252,0               | 740,0               | 20      |
| 10578    | 61 G 0,5                               | 23,1            | 293,0               | 840,0               | 20      |
| 10579    | 65 G 0,5                               | 24,6            | 312,0               | 880,0               | 20      |
| 10580    | 80 G 0,5                               | 26,7            | 384,0               | 960,0               | 20      |
| 10581    | 100 G 0,5                              | 29,6            | 480,0               | 1050,0              | 20      |
| 10582    | 2 x 0,75                               | 6,7             | 14,0                | 66,0                | 19      |
| 10583    | 3 G 0,75                               | 7,1             | 22,0                | 74,0                | 19      |
| 10584    | 3 x 0,75                               | 7,1             | 22,0                | 74,0                | 19      |
| 10585    | 4 G 0,75                               | 7,7             | 29,0                | 126,0               | 19      |
| 10586    | 4 x 0,75                               | 7,7             | 29,0                | 126,0               | 19      |
| 10587    | 5 G 0,75                               | 8,5             | 36,0                | 140,0               | 19      |
| 10588    | 5 x 0,75                               | 8,5             | 36,0                | 140,0               | 19      |
| 10589    | 6 G 0,75                               | 9,5             | 43,0                | 170,0               | 19      |
| 10590    | 6 x 0,75                               | 9,5             | 43,0                | 170,0               | 19      |
| 10591    | 7 G 0,75                               | 9,5             | 50,0                | 190,0               | 19      |
| 10592    | 7 x 0,75                               | 9,5             | 50,0                | 190,0               | 19      |
| 10593    | 8 G 0,75                               | 10,5            | 58,0                | 212,0               | 19      |
| 10594    | 8 x 0,75                               | 10,5            | 58,0                | 212,0               | 19      |
| 10595    | 9 G 0,75                               | 11,8            | 65,0                | 227,0               | 19      |
| 10596    | 10 G 0,75                              | 12,0            | 72,0                | 238,0               | 19      |
| 10597    | 12 G 0,75                              | 12,6            | 86,0                | 257,0               | 19      |
| 10598    | 12 x 0,75                              | 12,6            | 86,0                | 257,0               | 19      |
| 10599    | 14 G 0,75                              | 13,2            | 101,0               | 286,0               | 19      |

Continuation ▶

# JZ-600

flexible, number coded, 0,6/1 kV, meter marking



| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 10600    | 15 G 0,75                             | 14,0            | 108,0               | 319,0               | 19      |
| 10601    | 18 G 0,75                             | 14,8            | 130,0               | 362,0               | 19      |
| 10602    | 20 G 0,75                             | 15,7            | 144,0               | 394,0               | 19      |
| 10603    | 21 G 0,75                             | 15,7            | 151,0               | 422,0               | 19      |
| 10604    | 25 G 0,75                             | 17,5            | 180,0               | 486,0               | 19      |
| 10605    | 32 G 0,75                             | 19,3            | 230,0               | 595,0               | 19      |
| 10606    | 34 G 0,75                             | 20,3            | 245,0               | 638,0               | 19      |
| 10607    | 37 G 0,75                             | 20,3            | 260,0               | 696,0               | 19      |
| 10608    | 40 G 0,75                             | 21,8            | 288,0               | 726,0               | 19      |
| 10609    | 41 G 0,75                             | 22,0            | 296,0               | 750,0               | 19      |
| 10610    | 42 G 0,75                             | 22,0            | 302,0               | 770,0               | 19      |
| 10611    | 50 G 0,75                             | 24,2            | 360,0               | 895,0               | 19      |
| 10612    | 61 G 0,75                             | 25,8            | 439,0               | 1070,0              | 19      |
| 10613    | 65 G 0,75                             | 27,4            | 468,0               | 1110,0              | 19      |
| 10614    | 80 G 0,75                             | 29,5            | 576,0               | 1500,0              | 19      |
| 10615    | 100 G 0,75                            | 32,7            | 720,0               | 1889,0              | 19      |
| 10616    | 2 x 1                                 | 7,0             | 19,2                | 80,0                | 18      |
| 10617    | 3 G 1                                 | 7,4             | 29,0                | 96,0                | 18      |
| 10618    | 3 x 1                                 | 7,4             | 29,0                | 96,0                | 18      |
| 10619    | 4 G 1                                 | 8,3             | 38,0                | 100,0               | 18      |
| 10620    | 4 x 1                                 | 8,3             | 38,0                | 100,0               | 18      |
| 10621    | 5 G 1                                 | 9,2             | 48,0                | 130,0               | 18      |
| 10622    | 5 x 1                                 | 9,2             | 48,0                | 130,0               | 18      |
| 10623    | 6 G 1                                 | 9,9             | 58,0                | 150,0               | 18      |
| 10624    | 7 G 1                                 | 9,9             | 67,0                | 170,0               | 18      |
| 10625    | 7 x 1                                 | 9,9             | 67,0                | 170,0               | 18      |
| 10626    | 8 G 1                                 | 11,0            | 77,0                | 230,0               | 18      |
| 10627    | 9 G 1                                 | 12,6            | 86,0                | 250,0               | 18      |
| 10628    | 10 G 1                                | 12,8            | 96,0                | 270,0               | 18      |
| 10629    | 10 x 1                                | 12,8            | 96,0                | 270,0               | 18      |
| 10630    | 12 G 1                                | 13,2            | 115,0               | 290,0               | 18      |
| 10631    | 12 x 1                                | 13,2            | 115,0               | 290,0               | 18      |
| 10632    | 14 G 1                                | 14,1            | 134,0               | 320,0               | 18      |
| 10633    | 16 G 1                                | 14,8            | 154,0               | 360,0               | 18      |
| 10634    | 18 G 1                                | 15,7            | 173,0               | 405,0               | 18      |
| 10635    | 18 x 1                                | 15,7            | 173,0               | 405,0               | 18      |
| 10636    | 20 G 1                                | 16,7            | 192,0               | 450,0               | 18      |
| 10637    | 20 x 1                                | 16,7            | 192,0               | 480,0               | 18      |
| 10638    | 21 G 1                                | 16,7            | 205,0               | 510,0               | 18      |
| 10639    | 24 G 1                                | 18,6            | 236,0               | 550,0               | 18      |
| 10640    | 25 G 1                                | 18,6            | 240,0               | 570,0               | 18      |
| 10641    | 25 x 1                                | 18,6            | 240,0               | 570,0               | 18      |
| 10642    | 26 G 1                                | 19,0            | 252,0               | 590,0               | 18      |
| 10643    | 30 x 1                                | 19,9            | 308,0               | 650,0               | 18      |
| 10644    | 34 G 1                                | 21,5            | 326,0               | 750,0               | 18      |
| 10645    | 36 G 1                                | 21,5            | 346,0               | 790,0               | 18      |
| 10646    | 40 G 1                                | 23,4            | 384,0               | 850,0               | 18      |
| 10647    | 40 x 1                                | 23,4            | 384,0               | 850,0               | 18      |
| 10648    | 41 G 1                                | 23,4            | 394,0               | 890,0               | 18      |
| 10649    | 42 G 1                                | 23,4            | 403,0               | 900,0               | 18      |
| 10650    | 50 G 1                                | 25,7            | 480,0               | 1100,0              | 18      |
| 10651    | 56 G 1                                | 26,4            | 538,0               | 1190,0              | 18      |
| 10652    | 61 G 1                                | 27,3            | 586,0               | 1266,0              | 18      |
| 10653    | 65 G 1                                | 29,0            | 628,0               | 1560,0              | 18      |
| 10654    | 80 G 1                                | 31,4            | 786,0               | 1810,0              | 18      |
| 10655    | 100 G 1                               | 34,8            | 960,0               | 1950,0              | 18      |
| 10656    | 2 x 1,5                               | 8,2             | 29,0                | 95,0                | 16      |
| 10657    | 3 G 1,5                               | 8,7             | 43,0                | 112,0               | 16      |
| 10658    | 3 x 1,5                               | 8,7             | 43,0                | 112,0               | 16      |
| 10659    | 4 G 1,5                               | 9,7             | 58,0                | 139,0               | 16      |
| 10660    | 4 x 1,5                               | 9,7             | 58,0                | 139,0               | 16      |
| 10661    | 5 G 1,5                               | 10,7            | 72,0                | 170,0               | 16      |
| 10662    | 5 x 1,5                               | 10,7            | 72,0                | 170,0               | 16      |
| 10663    | 6 G 1,5                               | 11,6            | 86,0                | 190,0               | 16      |
| 10664    | 7 G 1,5                               | 11,6            | 101,0               | 225,0               | 16      |
| 10665    | 7 x 1,5                               | 11,6            | 101,0               | 225,0               | 16      |
| 10666    | 8 G 1,5                               | 13,1            | 115,0               | 250,0               | 16      |
| 10667    | 9 G 1,5                               | 14,8            | 130,0               | 280,0               | 16      |
| 10668    | 10 G 1,5                              | 15,0            | 144,0               | 300,0               | 16      |
| 10669    | 11 G 1,5                              | 15,7            | 158,0               | 330,0               | 16      |
| 10670    | 12 G 1,5                              | 15,7            | 173,0               | 370,0               | 16      |
| 10671    | 12 x 1,5                              | 15,7            | 173,0               | 370,0               | 16      |
| 10672    | 14 G 1,5                              | 16,7            | 202,0               | 400,0               | 16      |
| 10673    | 16 G 1,5                              | 17,5            | 230,0               | 450,0               | 16      |
| 10674    | 18 G 1,5                              | 18,6            | 259,0               | 520,0               | 16      |
| 10675    | 19 G 1,5                              | 18,8            | 279,0               | 550,0               | 16      |
| 10676    | 20 G 1,5                              | 19,8            | 288,0               | 600,0               | 16      |
| 10677    | 21 G 1,5                              | 19,8            | 302,0               | 600,0               | 16      |
| 10678    | 25 G 1,5                              | 22,2            | 360,0               | 730,0               | 16      |
| 10679    | 32 G 1,5                              | 24,5            | 461,0               | 880,0               | 16      |
| 10680    | 34 G 1,5                              | 25,6            | 490,0               | 950,0               | 16      |
| 10681    | 40 G 1,5                              | 27,8            | 576,0               | 990,0               | 16      |

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|---------------------------------------|-----------------|---------------------|---------------------|-----------|
| 10682    | 42 G 1,5                              | 27,8            | 605,0               | 1120,0              | 16        |
| 10683    | 50 G 1,5                              | 30,5            | 720,0               | 1400,0              | 16        |
| 10684    | 56 G 1,5                              | 31,5            | 806,0               | 1530,0              | 16        |
| 10685    | 61 G 1,5                              | 32,6            | 878,0               | 1700,0              | 16        |
| 10686    | 65 G 1,5                              | 34,6            | 936,0               | 1900,0              | 16        |
| 10687    | 80 G 1,5                              | 37,4            | 1152,0              | 2300,0              | 16        |
| 10688    | 100 G 1,5                             | 41,6            | 1440,0              | 2700,0              | 16        |
| 10689    | 2 x 2,5                               | 9,6             | 48,0                | 160,0               | 14        |
| 10690    | 3 G 2,5                               | 10,2            | 72,0                | 175,0               | 14        |
| 10691    | 3 x 2,5                               | 10,2            | 72,0                | 175,0               | 14        |
| 10692    | 4 G 2,5                               | 11,3            | 96,0                | 203,0               | 14        |
| 10693    | 4 x 2,5                               | 11,3            | 96,0                | 203,0               | 14        |
| 10694    | 5 G 2,5                               | 12,5            | 120,0               | 251,0               | 14        |
| 10695    | 5 x 2,5                               | 12,5            | 120,0               | 251,0               | 14        |
| 10696    | 7 G 2,5                               | 13,8            | 168,0               | 330,0               | 14        |
| 10697    | 7 x 2,5                               | 13,8            | 168,0               | 330,0               | 14        |
| 10698    | 8 G 2,5                               | 15,3            | 192,0               | 400,0               | 14        |
| 10699    | 12 G 2,5                              | 18,6            | 288,0               | 553,0               | 14        |
| 10700    | 14 G 2,5                              | 19,7            | 336,0               | 630,0               | 14        |
| 10701    | 18 G 2,5                              | 22,0            | 432,0               | 795,0               | 14        |
| 10702    | 21 G 2,5                              | 23,4            | 504,0               | 930,0               | 14        |
| 10703    | 25 G 2,5                              | 26,2            | 600,0               | 1110,0              | 14        |
| 10704    | 34 G 2,5                              | 30,4            | 816,0               | 1450,0              | 14        |
| 10705    | 42 G 2,5                              | 33,2            | 1008,0              | 1750,0              | 14        |
| 10706    | 50 G 2,5                              | 36,3            | 1200,0              | 2100,0              | 14        |
| 10707    | 61 G 2,5                              | 38,8            | 1464,0              | 2540,0              | 14        |
| 10708    | 100 G 2,5                             | 49,6            | 2400,0              | 3850,0              | 14        |
| 10709    | 2 x 4                                 | 11,0            | 77,0                | 180,0               | 12        |
| 10710    | 3 G 4                                 | 11,7            | 115,0               | 230,0               | 12        |
| 10711    | 4 G 4                                 | 13,0            | 154,0               | 310,0               | 12        |
| 10712    | 5 G 4                                 | 14,3            | 192,0               | 410,0               | 12        |
| 10713    | 7 G 4                                 | 15,8            | 269,0               | 540,0               | 12        |
| 10714    | 8 G 4                                 | 17,5            | 307,0               | 710,0               | 12        |
| 10715    | 12 G 4                                | 21,5            | 461,0               | 860,0               | 12        |
| 10716    | 3 G 6                                 | 13,2            | 173,0               | 370,0               | 10        |
| 10717    | 4 G 6                                 | 14,6            | 230,0               | 430,0               | 10        |
| 10718    | 5 G 6                                 | 16,2            | 288,0               | 650,0               | 10        |
| 10719    | 7 G 6                                 | 18,6            | 403,0               | 860,0               | 10        |
| 10720    | 3 G 10                                | 16,8            | 288,0               | 660,0               | 8         |
| 10721    | 4 G 10                                | 18,6            | 384,0               | 790,0               | 8         |
| 10722    | 5 G 10                                | 20,5            | 480,0               | 960,0               | 8         |
| 10723    | 7 G 10                                | 22,8            | 672,0               | 1300,0              | 8         |
| 10724    | 3 G 16                                | 20,2            | 461,0               | 700,0               | 6         |
| 10725    | 4 G 16                                | 22,4            | 614,0               | 1100,0              | 6         |
| 10726    | 5 G 16                                | 25,0            | 768,0               | 1600,0              | 6         |
| 10727    | 7 G 16                                | 27,4            | 1075,0              | 1890,0              | 6         |
| 10728    | 3 G 25                                | 24,8            | 720,0               | 1450,0              | 4         |
| 10729    | 4 G 25                                | 27,4            | 960,0               | 1600,0              | 4         |
| 10730    | 5 G 25                                | 30,5            | 1200,0              | 2050,0              | 4         |
| 10731    | 7 G 25                                | 33,8            | 1680,0              | 2900,0              | 4         |
| 10732    | 3 G 35                                | 27,4            | 1008,0              | 1900,0              | 2         |
| 10733    | 4 G 35                                | 30,4            | 1344,0              | 2400,0              | 2         |
| 10734    | 5 G 35                                | 33,6            | 1680,0              | 2900,0              | 2         |
| 10735    | 3 G 50                                | 32,3            | 1440,0              | 2700,0              | 1         |
| 10736    | 4 G 50                                | 35,8            | 1920,0              | 3400,0              | 1         |
| 10742    | 5 G 50                                | 39,7            | 2400,0              | 4361,0              | 1         |
| 10737    | 3 G 70                                | 36,6            | 2016,0              | 3300,0              | 2/0       |
| 10738    | 4 G 70                                | 40,7            | 2688,0              | 4400,0              | 2/0       |
| 10743    | 5 G 70                                | 44,9            | 3360,0              | 5807,0              | 2/0       |
| 10739    | 3 G 95                                | 41,9            | 2736,0              | 5050,0              | 3/0       |
| 10740    | 4 G 95                                | 46,6            | 3648,0              | 6010,0              | 3/0       |
| 10744    | 5 G 95                                | 51,7            | 4560,0              | 7752,0              | 3/0       |
| 10741    | 4 G 120                               | 51,6            | 4608,0              | 7500,0              | 4/0       |
| 10745    | 4 G 150                               | 57,4            | 5760,0              | 8640,0              | 300 kcmil |
| 10746    | 4 G 185                               | 63,2            | 7104,0              | 10380,0             | 350 kcmil |

Dimensions and specifications may be changed without prior notice. (RA01)

# JZ-600-Y-CY

flexible, number coded, 0,6/1 kV, Cu screened meter marking, EMC-preferred type



## Technical data

- Adapted to DIN VDE 0262 and DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of Special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Inner sheath of PVC
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Further sizes are available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

## JZ-600

## Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burial (suitable from an outer diameter of 20 mm for direct burial) or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries. Interference-free transmission of signals and pulses is assured by the high degree of screening.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11464    | 2 x 0,5                                | 8,5             | 41,0                | 115,0               | 20      |
| 11465    | 3 G 0,5                                | 8,8             | 45,0                | 127,0               | 20      |
| 11466    | 4 G 0,5                                | 9,4             | 54,0                | 149,0               | 20      |
| 11467    | 5 G 0,5                                | 10,2            | 66,0                | 169,0               | 20      |
| 11469    | 7 G 0,5                                | 10,8            | 79,0                | 230,0               | 20      |
| 11472    | 12 G 0,5                               | 14,3            | 137,0               | 386,0               | 20      |
| 11475    | 18 G 0,5                               | 16,4            | 156,0               | 428,0               | 20      |
| 11478    | 25 G 0,5                               | 19,3            | 250,0               | 693,0               | 20      |
| 11489    | 2 x 0,75                               | 8,8             | 46,0                | 128,0               | 19      |
| 11490    | 3 G 0,75                               | 9,1             | 57,0                | 143,0               | 19      |
| 11491    | 4 G 0,75                               | 9,9             | 63,0                | 164,0               | 19      |
| 11492    | 5 G 0,75                               | 10,6            | 76,0                | 198,0               | 19      |
| 11494    | 7 G 0,75                               | 11,5            | 100,0               | 232,0               | 19      |
| 11498    | 12 G 0,75                              | 15,0            | 175,0               | 360,0               | 19      |
| 11501    | 18 G 0,75                              | 17,2            | 240,0               | 562,0               | 19      |
| 11504    | 25 G 0,75                              | 20,6            | 306,0               | 729,0               | 19      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 11516    | 2 x 1                                  | 9,2             | 54,0                | 146,0               | 18      |
| 11517    | 3 G 1                                  | 9,8             | 64,0                | 165,0               | 18      |
| 11518    | 4 G 1                                  | 10,4            | 76,0                | 204,0               | 18      |
| 11519    | 5 G 1                                  | 11,4            | 89,0                | 224,0               | 18      |
| 11521    | 7 G 1                                  | 12,3            | 114,0               | 379,0               | 18      |
| 11525    | 12 G 1                                 | 15,9            | 186,0               | 430,0               | 18      |
| 11528    | 18 G 1                                 | 18,2            | 284,0               | 636,0               | 18      |
| 11532    | 25 G 1                                 | 22,0            | 387,0               | 837,0               | 18      |
| 11546    | 2 x 1,5                                | 10,4            | 64,0                | 175,0               | 16      |
| 11547    | 3 G 1,5                                | 10,8            | 82,0                | 213,0               | 16      |
| 11548    | 4 G 1,5                                | 11,5            | 99,0                | 247,0               | 16      |
| 11549    | 5 G 1,5                                | 13,0            | 123,0               | 300,0               | 16      |
| 11551    | 7 G 1,5                                | 14,2            | 148,0               | 364,0               | 16      |
| 11556    | 12 G 1,5                               | 18,4            | 274,0               | 668,0               | 16      |
| 11559    | 18 G 1,5                               | 21,3            | 386,0               | 844,0               | 16      |
| 11563    | 25 G 1,5                               | 25,4            | 531,0               | 1356,0              | 16      |

Continuation ▶

# JZ-600-Y-CY

flexible, number coded, 0,6/1 kV, Cu screened meter marking, EMC-preferred type



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|-----------|
| 11574    | 2 x 2,5                                | 11,8            | 110,0               | 241,0               | 14      | 11608    | 3 G 16                                 | 23,4            | 653,0               | 1395,0              | 6         |
| 11575    | 3 G 2,5                                | 12,8            | 148,0               | 266,0               | 14      | 11609    | 4 G 16                                 | 25,7            | 807,0               | 1426,0              | 6         |
| 11576    | 4 G 2,5                                | 13,8            | 169,0               | 351,0               | 14      | 11610    | 5 G 16                                 | 28,5            | 940,0               | 2720,0              | 6         |
| 11577    | 5 G 2,5                                | 15,0            | 220,0               | 434,0               | 14      | 11611    | 7 G 16                                 | 31,4            | 1345,0              | 3213,0              | 6         |
| 11578    | 7 G 2,5                                | 16,3            | 284,0               | 517,0               | 14      | 11612    | 3 G 25                                 | 28,2            | 920,0               | 1810,0              | 4         |
| 11580    | 12 G 2,5                               | 21,6            | 470,0               | 862,0               | 14      | 11613    | 4 G 25                                 | 31,3            | 1169,0              | 2261,0              | 4         |
| 11582    | 18 G 2,5                               | 25,2            | 572,0               | 1236,0              | 14      | 11614    | 5 G 25                                 | 34,5            | 1420,0              | 2773,0              | 4         |
| 11584    | 25 G 2,5                               | 30,0            | 740,0               | 1659,0              | 14      | 11615    | 7 G 25                                 | 37,8            | 1921,0              | 4980,0              | 4         |
| 11590    | 2 x 4                                  | 13,6            | 124,0               | 306,0               | 12      | 11616    | 3 G 35                                 | 31,2            | 1250,0              | 2400,0              | 2         |
| 11591    | 3 G 4                                  | 14,6            | 178,0               | 444,0               | 12      | 11617    | 4 G 35                                 | 34,5            | 1680,0              | 2973,0              | 2         |
| 11592    | 4 G 4                                  | 15,7            | 234,0               | 489,0               | 12      | 11618    | 5 G 35                                 | 38,0            | 2020,0              | 3548,0              | 2         |
| 11593    | 5 G 4                                  | 17,2            | 284,0               | 623,0               | 12      | 11619    | 3 G 50                                 | 36,5            | 1887,0              | 3120,0              | 1         |
| 11594    | 7 G 4                                  | 18,9            | 321,0               | 775,0               | 12      | 11620    | 4 G 50                                 | 40,5            | 2370,0              | 3873,0              | 1         |
| 11596    | 12 G 4                                 | 24,5            | 581,0               | 1244,0              | 12      | 11621    | 5 G 50                                 | 45,2            | 2880,0              | 4634,0              | 1         |
| 11597    | 2 x 6                                  | 14,9            | 176,0               | 433,0               | 10      | 11622    | 3 G 70                                 | 41,8            | 2516,0              | 4220,0              | 2/0       |
| 11598    | 3 G 6                                  | 15,9            | 245,0               | 572,0               | 10      | 11623    | 4 G 70                                 | 46,0            | 3257,0              | 5546,0              | 2/0       |
| 11599    | 4 G 6                                  | 17,4            | 316,0               | 673,0               | 10      | 11624    | 5 G 70                                 | 50,4            | 4032,0              | 6410,0              | 2/0       |
| 11600    | 5 G 6                                  | 19,2            | 442,0               | 841,0               | 10      | 11625    | 3 G 95                                 | 46,8            | 3086,0              | 5240,0              | 3/0       |
| 11601    | 7 G 6                                  | 20,9            | 530,0               | 1078,0              | 10      | 11626    | 4 G 95                                 | 51,3            | 4060,0              | 6538,0              | 3/0       |
| 11602    | 2 x 10                                 | 18,6            | 260,0               | 640,0               | 8       | 11627    | 5 G 95                                 | 56,1            | 5244,0              | 7812,0              | 3/0       |
| 11603    | 3 G 10                                 | 19,8            | 367,0               | 820,0               | 8       | 11628    | 3 G 120                                | 51,8            | 4176,0              | 7210,0              | 4/0       |
| 11604    | 4 G 10                                 | 21,5            | 549,0               | 979,0               | 8       | 11629    | 4 G 120                                | 56,3            | 5231,0              | 7994,0              | 4/0       |
| 11605    | 5 G 10                                 | 23,5            | 604,0               | 1207,0              | 8       | 13137    | 4 G 150                                | 64,4            | 7760,0              | 10305,0             | 300 kcmil |
| 11606    | 7 G 10                                 | 25,6            | 820,0               | 2210,0              | 8       | 13147    | 4 G 185                                | 69,5            | 8104,0              | 12154,0             | 350 kcmil |
| 11607    | 2 x 16                                 | 21,8            | 491,0               | 1150,0              | 6       |          |  |                 |                     |                     |           |

Dimensions and specifications may be changed without prior notice. (RA01)



# JZ-600 HMH

flexible control cable, halogen-free, extremely fire resistant, oil resistant<sup>1)</sup>, 0,6/1 kV, meter marking



## Technical data

- Halogen-free, flexible control cable, adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range**  
flexing -15°C to +70°C  
fixed -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type T16 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of halogen-free polymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour: black (RAL 9005)
- With meter marking
- **LSOH**= Low Smoke Zero Halogen

## Properties

- <sup>1)</sup> For critical applications, we recommend that you consult
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:

### JZ-600 HMH-C

## Application

Halogen-free, flame retardant cables are used as measuring and control cable in machine tools, conveyor belts, production lines as well as in plant installations, in heating and air-conditioning systems and steel production works. For fixed installation or flexible application, directed without forcing by casual, constantly recurring free movements and without tensile stress, for medium mechanical strain. This cable is suitable for the application in dry, damp and wet environments, outdoors (fixed installation) and for laying on plaster.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12723    | 2 x 0,5                                | 6,3             | 9,6                 | 57,0                | 20      |
| 12724    | 3 G 0,5                                | 6,6             | 14,4                | 69,0                | 20      |
| 12725    | 3 x 0,5                                | 6,6             | 14,4                | 69,0                | 20      |
| 12726    | 4 G 0,5                                | 7,2             | 19,0                | 104,0               | 20      |
| 12727    | 4 x 0,5                                | 7,2             | 19,0                | 104,0               | 20      |
| 12728    | 5 G 0,5                                | 8,0             | 24,0                | 121,0               | 20      |
| 12729    | 5 x 0,5                                | 8,0             | 24,0                | 121,0               | 20      |
| 12730    | 7 G 0,5                                | 8,7             | 33,6                | 145,0               | 20      |
| 12731    | 10 G 0,5                               | 10,3            | 48,0                | 186,0               | 20      |
| 12732    | 12 G 0,5                               | 11,2            | 58,0                | 224,0               | 20      |
| 12733    | 18 G 0,5                               | 13,8            | 86,0                | 292,0               | 20      |
| 12734    | 25 G 0,5                               | 16,1            | 120,0               | 357,0               | 20      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12735    | 2 x 0,75                               | 6,6             | 14,4                | 68,0                | 19      |
| 12736    | 3 G 0,75                               | 6,9             | 21,6                | 77,0                | 19      |
| 12737    | 3 x 0,75                               | 6,9             | 21,6                | 77,0                | 19      |
| 12738    | 4 G 0,75                               | 7,5             | 29,0                | 136,0               | 19      |
| 12739    | 4 x 0,75                               | 7,5             | 29,0                | 136,0               | 19      |
| 12740    | 5 G 0,75                               | 8,4             | 36,0                | 152,0               | 19      |
| 12741    | 5 x 0,75                               | 8,4             | 36,0                | 152,0               | 19      |
| 12742    | 7 G 0,75                               | 9,3             | 50,0                | 208,0               | 19      |
| 12743    | 10 G 0,75                              | 11,4            | 72,0                | 250,0               | 19      |
| 12744    | 12 G 0,75                              | 12,2            | 86,0                | 271,0               | 19      |
| 12745    | 18 G 0,75                              | 14,5            | 130,0               | 387,0               | 19      |
| 12746    | 25 G 0,75                              | 17,2            | 180,0               | 498,0               | 19      |

Continuation ▶

# JZ-600 HMH

flexible control cable, halogen-free, extremely fire resistant,  
oil resistant<sup>1)</sup>, 0,6/1 kV, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12747    | 2 x 1                                  | 7,0             | 19,2                | 82,0                | 18      |
| 12748    | 3 G 1                                  | 7,4             | 29,0                | 99,0                | 18      |
| 12749    | 3 x 1                                  | 7,4             | 29,0                | 99,0                | 18      |
| 12750    | 4 G 1                                  | 8,2             | 38,4                | 140,0               | 18      |
| 12751    | 4 x 1                                  | 8,2             | 38,4                | 140,0               | 18      |
| 12752    | 5 G 1                                  | 9,2             | 48,0                | 160,0               | 18      |
| 12753    | 5 x 1                                  | 9,2             | 48,0                | 160,0               | 18      |
| 12754    | 7 G 1                                  | 9,9             | 67,0                | 217,0               | 18      |
| 12755    | 10 G 1                                 | 11,9            | 96,0                | 271,0               | 18      |
| 12756    | 12 G 1                                 | 12,8            | 115,0               | 301,0               | 18      |
| 12757    | 18 G 1                                 | 15,7            | 173,0               | 417,0               | 18      |
| 12758    | 25 G 1                                 | 18,6            | 240,0               | 576,0               | 18      |
| 12759    | 2 x 1,5                                | 8,2             | 29,0                | 97,0                | 16      |
| 12760    | 3 G 1,5                                | 8,6             | 43,0                | 119,0               | 16      |
| 12761    | 3 x 1,5                                | 8,6             | 43,0                | 119,0               | 16      |
| 12762    | 4 G 1,5                                | 9,6             | 58,0                | 148,0               | 16      |
| 12763    | 4 x 1,5                                | 9,6             | 58,0                | 148,0               | 16      |
| 12764    | 5 G 1,5                                | 10,7            | 72,0                | 172,0               | 16      |
| 12765    | 5 x 1,5                                | 10,7            | 72,0                | 172,0               | 16      |
| 12766    | 7 G 1,5                                | 11,6            | 101,0               | 243,0               | 16      |
| 12767    | 10 G 1,5                               | 15,2            | 144,0               | 311,0               | 16      |
| 12768    | 12 G 1,5                               | 15,5            | 173,0               | 392,0               | 16      |
| 12769    | 18 G 1,5                               | 18,6            | 259,0               | 529,0               | 16      |
| 12770    | 25 G 1,5                               | 22,5            | 360,0               | 741,0               | 16      |
| 12771    | 2 x 2,5                                | 9,6             | 48,0                | 160,0               | 14      |
| 12772    | 3 G 2,5                                | 10,1            | 72,0                | 177,0               | 14      |
| 12773    | 3 x 2,5                                | 10,1            | 72,0                | 177,0               | 14      |
| 12774    | 4 G 2,5                                | 11,2            | 96,0                | 209,0               | 14      |
| 12775    | 4 x 2,5                                | 11,2            | 96,0                | 209,0               | 14      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12776    | 5 G 2,5                                | 12,5            | 120,0               | 272,0               | 14      |
| 12777    | 5 x 2,5                                | 12,5            | 120,0               | 272,0               | 14      |
| 12778    | 7 G 2,5                                | 13,8            | 168,0               | 340,0               | 14      |
| 12779    | 10 G 2,5                               | 16,6            | 288,0               | 561,0               | 14      |
| 12780    | 12 G 2,5                               | 18,3            | 432,0               | 799,0               | 14      |
| 12781    | 18 G 2,5                               | 22,0            | 480,0               | 940,0               | 14      |
| 12782    | 25 G 2,5                               | 26,2            | 600,0               | 1121,0              | 14      |
| 12783    | 3 G 4                                  | 11,7            | 115,0               | 255,0               | 12      |
| 12784    | 4 G 4                                  | 12,9            | 154,0               | 319,0               | 12      |
| 12785    | 5 G 4                                  | 14,4            | 192,0               | 423,0               | 12      |
| 12786    | 3 G 6                                  | 13,1            | 173,0               | 380,0               | 10      |
| 12787    | 4 G 6                                  | 14,5            | 230,0               | 441,0               | 10      |
| 12788    | 5 G 6                                  | 16,2            | 288,0               | 657,0               | 10      |
| 12789    | 3 G 10                                 | 16,8            | 288,0               | 668,0               | 8       |
| 12790    | 4 G 10                                 | 18,5            | 384,0               | 796,0               | 8       |
| 12791    | 5 G 10                                 | 20,5            | 480,0               | 972,0               | 8       |
| 12792    | 3 G 16                                 | 20,2            | 461,0               | 832,0               | 6       |
| 12793    | 4 G 16                                 | 22,4            | 614,0               | 1122,0              | 6       |
| 12794    | 5 G 16                                 | 25,0            | 768,0               | 1604,0              | 6       |
| 12795    | 3 G 25                                 | 24,8            | 720,0               | 1457,0              | 4       |
| 12796    | 4 G 25                                 | 27,4            | 960,0               | 1611,0              | 4       |
| 12797    | 5 G 25                                 | 30,5            | 1200,0              | 2070,0              | 4       |
| 12798    | 3 G 35                                 | 27,4            | 1008,0              | 1914,0              | 2       |
| 12799    | 4 G 35                                 | 30,3            | 1344,0              | 2424,0              | 2       |
| 12800    | 5 G 35                                 | 33,6            | 1680,0              | 2970,0              | 2       |
| 12801    | 4 G 50                                 | 35,8            | 1920,0              | 3467,0              | 1       |
| 12802    | 4 G 70                                 | 40,8            | 2688,0              | 4491,0              | 2/0     |
| 12803    | 4 G 95                                 | 46,2            | 3648,0              | 6170,0              | 3/0     |
| 12804    | 4 G 120                                | 51,6            | 4608,0              | 7618,0              | 4/0     |

Dimensions and specifications may be changed without prior notice. (RA03)

# JZ-600 HMH-C

flexible control cable, halogen-free, extremely fire resistant, oil resistant<sup>1)</sup>, 0,6/1 kV, screened, EMC-preferred type, meter marking



## Technical data

- Halogen-free, flexible control cable, core construction adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range**  
flexing -15°C to +70°C  
fixed -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type T16 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Inner sheath
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free polymer compound type, TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour: black (RAL 9005)
- With meter marking
- **LSOH**= Low Smoke Zero Halogen

## Properties

- <sup>1)</sup> For critical applications recommend you request a consultation
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2

## Note

- G = with GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

### JZ-600 HMH

## Application

Halogen-free, flame retardant cables are used as measuring and control cable in machine tools, conveyor belts, production lines as well as in plant installations, in heating and air-conditioning systems and steel production works. For fixed installation or flexible application, directed without forcing by casual, constantly recurring free movements and without tensile stress, for medium mechanical strain. This cable is suitable for the application in dry, damp and wet environments, outdoors (fixed installation) and for laying on plaster. The dense screening assures interference-free transmission of all signals and impulses.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12850    | 3 G 0,5                                | 8,8             | 45,0                | 150,0               | 20      |
| 12851    | 4 G 0,5                                | 9,4             | 54,0                | 170,0               | 20      |
| 12852    | 5 G 0,5                                | 10,2            | 66,0                | 199,0               | 20      |
| 12853    | 7 G 0,5                                | 10,8            | 79,0                | 235,0               | 20      |
| 12854    | 12 G 0,5                               | 14,3            | 137,0               | 320,0               | 20      |
| 12855    | 18 G 0,5                               | 16,4            | 156,0               | 428,0               | 20      |
| 12856    | 25 G 0,5                               | 19,3            | 250,0               | 503,0               | 20      |
| 12857    | 3 G 0,75                               | 9,1             | 57,0                | 155,0               | 19      |
| 12858    | 4 G 0,75                               | 9,9             | 63,0                | 190,0               | 19      |
| 12859    | 5 G 0,75                               | 10,6            | 76,0                | 228,0               | 19      |
| 12860    | 7 G 0,75                               | 11,5            | 100,0               | 323,0               | 19      |
| 12861    | 12 G 0,75                              | 14,9            | 175,0               | 410,0               | 19      |
| 12862    | 18 G 0,75                              | 17,2            | 240,0               | 560,0               | 19      |
| 12863    | 25 G 0,75                              | 20,6            | 306,0               | 730,0               | 19      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12864    | 3 G 1                                  | 9,8             | 64,0                | 163,0               | 18      |
| 12865    | 4 G 1                                  | 10,4            | 76,0                | 200,0               | 18      |
| 12866    | 5 G 1                                  | 11,4            | 89,0                | 239,0               | 18      |
| 12867    | 7 G 1                                  | 12,3            | 114,0               | 289,0               | 18      |
| 12868    | 12 G 1                                 | 15,9            | 186,0               | 464,0               | 18      |
| 12869    | 18 G 1                                 | 18,2            | 284,0               | 628,0               | 18      |
| 12870    | 25 G 1                                 | 22,0            | 387,0               | 855,0               | 18      |
| 12871    | 3 G 1,5                                | 10,8            | 82,0                | 187,0               | 16      |
| 12872    | 4 G 1,5                                | 11,5            | 99,0                | 240,0               | 16      |
| 12873    | 5 G 1,5                                | 13,0            | 123,0               | 289,0               | 16      |
| 12874    | 7 G 1,5                                | 14,2            | 148,0               | 383,0               | 16      |
| 12875    | 12 G 1,5                               | 18,4            | 274,0               | 592,0               | 16      |
| 12876    | 18 G 1,5                               | 21,3            | 386,0               | 806,0               | 16      |
| 12877    | 25 G 1,5                               | 25,4            | 531,0               | 1241,0              | 16      |

Continuation ▶

# JZ-600 HMH-C

flexible control cable, halogen-free, extremely fire resistant,  
oil resistant<sup>1)</sup>, 0,6/1 kV, screened, EMC-preferred type, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12878    | 3 G 2,5                                | 12,8            | 148,0               | 298,0               | 14      |
| 12879    | 4 G 2,5                                | 13,8            | 169,0               | 345,0               | 14      |
| 12880    | 5 G 2,5                                | 15,0            | 220,0               | 427,0               | 14      |
| 12881    | 7 G 2,5                                | 16,3            | 284,0               | 561,0               | 14      |
| 12882    | 12 G 2,5                               | 21,6            | 470,0               | 857,0               | 14      |
| 12883    | 18 G 2,5                               | 25,2            | 572,0               | 1355,0              | 14      |
| 12884    | 25 G 2,5                               | 30,0            | 740,0               | 1995,0              | 14      |
| 12885    | 3 G 4                                  | 14,6            | 178,0               | 391,0               | 12      |
| 12886    | 4 G 4                                  | 15,7            | 234,0               | 527,0               | 12      |
| 12887    | 5 G 4                                  | 17,2            | 284,0               | 700,0               | 12      |
| 12888    | 3 G 6                                  | 15,9            | 245,0               | 629,0               | 10      |
| 12889    | 4 G 6                                  | 17,4            | 316,0               | 731,0               | 10      |
| 12890    | 5 G 6                                  | 19,2            | 442,0               | 1105,0              | 10      |
| 12891    | 3 G 10                                 | 19,8            | 367,0               | 1125,0              | 8       |
| 12892    | 4 G 10                                 | 21,5            | 549,0               | 1345,0              | 8       |
| 12893    | 5 G 10                                 | 23,5            | 604,0               | 1635,0              | 8       |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 12894    | 4 G 16                                 | 25,7            | 807,0               | 1395,0              | 6       |
| 12895    | 5 G 16                                 | 28,5            | 940,0               | 1870,0              | 6       |
| 12896    | 7 G 16                                 | 31,4            | 1345,0              | 2720,0              | 6       |
| 12897    | 3 G 25                                 | 28,2            | 920,0               | 2465,0              | 4       |
| 12898    | 4 G 25                                 | 31,3            | 1169,0              | 2750,0              | 4       |
| 12899    | 5 G 25                                 | 34,5            | 1420,0              | 3490,0              | 4       |
| 12900    | 3 G 35                                 | 31,2            | 1250,0              | 3230,0              | 2       |
| 12901    | 4 G 35                                 | 34,5            | 1680,0              | 4100,0              | 2       |
| 12902    | 5 G 35                                 | 38,0            | 2020,0              | 4950,0              | 2       |
| 12903    | 4 G 50                                 | 40,5            | 2370,0              | 5780,0              | 1       |
| 12904    | 4 G 70                                 | 46,0            | 3257,0              | 7480,0              | 2/0     |
| 12905    | 4 G 95                                 | 51,3            | 4060,0              | 10220,0             | 3/0     |
| 12906    | 4 G 120                                | 56,4            | 5231,0              | 13750,0             | 4/0     |
| 12907    | 4 G 150                                | 64,4            | 6794,0              | 15900,0             | 4/0     |

Dimensions and specifications may be changed without prior notice. (RA03)

# JZ-600 UL/CSA

flexible, number coded, 1000 V, meter marking



## Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation thickness for 1 kV and to UL Std.758 Style 21179
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: black (RAL 9005) or grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- UV resistant (building with black sheath)
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-600-Y-CY UL/CSA**

## Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burial- or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no.     | No. cores x cross-sec. | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|--------------|------------------------|---------|-----------------|---------------------|---------------------|
| <b>black</b> |                        |         |                 |                     |                     |
| 11815        | 2 x 0,5                | 20      | 6,4             | 9,6                 | 56,0                |
| 11816        | 3 G 0,5                | 20      | 6,8             | 14,4                | 68,0                |
| 11817        | 4 G 0,5                | 20      | 7,6             | 19,0                | 100,0               |
| 11818        | 5 G 0,5                | 20      | 8,2             | 24,0                | 117,0               |
| 11819        | 7 G 0,5                | 20      | 9,8             | 33,6                | 138,0               |
| 11820        | 12 G 0,5               | 20      | 12,2            | 58,0                | 200,0               |
| 11821        | 18 G 0,5               | 20      | 14,4            | 86,0                | 276,0               |
| 11822        | 25 G 0,5               | 20      | 17,2            | 120,0               | 335,0               |
| 11823        | 2 x 0,75               | 19      | 6,8             | 14,4                | 66,0                |
| 11824        | 3 G 0,75               | 19      | 7,2             | 21,6                | 74,0                |
| 11825        | 4 G 0,75               | 19      | 8,0             | 29,0                | 126,0               |
| 11826        | 5 G 0,75               | 19      | 8,8             | 36,0                | 140,0               |
| 11827        | 7 G 0,75               | 19      | 10,7            | 50,0                | 190,0               |
| 11828        | 12 G 0,75              | 19      | 13,1            | 86,0                | 257,0               |
| 11829        | 18 G 0,75              | 19      | 15,6            | 130,0               | 362,0               |
| 11830        | 25 G 0,75              | 19      | 18,9            | 180,0               | 486,0               |
| 11831        | 2 x 1                  | 18      | 7,4             | 19,2                | 80,0                |
| 11832        | 3 G 1                  | 18      | 8,0             | 29,2                | 96,0                |
| 11833        | 4 G 1                  | 18      | 8,8             | 38,4                | 100,0               |
| 11834        | 5 G 1                  | 18      | 9,8             | 48,0                | 130,0               |
| 11835        | 7 G 1                  | 18      | 11,7            | 67,0                | 170,0               |
| 11836        | 12 G 1                 | 18      | 14,5            | 115,0               | 290,0               |
| 11837        | 18 G 1                 | 18      | 17,3            | 173,0               | 405,0               |
| 11838        | 25 G 1                 | 18      | 21,1            | 240,0               | 570,0               |
| 11839        | 2 x 1,5                | 16      | 8,4             | 29,0                | 95,0                |
| 11840        | 3 G 1,5                | 16      | 9,1             | 43,0                | 112,0               |
| 11841        | 4 G 1,5                | 16      | 9,9             | 58,0                | 139,0               |
| 11842        | 5 G 1,5                | 16      | 11,0            | 72,0                | 170,0               |
| 11843        | 7 G 1,5                | 16      | 13,3            | 101,0               | 225,0               |
| 11844        | 12 G 1,5               | 16      | 16,6            | 173,0               | 370,0               |
| 11845        | 18 G 1,5               | 16      | 19,7            | 259,0               | 520,0               |
| 11846        | 25 G 1,5               | 16      | 23,9            | 360,0               | 730,0               |

| Part no.    | No. cores x cross-sec. | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|-------------|------------------------|---------|-----------------|---------------------|---------------------|
| <b>grey</b> |                        |         |                 |                     |                     |
| 11880       | 2 x 0,5                | 20      | 6,4             | 9,6                 | 56,0                |
| 11881       | 3 G 0,5                | 20      | 6,8             | 14,4                | 68,0                |
| 11882       | 4 G 0,5                | 20      | 7,6             | 19,0                | 100,0               |
| 11883       | 5 G 0,5                | 20      | 8,2             | 24,0                | 117,0               |
| 11884       | 7 G 0,5                | 20      | 9,8             | 33,6                | 138,0               |
| 11885       | 12 G 0,5               | 20      | 12,2            | 58,0                | 200,0               |
| 11886       | 18 G 0,5               | 20      | 14,4            | 86,0                | 276,0               |
| 11887       | 25 G 0,5               | 20      | 17,2            | 120,0               | 335,0               |
| 11888       | 2 x 0,75               | 19      | 6,8             | 14,4                | 66,0                |
| 11889       | 3 G 0,75               | 19      | 7,2             | 21,6                | 74,0                |
| 11890       | 4 G 0,75               | 19      | 8,0             | 29,0                | 126,0               |
| 11891       | 5 G 0,75               | 19      | 8,8             | 36,0                | 140,0               |
| 11892       | 7 G 0,75               | 19      | 10,7            | 50,0                | 190,0               |
| 11893       | 12 G 0,75              | 19      | 13,1            | 86,0                | 257,0               |
| 11894       | 18 G 0,75              | 19      | 15,6            | 130,0               | 362,0               |
| 11895       | 25 G 0,75              | 19      | 18,9            | 180,0               | 486,0               |
| 11896       | 2 x 1                  | 18      | 7,4             | 19,2                | 80,0                |
| 11897       | 3 G 1                  | 18      | 8,0             | 29,2                | 96,0                |
| 11898       | 4 G 1                  | 18      | 8,8             | 38,4                | 100,0               |
| 11899       | 5 G 1                  | 18      | 9,8             | 48,0                | 130,0               |
| 11900       | 7 G 1                  | 18      | 11,7            | 67,0                | 170,0               |
| 11901       | 12 G 1                 | 18      | 14,5            | 115,0               | 290,0               |
| 11902       | 18 G 1                 | 18      | 17,3            | 173,0               | 405,0               |
| 11903       | 25 G 1                 | 18      | 21,1            | 240,0               | 570,0               |
| 11904       | 2 x 1,5                | 16      | 8,4             | 29,0                | 95,0                |
| 11905       | 3 G 1,5                | 16      | 9,1             | 43,0                | 112,0               |
| 11906       | 4 G 1,5                | 16      | 9,9             | 58,0                | 139,0               |
| 11907       | 5 G 1,5                | 16      | 11,0            | 72,0                | 170,0               |
| 11908       | 7 G 1,5                | 16      | 13,3            | 101,0               | 225,0               |
| 11909       | 12 G 1,5               | 16      | 16,6            | 173,0               | 370,0               |
| 11910       | 18 G 1,5               | 16      | 19,7            | 259,0               | 520,0               |
| 11911       | 25 G 1,5               | 16      | 23,9            | 360,0               | 730,0               |

Continuation ▶

# JZ-600 UL/CSA

flexible, number coded, 1000 V, meter marking



| Part no.<br>Sheath<br>colour | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|------------------------------|--|---------|--------------------|---------------------------|---------------------------|
| <b>black</b>                 |  |         |                    |                           |                           |
| 11847                        | 2 x 2,5                                      | 14      | 9,4                | 48,0                      | 160,0                     |
| 11848                        | 3 G 2,5                                      | 14      | 9,9                | 72,0                      | 175,0                     |
| 11849                        | 4 G 2,5                                      | 14      | 11,1               | 96,0                      | 203,0                     |
| 11850                        | 5 G 2,5                                      | 14      | 12,4               | 120,0                     | 251,0                     |
| 11851                        | 7 G 2,5                                      | 14      | 15,0               | 168,0                     | 330,0                     |
| 11852                        | 12 G 2,5                                     | 14      | 18,4               | 288,0                     | 553,0                     |
| 11853                        | 18 G 2,5                                     | 14      | 22,0               | 432,0                     | 795,0                     |
| 11854                        | 25 G 2,5                                     | 14      | 26,9               | 600,0                     | 1110,0                    |
| 11855                        | 2 x 4  | 12      | 11,4               | 77,0                      | 180,0                     |
| 11856                        | 3 G 4  | 12      | 12,3               | 115,0                     | 230,0                     |
| 11857                        | 4 G 4  | 12      | 13,8               | 154,0                     | 310,0                     |
| 11858                        | 5 G 4  | 12      | 15,3               | 192,0                     | 410,0                     |
| 11859                        | 7 G 4  | 12      | 16,8               | 269,0                     | 540,0                     |
| 11860                        | 12 G 4                                       | 12      | 22,9               | 461,0                     | 860,0                     |
| 11861                        | 3 G 6  | 10      | 14,1               | 173,0                     | 370,0                     |
| 11862                        | 4 G 6  | 10      | 15,6               | 230,0                     | 430,0                     |
| 11863                        | 5 G 6  | 10      | 17,3               | 288,0                     | 650,0                     |
| 11864                        | 7 G 6  | 10      | 19,3               | 403,0                     | 860,0                     |
| 11865                        | 3 G 10                                       | 8       | 16,5               | 288,0                     | 660,0                     |
| 11866                        | 4 G 10                                       | 8       | 18,1               | 384,0                     | 790,0                     |
| 11867                        | 5 G 10                                       | 8       | 20,5               | 480,0                     | 960,0                     |
| 11868                        | 7 G 10                                       | 8       | 22,5               | 672,0                     | 1300,0                    |
| 11869                        | 3 G 16                                       | 6       | 19,6               | 461,0                     | 760,0                     |
| 11870                        | 4 G 16                                       | 6       | 21,7               | 614,0                     | 1100,0                    |
| 11871                        | 5 G 16                                       | 6       | 24,2               | 768,0                     | 1600,0                    |
| 11872                        | 7 G 16                                       | 6       | 25,7               | 1075,0                    | 1890,0                    |
| 11873                        | 3 G 25                                       | 4       | 24,0               | 720,0                     | 1450,0                    |
| 11874                        | 4 G 25                                       | 4       | 26,9               | 960,0                     | 1600,0                    |
| 11875                        | 5 G 25                                       | 4       | 29,4               | 1200,0                    | 2050,0                    |
| 11876                        | 7 G 25                                       | 4       | 32,8               | 1680,0                    | 2900,0                    |

| Part no.<br>Sheath<br>colour | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|------------------------------|--|---------|--------------------|---------------------------|---------------------------|
| <b>grey</b>                  |  |         |                    |                           |                           |
| 11912                        | 2 x 2,5                                      | 14      | 9,4                | 48,0                      | 160,0                     |
| 11913                        | 3 G 2,5                                      | 14      | 9,9                | 72,0                      | 175,0                     |
| 11914                        | 4 G 2,5                                      | 14      | 11,1               | 96,0                      | 203,0                     |
| 11915                        | 5 G 2,5                                      | 14      | 12,4               | 120,0                     | 251,0                     |
| 11916                        | 7 G 2,5                                      | 14      | 15,0               | 168,0                     | 330,0                     |
| 11917                        | 12 G 2,5                                     | 14      | 18,4               | 288,0                     | 553,0                     |
| 11918                        | 18 G 2,5                                     | 14      | 22,0               | 432,0                     | 795,0                     |
| 11919                        | 25 G 2,5                                     | 14      | 26,9               | 600,0                     | 1110,0                    |
| 11920                        | 2 x 4  | 12      | 11,4               | 77,0                      | 180,0                     |
| 11921                        | 3 G 4  | 12      | 12,3               | 115,0                     | 230,0                     |
| 11922                        | 4 G 4  | 12      | 13,8               | 154,0                     | 310,0                     |
| 11923                        | 5 G 4  | 12      | 15,3               | 192,0                     | 410,0                     |
| 11924                        | 7 G 4  | 12      | 16,8               | 269,0                     | 540,0                     |
| 11925                        | 12 G 4                                       | 12      | 22,9               | 461,0                     | 860,0                     |
| 11926                        | 3 G 6  | 10      | 14,1               | 173,0                     | 370,0                     |
| 11927                        | 4 G 6  | 10      | 15,6               | 230,0                     | 430,0                     |
| 11928                        | 5 G 6  | 10      | 17,3               | 288,0                     | 650,0                     |
| 11929                        | 7 G 6  | 10      | 19,3               | 403,0                     | 860,0                     |
| 11930                        | 3 G 10                                       | 8       | 16,5               | 288,0                     | 660,0                     |
| 11931                        | 4 G 10                                       | 8       | 18,4               | 384,0                     | 790,0                     |
| 11932                        | 5 G 10                                       | 8       | 20,5               | 480,0                     | 960,0                     |
| 11933                        | 7 G 10                                       | 8       | 22,5               | 672,0                     | 1300,0                    |
| 11934                        | 3 G 16                                       | 6       | 19,6               | 461,0                     | 760,0                     |
| 11935                        | 4 G 16                                       | 6       | 21,7               | 614,0                     | 1100,0                    |
| 11936                        | 5 G 16                                       | 6       | 24,2               | 768,0                     | 1600,0                    |
| 11937                        | 7 G 16                                       | 6       | 25,7               | 1075,0                    | 1890,0                    |
| 11938                        | 3 G 25                                       | 4       | 24,0               | 720,0                     | 1450,0                    |
| 11939                        | 4 G 25                                       | 4       | 26,9               | 960,0                     | 1600,0                    |
| 11940                        | 5 G 25                                       | 4       | 29,3               | 1200,0                    | 2050,0                    |
| 11941                        | 7 G 25                                       | 4       | 32,6               | 1680,0                    | 2900,0                    |

Dimensions and specifications may be changed without prior notice. (RN01)



# JZ-600-Y-CY UL/CSA

EMC-preferred type, number coded, 1000 V, Cu-screened, flexible, meter marking



## Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation thickness for 1 kV and to UL Std.758 Style 21179
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC-insulated inner sheath TM2, to DIN VDE 0207-363-4-1/DIN EN 50363-4-1, class 43 acc. to UL Std.1581
- Braided screen of tinned Cu wires, coverage approx. 85%
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: black (RAL 9005) or grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- UV resistant (building with black sheath)
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**JZ-600 UL/CSA**

## Application

PVC control cable for measuring, monitoring and control purposes in tool machinery, conveyor belts and production lines in machinery, in air conditioning, in foundries and steel mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burial- or as underwater cable. Interference-free transmission of signals and pulses is assured by the high degree of screening.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no.<br>Sheath<br>colour | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|------------------------------|---|---------|--------------------|---------------------------|---------------------------|
| <b>black</b>                 |   |         |                    |                           |                           |
| 12345                        | 2 x 0,5                                     | 20      | 8,3                | 41,0                      | 129,0                     |
| 12346                        | 3 G 0,5                                     | 20      | 8,6                | 45,0                      | 150,0                     |
| 12347                        | 4 G 0,5                                     | 20      | 9,4                | 54,0                      | 170,0                     |
| 12348                        | 5 G 0,5                                     | 20      | 10,1               | 66,0                      | 199,0                     |
| 12349                        | 7 G 0,5                                     | 20      | 12,1               | 79,0                      | 235,0                     |
| 12350                        | 12 G 0,5                                    | 20      | 14,7               | 137,0                     | 320,0                     |
| 12351                        | 18 G 0,5                                    | 20      | 17,3               | 156,0                     | 428,0                     |
| 12352                        | 25 G 0,5                                    | 20      | 20,6               | 250,0                     | 503,0                     |
| 12353                        | 2 x 0,75                                    | 19      | 8,7                | 46,0                      | 143,0                     |
| 12354                        | 3 G 0,75                                    | 19      | 9,0                | 57,0                      | 155,0                     |
| 12355                        | 4 G 0,75                                    | 19      | 9,9                | 63,0                      | 190,0                     |
| 12356                        | 5 G 0,75                                    | 19      | 10,8               | 76,0                      | 228,0                     |
| 12357                        | 7 G 0,75                                    | 19      | 13,0               | 100,0                     | 323,0                     |
| 12358                        | 12 G 0,75                                   | 19      | 15,8               | 175,0                     | 410,0                     |
| 12359                        | 18 G 0,75                                   | 19      | 17,9               | 240,0                     | 560,0                     |
| 12360                        | 25 G 0,75                                   | 19      | 22,8               | 306,0                     | 730,0                     |
| 12361                        | 2 x 1                                       | 18      | 9,4                | 54,0                      | 150,0                     |
| 12362                        | 3 G 1                                       | 18      | 9,8                | 64,0                      | 163,0                     |
| 12363                        | 4 G 1                                       | 18      | 10,8               | 76,0                      | 200,0                     |
| 12364                        | 5 G 1                                       | 18      | 12,1               | 89,0                      | 239,0                     |
| 12365                        | 7 G 1                                       | 18      | 14,5               | 114,0                     | 289,0                     |
| 12366                        | 12 G 1                                      | 18      | 17,4               | 186,0                     | 464,0                     |
| 12367                        | 18 G 1                                      | 18      | 20,7               | 284,0                     | 628,0                     |
| 12368                        | 25 G 1                                      | 18      | 24,8               | 387,0                     | 855,0                     |
| 12369                        | 2 x 1,5                                     | 16      | 10,2               | 64,0                      | 162,0                     |
| 12370                        | 3 G 1,5                                     | 16      | 10,9               | 82,0                      | 187,0                     |
| 12371                        | 4 G 1,5                                     | 16      | 12,2               | 99,0                      | 240,0                     |

| Part no.<br>Sheath<br>colour | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|------------------------------|---|---------|--------------------|---------------------------|---------------------------|
| <b>grey</b>                  |   |         |                    |                           |                           |
| 12410                        | 2 x 0,5                                     | 20      | 8,3                | 41,0                      | 129,0                     |
| 12411                        | 3 G 0,5                                     | 20      | 8,6                | 45,0                      | 150,0                     |
| 12412                        | 4 G 0,5                                     | 20      | 9,4                | 54,0                      | 170,0                     |
| 12413                        | 5 G 0,5                                     | 20      | 10,1               | 66,0                      | 199,0                     |
| 12414                        | 7 G 0,5                                     | 20      | 12,1               | 79,0                      | 235,0                     |
| 12415                        | 12 G 0,5                                    | 20      | 14,7               | 137,0                     | 320,0                     |
| 12416                        | 18 G 0,5                                    | 20      | 17,3               | 156,0                     | 428,0                     |
| 12417                        | 25 G 0,5                                    | 20      | 20,6               | 250,0                     | 503,0                     |
| 12418                        | 2 x 0,75                                    | 19      | 8,7                | 46,0                      | 143,0                     |
| 12419                        | 3 G 0,75                                    | 19      | 9,0                | 57,0                      | 155,0                     |
| 12420                        | 4 G 0,75                                    | 19      | 9,9                | 63,0                      | 190,0                     |
| 12421                        | 5 G 0,75                                    | 19      | 10,8               | 76,0                      | 228,0                     |
| 12422                        | 7 G 0,75                                    | 19      | 13,0               | 100,0                     | 323,0                     |
| 12423                        | 12 G 0,75                                   | 19      | 15,8               | 175,0                     | 410,0                     |
| 12424                        | 18 G 0,75                                   | 19      | 17,9               | 240,0                     | 560,0                     |
| 12425                        | 25 G 0,75                                   | 19      | 22,8               | 306,0                     | 730,0                     |
| 12426                        | 2 x 1                                       | 18      | 9,4                | 54,0                      | 150,0                     |
| 12427                        | 3 G 1                                       | 18      | 9,8                | 64,0                      | 163,0                     |
| 12428                        | 4 G 1                                       | 18      | 10,8               | 76,0                      | 200,0                     |
| 12429                        | 5 G 1                                       | 18      | 12,1               | 89,0                      | 239,0                     |
| 12430                        | 7 G 1                                       | 18      | 14,5               | 114,0                     | 289,0                     |
| 12431                        | 12 G 1                                      | 18      | 17,4               | 186,0                     | 464,0                     |
| 12432                        | 18 G 1                                      | 18      | 20,7               | 284,0                     | 628,0                     |
| 12433                        | 25 G 1                                      | 18      | 24,8               | 387,0                     | 855,0                     |
| 12434                        | 2 x 1,5                                     | 16      | 10,2               | 64,0                      | 162,0                     |
| 12435                        | 3 G 1,5                                     | 16      | 10,9               | 82,0                      | 187,0                     |
| 12436                        | 4 G 1,5                                     | 16      | 12,2               | 99,0                      | 240,0                     |

Continuation ▶

# JZ-600-Y-CY UL/CSA

EMC-preferred type, number coded, 1000 V, Cu-screened, flexible, meter marking

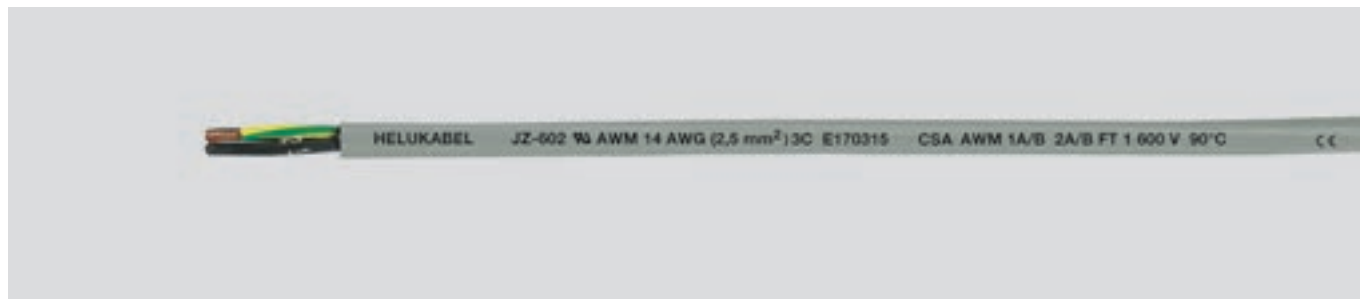


| Part no.<br>Sheath<br>colour | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km | Part no.<br>Sheath<br>colour | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|------------------------------|---|---------|--------------------|---------------------------|---------------------------|------------------------------|---|---------|--------------------|---------------------------|---------------------------|
| <b>black</b>                 |   |         |                    |                           |                           | <b>grey</b>                  |   |         |                    |                           |                           |
| 12372                        | 5 G 1,5                                     | 16      | 13,3               | 123,0                     | 289,0                     | 12437                        | 5 G 1,5                                     | 16      | 13,3               | 123,0                     | 289,0                     |
| 12373                        | 7 G 1,5                                     | 16      | 16,0               | 148,0                     | 383,0                     | 12438                        | 7 G 1,5                                     | 16      | 16,0               | 148,0                     | 383,0                     |
| 12374                        | 12 G 1,5                                    | 16      | 19,6               | 274,0                     | 592,0                     | 12439                        | 12 G 1,5                                    | 16      | 19,6               | 274,0                     | 592,0                     |
| 12375                        | 18 G 1,5                                    | 16      | 23,4               | 386,0                     | 806,0                     | 12440                        | 18 G 1,5                                    | 16      | 23,4               | 386,0                     | 806,0                     |
| 12376                        | 25 G 1,5                                    | 16      | 28,2               | 531,0                     | 1241,0                    | 12441                        | 25 G 1,5                                    | 16      | 28,2               | 531,0                     | 1241,0                    |
| 12377                        | 2 x 2,5                                     | 14      | 11,5               | 110,0                     | 272,0                     | 12442                        | 2 x 2,5                                     | 14      | 11,5               | 110,0                     | 272,0                     |
| 12378                        | 3 G 2,5                                     | 14      | 12,2               | 148,0                     | 298,0                     | 12443                        | 3 G 2,5                                     | 14      | 12,2               | 148,0                     | 298,0                     |
| 12379                        | 4 G 2,5                                     | 14      | 13,4               | 169,0                     | 345,0                     | 12444                        | 4 G 2,5                                     | 14      | 13,4               | 169,0                     | 345,0                     |
| 12380                        | 5 G 2,5                                     | 14      | 14,9               | 220,0                     | 427,0                     | 12445                        | 5 G 2,5                                     | 14      | 14,9               | 220,0                     | 427,0                     |
| 12381                        | 7 G 2,5                                     | 14      | 17,9               | 284,0                     | 561,0                     | 12446                        | 7 G 2,5                                     | 14      | 17,9               | 284,0                     | 561,0                     |
| 12382                        | 12 G 2,5                                    | 14      | 21,9               | 470,0                     | 857,0                     | 12447                        | 12 G 2,5                                    | 14      | 21,9               | 470,0                     | 857,0                     |
| 12383                        | 18 G 2,5                                    | 14      | 26,1               | 572,0                     | 1355,0                    | 12448                        | 18 G 2,5                                    | 14      | 26,1               | 572,0                     | 1355,0                    |
| 12384                        | 25 G 2,5                                    | 14      | 31,9               | 740,0                     | 1995,0                    | 12449                        | 25 G 2,5                                    | 14      | 31,9               | 740,0                     | 1995,0                    |
| 12385                        | 2 x 4                                       | 12      | 14,3               | 124,0                     | 306,0                     | 12450                        | 2 x 4                                       | 12      | 14,3               | 124,0                     | 306,0                     |
| 12386                        | 3 G 4                                       | 12      | 15,1               | 178,0                     | 391,0                     | 12451                        | 3 G 4                                       | 12      | 15,1               | 178,0                     | 391,0                     |
| 12387                        | 4 G 4                                       | 12      | 16,7               | 234,0                     | 527,0                     | 12452                        | 4 G 4                                       | 12      | 16,7               | 234,0                     | 527,0                     |
| 12388                        | 5 G 4                                       | 12      | 18,6               | 284,0                     | 700,0                     | 12453                        | 5 G 4                                       | 12      | 18,6               | 284,0                     | 700,0                     |
| 12389                        | 7 G 4                                       | 12      | 20,0               | 321,0                     | 920,0                     | 12454                        | 7 G 4                                       | 12      | 20,0               | 321,0                     | 920,0                     |
| 12390                        | 3 G 6                                       | 10      | 17,0               | 245,0                     | 629,0                     | 12455                        | 3 G 6                                       | 10      | 17,0               | 245,0                     | 629,0                     |
| 12391                        | 4 G 6                                       | 10      | 18,7               | 316,0                     | 731,0                     | 12456                        | 4 G 6                                       | 10      | 18,7               | 316,0                     | 731,0                     |
| 12392                        | 5 G 6                                       | 10      | 20,7               | 442,0                     | 1105,0                    | 12457                        | 5 G 6                                       | 10      | 20,7               | 442,0                     | 1105,0                    |
| 12393                        | 7 G 6                                       | 10      | 23,0               | 530,0                     | 1465,0                    | 12458                        | 7 G 6                                       | 10      | 23,0               | 530,0                     | 1465,0                    |
| 12394                        | 3 G 10                                      | 8       | 19,6               | 367,0                     | 1125,0                    | 12459                        | 3 G 10                                      | 8       | 19,6               | 367,0                     | 1125,0                    |
| 12395                        | 4 G 10                                      | 8       | 21,9               | 549,0                     | 1345,0                    | 12460                        | 4 G 10                                      | 8       | 21,9               | 549,0                     | 1345,0                    |
| 12396                        | 5 G 10                                      | 8       | 24,1               | 604,0                     | 1635,0                    | 12461                        | 5 G 10                                      | 8       | 24,1               | 604,0                     | 1635,0                    |
| 12397                        | 7 G 10                                      | 8       | 26,8               | 820,0                     | 2210,0                    | 12462                        | 7 G 10                                      | 8       | 26,8               | 820,0                     | 2210,0                    |
| 12398                        | 3 G 16                                      | 6       | 23,5               | 653,0                     | 1395,0                    | 12463                        | 3 G 16                                      | 6       | 23,5               | 653,0                     | 1395,0                    |
| 12399                        | 4 G 16                                      | 6       | 26,4               | 807,0                     | 1870,0                    | 12464                        | 4 G 16                                      | 6       | 26,4               | 807,0                     | 1870,0                    |
| 12400                        | 5 G 16                                      | 6       | 28,8               | 940,0                     | 2720,0                    | 12465                        | 5 G 16                                      | 6       | 28,8               | 940,0                     | 2720,0                    |
| 12401                        | 7 G 16                                      | 6       | 31,9               | 1345,0                    | 3213,0                    | 12466                        | 7 G 16                                      | 6       | 31,9               | 1345,0                    | 3213,0                    |
| 12402                        | 3 G 25                                      | 4       | 28,0               | 920,0                     | 2465,0                    | 12467                        | 3 G 25                                      | 4       | 28,0               | 920,0                     | 2465,0                    |
| 12403                        | 4 G 25                                      | 4       | 32,5               | 1169,0                    | 2750,0                    | 12468                        | 4 G 25                                      | 4       | 32,5               | 1169,0                    | 2750,0                    |
| 12404                        | 5 G 25                                      | 4       | 35,7               | 1420,0                    | 3490,0                    | 12469                        | 5 G 25                                      | 4       | 35,7               | 1420,0                    | 3490,0                    |
| 12405                        | 7 G 25                                      | 4       | 39,0               | 1921,0                    | 4980,0                    | 12470                        | 7 G 25                                      | 4       | 39,0               | 1921,0                    | 4980,0                    |

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-602

two approval control cable, 90°C, 600 V, oil resistant, meter marking



## Technical data

- Control cable of special-PVC acc. to UL CSA AWM I/II A/B Style 2587 (sheath insulation) and CSA
- Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- Nominal voltage**  
UL/CSA 600 V
- Test voltage**  
3000 V
- Breakdown voltage**  
min. 6000 V
- Insulation resistance**  
min 20 MOhm x km
- Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type T13 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Resistant to mineral oils, synthetic oils and coolant
- The outer sheath is approved with an improved oil resistance test
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-602-CY**

## Application

UL-approved and CSA certified flexible control cable rated at 600 V. Used in machine tools, control systems, connection between control panels and machines, assembly lines and other industrial equipment. Suitable for installation in dry, moist or wet environment and moderate flexing applications.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83090    | 2 x 0,5                                | 20      | 5,6             | 9,6                 | 49,0                |
| 83091    | 3 G 0,5                                | 20      | 5,9             | 14,0                | 58,0                |
| 83092    | 4 G 0,5                                | 20      | 6,4             | 19,0                | 69,0                |
| 83093    | 5 G 0,5                                | 20      | 6,9             | 24,0                | 84,0                |
| 83094    | 7 G 0,5                                | 20      | 7,5             | 34,0                | 123,0               |
| 83100    | 8 G 0,5                                | 20      | 8,3             | 38,4                | 140,0               |
| 83101    | 9 G 0,5                                | 20      | 8,9             | 43,2                | 177,0               |
| 83095    | 12 G 0,5                               | 20      | 9,8             | 58,0                | 192,0               |
| 83096    | 18 G 0,5                               | 20      | 12,0            | 86,0                | 256,0               |
| 83097    | 25 G 0,5                               | 20      | 14,3            | 120,0               | 358,0               |
| 83098    | 34 G 0,5                               | 20      | 16,5            | 163,0               | 487,0               |
| 83099    | 41 G 0,5                               | 20      | 17,9            | 197,0               | 580,0               |
| 83080    | 2 x 1                                  | 18      | 6,3             | 19,2                | 53,0                |
| 83081    | 3 G 1                                  | 18      | 6,6             | 27,0                | 61,0                |
| 83082    | 4 G 1                                  | 18      | 7,2             | 38,4                | 74,0                |
| 83565    | 3 x 1                                  | 18      | 6,6             | 27,0                | 61,0                |
| 83083    | 5 G 1                                  | 18      | 7,9             | 48,0                | 90,0                |
| 83084    | 7 G 1                                  | 18      | 8,7             | 67,0                | 130,0               |
| 83102    | 8 G 1                                  | 18      | 9,5             | 76,8                | 144,0               |
| 83103    | 9 G 1                                  | 18      | 10,4            | 86,4                | 180,0               |
| 83085    | 12 G 1                                 | 18      | 11,2            | 115,2               | 198,0               |
| 83086    | 18 G 1                                 | 18      | 14,1            | 173,0               | 274,0               |
| 83087    | 25 G 1                                 | 18      | 16,8            | 240,0               | 384,0               |
| 83088    | 34 G 1                                 | 18      | 19,5            | 326,0               | 494,0               |
| 83089    | 41 G 1                                 | 18      | 21,2            | 394,0               | 508,0               |
| 83070    | 2 x 1,5                                | 16      | 6,8             | 28,8                | 73,0                |
| 83071    | 3 G 1,5                                | 16      | 7,2             | 44,0                | 94,0                |
| 83072    | 4 G 1,5                                | 16      | 7,9             | 58,0                | 117,0               |
| 83073    | 5 G 1,5                                | 16      | 8,7             | 72,0                | 140,0               |
| 83074    | 7 G 1,5                                | 16      | 9,7             | 101,0               | 186,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83104    | 9 G 1,5                                | 16      | 11,5            | 129,7               | 244,0               |
| 83075    | 12 G 1,5                               | 16      | 12,6            | 173,0               | 319,0               |
| 83076    | 18 G 1,5                               | 16      | 15,8            | 260,0               | 451,0               |
| 83077    | 25 G 1,5                               | 16      | 18,3            | 360,0               | 625,0               |
| 83078    | 34 G 1,5                               | 16      | 21,4            | 490,0               | 840,0               |
| 83079    | 41 G 1,5                               | 16      | 23,3            | 590,0               | 1032,0              |
| 83060    | 2 x 2,5                                | 14      | 7,8             | 48,0                | 115,0               |
| 83061    | 3 G 2,5                                | 14      | 8,5             | 72,0                | 143,0               |
| 83062    | 4 G 2,5                                | 14      | 9,3             | 96,0                | 185,0               |
| 83063    | 5 G 2,5                                | 14      | 10,4            | 120,0               | 221,0               |
| 83064    | 7 G 2,5                                | 14      | 11,5            | 168,0               | 293,0               |
| 83065    | 9 G 2,5                                | 14      | 13,9            | 216,0               | 429,0               |
| 83066    | 12 G 2,5                               | 14      | 15,2            | 288,0               | 563,0               |
| 83067    | 18 G 2,5                               | 14      | 18,7            | 432,0               | 854,0               |
| 83068    | 19 G 2,5                               | 14      | 18,7            | 456,0               | 914,0               |
| 83069    | 25 G 2,5                               | 14      | 22,2            | 600,0               | 1188,0              |
| 83051    | 3 G 4                                  | 12      | 9,7             | 115,0               | 232,0               |
| 83052    | 4 G 4                                  | 12      | 10,6            | 154,0               | 298,0               |
| 83053    | 5 G 4                                  | 12      | 11,8            | 192,0               | 358,0               |
| 83054    | 7 G 4                                  | 12      | 13,1            | 269,0               | 460,0               |
| 83041    | 3 G 6                                  | 10      | 11,3            | 173,0               | 360,0               |
| 83042    | 4 G 6                                  | 10      | 12,5            | 231,0               | 402,0               |
| 83043    | 5 G 6                                  | 10      | 13,9            | 288,0               | 484,0               |
| 83044    | 7 G 6                                  | 10      | 15,4            | 403,0               | 630,0               |
| 83031    | 3 G 10                                 | 8       | 14,7            | 288,0               | 535,0               |
| 83032    | 4 G 10                                 | 8       | 16,3            | 384,0               | 653,0               |
| 83033    | 5 G 10                                 | 8       | 18,3            | 480,0               | 786,0               |
| 83034    | 7 G 10                                 | 8       | 20,2            | 672,0               | 1100,0              |

Continuation ▶

# JZ-602

two approval control cable, 90°C, 600 V, oil resistant, meter marking



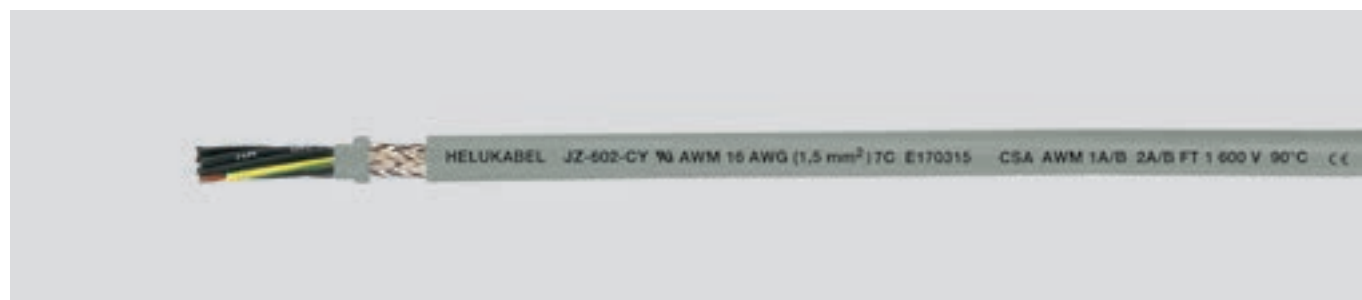
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83020    | 2 x 16                                 | 6       | 18,8            | 307,0               | 640,0               |
| 83021    | 3 G 16                                 | 6       | 20,2            | 461,0               | 810,0               |
| 83022    | 4 G 16                                 | 6       | 22,3            | 615,0               | 1045,0              |
| 83023    | 5 G 16                                 | 6       | 24,9            | 768,0               | 1260,0              |
| 83024    | 7 G 16                                 | 6       | 27,5            | 1075,0              | 1760,0              |
| 83011    | 3 G 25                                 | 4       | 24,0            | 720,0               | 1180,0              |
| 83012    | 4 G 25                                 | 4       | 26,9            | 960,0               | 1507,0              |
| 83013    | 5 G 25                                 | 4       | 31,9            | 1200,0              | 1858,0              |
| 83014    | 7 G 25                                 | 4       | 33,0            | 1680,0              | 2830,0              |
| 83001    | 3 G 35                                 | 2       | 26,2            | 1008,0              | 1590,0              |
| 83002    | 4 G 35                                 | 2       | 29,7            | 1344,0              | 2123,0              |
| 83003    | 5 G 35                                 | 2       | 33,0            | 1680,0              | 2612,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83004    | 3 G 50                                 | 1       | 31,9            | 1440,0              | 2652,0              |
| 83005    | 4 G 50                                 | 1       | 35,6            | 1920,0              | 3058,0              |
| 83006    | 5 G 50                                 | 1       | 39,7            | 2400,0              | 4093,0              |
| 83007    | 3 G 70                                 | 2/0     | 36,8            | 2016,0              | 3307,0              |
| 83008    | 4 G 70                                 | 2/0     | 40,9            | 2688,0              | 4254,0              |
| 83009    | 5 G 70                                 | 2/0     | 45,6            | 3360,0              | 5661,0              |
| 83010    | 3 G 95                                 | 3/0     | 40,9            | 2736,0              | 4867,0              |
| 83015    | 4 G 95                                 | 3/0     | 45,6            | 3648,0              | 5762,0              |
| 83016    | 5 G 95                                 | 3/0     | 50,7            | 4560,0              | 7208,0              |
| 83017    | 3 G 120                                | 4/0     | 48,1            | 3456,0              | 5580,0              |
| 83018    | 4 G 120                                | 4/0     | 53,3            | 4608,0              | 7280,0              |
| 83019    | 5 G 120                                | 4/0     | 58,9            | 5760,0              | 8692,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-602-CY

screened two approval control cable, oil resistant, EMC-preferred type, 90°C, 600 V, meter marking



## Technical data

- Control cable of special-PVC acc. to UL CSA AWM I/II A/B Style 2587 (sheath insulation) and CSA
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of PVC compound type T13 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC-insulated inner sheath YM5 to DIN VDE 0207 part 5
- Braided screen of tinned Cu wires approx. 85% coverage
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Resistant to mineral oils, synthetic oils and coolant
- The outer sheath is approved with an improved oil resistance test
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**JZ-602**

## Application

UL and CSA approved flexible control cables up to 600 V, for all machinery in tooling and plant construction, suitable for installation in dry, moist or wet environments for medium mechanical loads. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada. The thick braiding screen ensures compliance with electromagnetic requirements.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 82990    | 2 x 0,5                                | 20      | 7,4             | 35,0                | 93,0                |
| 82991    | 3 G 0,5                                | 20      | 7,7             | 42,0                | 124,0               |
| 82992    | 4 G 0,5                                | 20      | 8,2             | 47,0                | 133,0               |
| 82993    | 5 G 0,5                                | 20      | 9,0             | 56,0                | 153,0               |
| 82994    | 7 G 0,5                                | 20      | 9,6             | 69,0                | 191,0               |
| 82995    | 9 G 0,5                                | 20      | 11,2            | 87,0                | 243,0               |
| 82996    | 12 G 0,5                               | 20      | 12,3            | 108,0               | 322,0               |
| 82997    | 18 G 0,5                               | 20      | 14,7            | 145,0               | 374,0               |
| 82998    | 25 G 0,5                               | 20      | 17,0            | 240,0               | 436,0               |
| 82999    | 34 G 0,5                               | 20      | 21,4            | 312,0               | 560,0               |
| 83000    | 41 G 0,5                               | 20      | 21,4            | 348,0               | 663,0               |
| 82979    | 2 x 1                                  | 18      | 8,1             | 50,0                | 107,0               |
| 82980    | 3 G 1                                  | 18      | 8,5             | 60,0                | 130,0               |
| 82981    | 4 G 1                                  | 18      | 9,2             | 71,0                | 155,0               |
| 82982    | 5 G 1                                  | 18      | 10,1            | 88,0                | 181,0               |
| 82983    | 7 G 1                                  | 18      | 10,8            | 111,0               | 209,0               |
| 82984    | 9 G 1                                  | 18      | 12,7            | 139,0               | 321,0               |
| 82985    | 12 G 1                                 | 18      | 14,1            | 184,0               | 341,0               |
| 82986    | 18 G 1                                 | 18      | 16,6            | 260,0               | 473,0               |
| 82987    | 25 G 1                                 | 18      | 19,7            | 349,0               | 650,0               |
| 82988    | 34 G 1                                 | 18      | 22,6            | 486,0               | 781,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 82989    | 41 G 1                                 | 18      | 24,7            | 531,0               | 892,0               |
| 82968    | 2 x 1,5                                | 16      | 8,6             | 63,0                | 136,0               |
| 82969    | 3 G 1,5                                | 16      | 9,2             | 80,0                | 165,0               |
| 82970    | 4 G 1,5                                | 16      | 10,0            | 97,0                | 192,0               |
| 82971    | 5 G 1,5                                | 16      | 11,0            | 119,0               | 224,0               |
| 82972    | 7 G 1,5                                | 16      | 11,8            | 147,0               | 273,0               |
| 82973    | 9 G 1,5                                | 16      | 14,0            | 182,0               | 340,0               |
| 82974    | 12 G 1,5                               | 16      | 15,3            | 267,0               | 461,0               |
| 82975    | 18 G 1,5                               | 16      | 18,5            | 374,0               | 674,0               |
| 82976    | 25 G 1,5                               | 16      | 21,8            | 526,0               | 950,0               |
| 82977    | 34 G 1,5                               | 16      | 25,2            | 629,0               | 1203,0              |
| 82978    | 41 G 1,5                               | 16      | 27,6            | 801,0               | 1588,0              |
| 82959    | 2 x 2,5                                | 14      | 10,1            | 96,0                | 173,0               |
| 82960    | 3 G 2,5                                | 14      | 10,6            | 144,0               | 220,0               |
| 82961    | 4 G 2,5                                | 14      | 11,6            | 148,0               | 270,0               |
| 82962    | 5 G 2,5                                | 14      | 12,7            | 181,0               | 329,0               |
| 82963    | 7 G 2,5                                | 14      | 14,0            | 255,0               | 428,0               |
| 82964    | 9 G 2,5                                | 14      | 16,4            | 309,0               | 580,0               |
| 82965    | 12 G 2,5                               | 14      | 18,1            | 441,0               | 761,0               |
| 82966    | 18 G 2,5                               | 14      | 22,2            | 570,0               | 1140,0              |
| 82967    | 25 G 2,5                               | 14      | 27,0            | 738,0               | 1551,0              |

Continuation ▶

# JZ-602-CY

screened two approval control cable, oil resistant, EMC-preferred type,  
90°C, 600 V, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 82954    | 2 x 4                                  | 12      | 11,2            | 120,0               | 209,0               |
| 82955    | 3 G 4                                  | 12      | 11,9            | 174,0               | 310,0               |
| 82956    | 4 G 4                                  | 12      | 13,3            | 230,0               | 456,0               |
| 82957    | 5 G 4                                  | 12      | 14,6            | 273,0               | 532,0               |
| 82958    | 7 G 4                                  | 12      | 15,9            | 316,0               | 737,0               |
| 82949    | 2 x 6                                  | 10      | 12,9            | 173,0               | 318,0               |
| 82950    | 3 G 6                                  | 10      | 14,0            | 240,0               | 411,0               |
| 82951    | 4 G 6                                  | 10      | 15,4            | 305,0               | 572,0               |
| 82952    | 5 G 6                                  | 10      | 17,0            | 439,0               | 732,0               |
| 82953    | 7 G 6                                  | 10      | 18,3            | 505,0               | 961,0               |
| 82945    | 3 G 10                                 | 8       | 16,3            | 350,0               | 741,0               |
| 82946    | 4 G 10                                 | 8       | 19,4            | 535,0               | 988,0               |
| 82947    | 5 G 10                                 | 8       | 21,6            | 592,0               | 1202,0              |
| 82948    | 7 G 10                                 | 8       | 23,9            | 810,0               | 1743,0              |
| 82941    | 3 G 16                                 | 6       | 23,9            | 585,0               | 1088,0              |
| 82942    | 4 G 16                                 | 6       | 26,4            | 740,0               | 1662,0              |
| 82943    | 5 G 16                                 | 6       | 29,6            | 895,0               | 2021,0              |
| 82944    | 7 G 16                                 | 6       | 32,6            | 1282,0              | 2720,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 82937    | 3 G 25                                 | 4       | 28,3            | 1070,0              | 1947,0              |
| 82938    | 4 G 25                                 | 4       | 31,4            | 1140,0              | 2591,0              |
| 82939    | 5 G 25                                 | 4       | 34,6            | 1380,0              | 3197,0              |
| 82940    | 7 G 25                                 | 4       | 38,1            | 1870,0              | 4530,0              |
| 82934    | 3 G 35                                 | 2       | 31,3            | 1240,0              | 2701,0              |
| 82935    | 4 G 35                                 | 2       | 34,4            | 1576,0              | 3277,0              |
| 82936    | 5 G 35                                 | 2       | 38,1            | 1930,0              | 4530,0              |
| 82488    | 3 G 50                                 | 1       | 37,0            | 1675,0              | 2870,0              |
| 82780    | 4 G 50                                 | 1       | 40,9            | 2155,0              | 3960,0              |
| 82781    | 5 G 50                                 | 1       | 45,0            | 2794,0              | 4371,0              |
| 82782    | 3 G 70                                 | 2/0     | 42,1            | 2288,0              | 3647,0              |
| 82783    | 4 G 70                                 | 2/0     | 46,2            | 3120,0              | 4882,0              |
| 82914    | 5 G 70                                 | 2/0     | 50,9            | 3705,0              | 5876,0              |
| 82915    | 3 G 95                                 | 3/0     | 46,2            | 3010,0              | 4751,0              |
| 82916    | 4 G 95                                 | 3/0     | 50,0            | 4043,0              | 6368,0              |
| 82917    | 5 G 95                                 | 3/0     | 56,0            | 5026,0              | 7843,0              |
| 82918    | 3 G 120                                | 4/0     | 52,8            | 3812,0              | 5899,0              |
| 82919    | 4 G 120                                | 4/0     | 58,2            | 5069,0              | 8010,0              |
| 82920    | 5 G 120                                | 4/0     | 63,8            | 5877,0              | 9205,0              |

Dimensions and specifications may be changed without prior notice. (RN01)



# JZ-603

Multi approval control cable, oil resistant, meter marking



## Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and UL Style 2587
- **Temperature range**  
HAR  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C  
UL/CSA  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
HAR U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of oil resistant special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404, UL-Std.1581 part 50.182

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-603-CY**

## Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83704    | 2 x 0,5                                | 20      | 5,8             | 9,6                 | 52,0                |
| 83650    | 3 G 0,5                                | 20      | 6,1             | 14,0                | 63,0                |
| 83651    | 4 G 0,5                                | 20      | 6,7             | 19,0                | 69,0                |
| 83652    | 5 G 0,5                                | 20      | 7,3             | 24,0                | 87,0                |
| 83653    | 7 G 0,5                                | 20      | 8,8             | 34,0                | 119,0               |
| 83654    | 12 G 0,5                               | 20      | 11,1            | 58,0                | 198,0               |
| 83655    | 18 G 0,5                               | 20      | 12,9            | 86,0                | 266,0               |
| 83656    | 25 G 0,5                               | 20      | 16,0            | 120,0               | 380,0               |
| 83657    | 34 G 0,5                               | 20      | 17,7            | 163,0               | 508,0               |
| 83658    | 41 G 0,5                               | 20      | 19,5            | 197,0               | 594,0               |
| 83659    | 50 G 0,5                               | 20      | 21,3            | 240,0               | 715,0               |
| 83660    | 61 G 0,5                               | 20      | 23,8            | 293,0               | 840,0               |
| 83705    | 2 x 0,75                               | 19      | 6,1             | 14,4                | 66,0                |
| 83661    | 3 G 0,75                               | 19      | 6,5             | 22,0                | 76,0                |
| 83662    | 4 G 0,75                               | 19      | 7,1             | 29,0                | 85,0                |
| 83663    | 5 G 0,75                               | 19      | 7,9             | 36,0                | 113,0               |
| 83664    | 7 G 0,75                               | 19      | 9,5             | 50,0                | 144,0               |
| 83665    | 12 G 0,75                              | 19      | 11,6            | 86,0                | 245,0               |
| 83666    | 18 G 0,75                              | 19      | 13,9            | 130,0               | 327,0               |
| 83667    | 25 G 0,75                              | 19      | 17,1            | 180,0               | 466,0               |
| 83668    | 34 G 0,75                              | 19      | 19,1            | 245,0               | 626,0               |
| 83669    | 41 G 0,75                              | 19      | 20,9            | 296,0               | 747,0               |
| 83670    | 50 G 0,75                              | 19      | 23,0            | 360,0               | 896,0               |
| 83671    | 61 G 0,75                              | 19      | 25,3            | 439,0               | 1070,0              |
| 83706    | 2 x 1                                  | 18      | 6,4             | 19,2                | 70,0                |
| 83672    | 3 G 1                                  | 18      | 6,8             | 29,0                | 88,0                |
| 83673    | 4 G 1                                  | 18      | 7,5             | 39,0                | 99,0                |
| 83674    | 5 G 1                                  | 18      | 8,4             | 48,0                | 132,0               |
| 83675    | 7 G 1                                  | 18      | 10,0            | 67,0                | 170,0               |
| 83676    | 12 G 1                                 | 18      | 12,5            | 115,0               | 285,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83677    | 18 G 1                                 | 18      | 14,7            | 173,0               | 405,0               |
| 83678    | 25 G 1                                 | 18      | 18,0            | 240,0               | 570,0               |
| 83679    | 34 G 1                                 | 18      | 20,3            | 326,0               | 742,0               |
| 83680    | 41 G 1                                 | 18      | 22,4            | 394,0               | 885,0               |
| 83681    | 50 G 1                                 | 18      | 24,3            | 480,0               | 1071,0              |
| 83682    | 61 G 1                                 | 18      | 26,8            | 586,0               | 1265,0              |
| 83707    | 2 x 1,5                                | 16      | 7,4             | 28,8                | 91,0                |
| 83683    | 3 G 1,5                                | 16      | 8,0             | 43,0                | 110,0               |
| 83684    | 4 G 1,5                                | 16      | 8,7             | 58,0                | 141,0               |
| 83685    | 5 G 1,5                                | 16      | 9,8             | 72,0                | 167,0               |
| 83686    | 7 G 1,5                                | 16      | 11,9            | 101,0               | 225,0               |
| 83687    | 12 G 1,5                               | 16      | 14,5            | 173,0               | 361,0               |
| 83688    | 18 G 1,5                               | 16      | 17,4            | 259,0               | 518,0               |
| 83689    | 25 G 1,5                               | 16      | 21,3            | 360,0               | 730,0               |
| 83690    | 34 G 1,5                               | 16      | 24,1            | 490,0               | 945,0               |
| 83691    | 41 G 1,5                               | 16      | 26,2            | 591,0               | 1135,0              |
| 83692    | 50 G 1,5                               | 16      | 28,8            | 720,0               | 1381,0              |
| 83693    | 61 G 1,5                               | 16      | 31,5            | 878,0               | 1640,0              |
| 83708    | 2 x 2,5                                | 14      | 9,1             | 48,0                | 125,0               |
| 83694    | 3 G 2,5                                | 14      | 9,9             | 72,0                | 169,0               |
| 83695    | 4 G 2,5                                | 14      | 11,0            | 96,0                | 209,0               |
| 83696    | 5 G 2,5                                | 14      | 12,0            | 120,0               | 256,0               |
| 83697    | 7 G 2,5                                | 14      | 14,6            | 168,0               | 340,0               |
| 83698    | 12 G 2,5                               | 14      | 18,1            | 288,0               | 579,0               |
| 83699    | 18 G 2,5                               | 14      | 22,1            | 432,0               | 851,0               |
| 83700    | 25 G 2,5                               | 14      | 26,5            | 600,0               | 1175,0              |
| 83701    | 34 G 2,5                               | 14      | 29,9            | 816,0               | 1529,0              |
| 83702    | 50 G 2,5                               | 14      | 35,2            | 1200,0              | 2290,0              |
| 83703    | 61 G 2,5                               | 14      | 38,4            | 1464,0              | 2724,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-603-CY

Multi approval control cable, oil resistant, Cu-screened,  
EMC-preferred, meter marking



## Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51, DIN EN 50525-2-51 and to UL Style 2587
- **Temperature range**  
HAR  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C  
UL/CSA  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
HAR U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC based inner sheath
- Tinned copper braiding screening, 85% coverage
- Outer sheath of special PVC, oil resistant compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404, UL 1581 part 50.182
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**JZ-603**

## Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for medium mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83709    | 2 x 0,5                                | 20      | 8,0             | 41,0                | 90,0                |
| 83720    | 3 G 0,5                                | 20      | 8,3             | 45,0                | 105,0               |
| 83721    | 4 G 0,5                                | 20      | 8,9             | 54,0                | 123,0               |
| 83722    | 5 G 0,5                                | 20      | 9,7             | 66,0                | 147,0               |
| 83723    | 7 G 0,5                                | 20      | 11,2            | 79,0                | 195,0               |
| 83724    | 12 G 0,5                               | 20      | 13,6            | 137,0               | 276,0               |
| 83725    | 18 G 0,5                               | 20      | 15,4            | 156,0               | 418,0               |
| 83726    | 25 G 0,5                               | 20      | 18,6            | 250,0               | 504,0               |
| 83727    | 34 G 0,5                               | 20      | 20,8            | 316,0               | 632,0               |
| 83728    | 41 G 0,5                               | 20      | 22,6            | 348,0               | 750,0               |
| 83729    | 50 G 0,5                               | 20      | 24,8            | 407,0               | 968,0               |
| 83730    | 61 G 0,5                               | 20      | 26,0            | 520,0               | 1068,0              |
| 83710    | 2 x 0,75                               | 19      | 8,3             | 46,0                | 101,0               |
| 83731    | 3 G 0,75                               | 19      | 8,6             | 57,0                | 127,0               |
| 83732    | 4 G 0,75                               | 19      | 9,4             | 63,0                | 155,0               |
| 83733    | 5 G 0,75                               | 19      | 10,1            | 76,0                | 180,0               |
| 83734    | 7 G 0,75                               | 19      | 11,9            | 100,0               | 225,0               |
| 83735    | 12 G 0,75                              | 19      | 14,2            | 175,0               | 326,0               |
| 83736    | 18 G 0,75                              | 19      | 16,6            | 240,0               | 457,0               |
| 83737    | 25 G 0,75                              | 19      | 20,0            | 306,0               | 635,0               |
| 83738    | 34 G 0,75                              | 19      | 22,4            | 346,0               | 805,0               |
| 83739    | 41 G 0,75                              | 19      | 24,0            | 403,0               | 908,0               |
| 83740    | 50 G 0,75                              | 19      | 26,2            | 470,0               | 1155,0              |
| 83741    | 61 G 0,75                              | 19      | 30,0            | 550,0               | 1400,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83711    | 2 x 1                                  | 18      | 8,6             | 54,0                | 113,0               |
| 83742    | 3 G 1                                  | 18      | 9,2             | 64,0                | 144,0               |
| 83743    | 4 G 1                                  | 18      | 9,8             | 76,0                | 178,0               |
| 83744    | 5 G 1                                  | 18      | 10,7            | 89,0                | 205,0               |
| 83745    | 7 G 1                                  | 18      | 12,5            | 114,0               | 263,0               |
| 83746    | 12 G 1                                 | 18      | 15,1            | 186,0               | 424,0               |
| 83747    | 18 G 1                                 | 18      | 17,3            | 284,0               | 560,0               |
| 83748    | 25 G 1                                 | 18      | 21,1            | 387,0               | 760,0               |
| 83749    | 34 G 1                                 | 18      | 23,5            | 500,0               | 945,0               |
| 83750    | 41 G 1                                 | 18      | 25,5            | 578,0               | 1151,0              |
| 83751    | 50 G 1                                 | 18      | 27,6            | 681,0               | 1300,0              |
| 83752    | 61 G 1                                 | 18      | 32,4            | 710,0               | 1500,0              |
| 83712    | 2 x 1,5                                | 16      | 9,6             | 64,0                | 144,0               |
| 83753    | 3 G 1,5                                | 16      | 10,1            | 82,0                | 160,0               |
| 83754    | 4 G 1,5                                | 16      | 11,0            | 99,0                | 210,0               |
| 83755    | 5 G 1,5                                | 16      | 12,3            | 123,0               | 240,0               |
| 83756    | 7 G 1,5                                | 16      | 14,2            | 148,0               | 305,0               |
| 83757    | 12 G 1,5                               | 16      | 17,1            | 274,0               | 482,0               |
| 83758    | 18 G 1,5                               | 16      | 20,0            | 386,0               | 611,0               |
| 83759    | 25 G 1,5                               | 16      | 24,0            | 531,0               | 950,0               |
| 83760    | 34 G 1,5                               | 16      | 27,1            | 671,0               | 1200,0              |
| 83761    | 41 G 1,5                               | 16      | 29,7            | 840,0               | 1400,0              |
| 83762    | 50 G 1,5                               | 16      | 31,8            | 997,0               | 1665,0              |
| 83763    | 61 G 1,5                               | 16      | 34,6            | 1120,0              | 1852,0              |

Continuation ▶

# JZ-603-CY

Multi approval control cable, oil resistant, Cu-screened,  
EMC-preferred, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83713    | 2 x 2,5                                | 14      | 11,4            | 110,0               | 189,0               |
| 83764    | 3 G 2,5                                | 14      | 12,0            | 148,0               | 244,0               |
| 83765    | 4 G 2,5                                | 14      | 13,4            | 169,0               | 296,0               |
| 83766    | 5 G 2,5                                | 14      | 14,6            | 220,0               | 367,0               |
| 83767    | 7 G 2,5                                | 14      | 17,2            | 284,0               | 478,0               |
| 83768    | 12 G 2,5                               | 14      | 21,2            | 470,0               | 622,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 83769    | 18 G 2,5                               | 14      | 24,8            | 572,0               | 1010,0              |
| 83770    | 25 G 2,5                               | 14      | 29,8            | 740,0               | 1375,0              |
| 83771    | 34 G 2,5                               | 14      | 33,4            | 1179,0              | 1893,0              |
| 83772    | 50 G 2,5                               | 14      | 39,0            | 1660,0              | 2666,0              |
| 83773    | 61 G 2,5                               | 14      | 41,0            | 1992,0              | 3077,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# H07RN-F

## rubber-sheathed cable



### Technical data

- Rubber sheathed cable H07RN-F to DIN VDE 0285-525-2-21, BS 7919 DIN EN 50525-2-21, IEC 60245-4
- **Temperature range**  
flexing -25°C bis +60°C  
fixed installation -30°C bis +60°C
- Permissible conductor **operating temperature** +60°C
- **Nominal voltage**  
U<sub>0</sub>/U 450/750 V  
in case of protected and fixed installation  
U<sub>0</sub>/U 600/1000 V
- Max. permissible **operating voltage** in three phase and one phase a.c. system  
U<sub>0</sub>/U 476/825 V  
direct current-system  
U<sub>0</sub>/U 619/1238 V
- **Test voltage**  
2500 V
- **Permanent tensile load**  
max. 15 N/mm<sup>2</sup>
- **Minimum bending radius**  
for fixed installation 4x cable Ø  
for guiding over roller 7,5x cable Ø  
during winding on drums 5x cable Ø

### Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay length
- Outer sheath of rubber EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour: black

### Properties

#### Resistant to

- Weather

#### Tests

- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Ozone resistant of the insulation to DIN VDE 0473-396, DIN EN 50396
- Oil resistant test acc. to DIN VDE 0473-811-404, DIN EN 60811-404

#### Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- The core identification of a single core sheathed, of an insulated wire is black.
- adapted to VDE with designation **07RN-F**  
- Part.-no. 37094, 19G1,5 mm<sup>2</sup>  
- Part.-no. 37098, 19G2,5 mm<sup>2</sup>  
- Part.-no. 34349, 5G120 mm<sup>2</sup>  
- Part.-no. 34127, 5G150 mm<sup>2</sup>

### Application

Heavy duty rubber-sheathed flexible cables are suited for use for medium mechanical stress in dry, damp and wet areas as well as in open air and in agriculture plants. They are used for equipment in industry works such as boilers, heating plates, hand lamps, electric tools such as drills, circular saws and homework tools as well as for transportable motors or machines at site. These cables are also suitable for fixed installation on plaster, in temporary buildings and residential barracks. They are suitable for direct laying on components and mechanical parts of machines, for example lifts and cranes. They can be used in case of protected and fixed installation in tubes or in equipment as well as rotor connecting cable of motors with a working voltage up to 1000 V alternating voltage or a direct voltage up to 750 V against ground.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.    |
|----------|--|------------------------|---------------------|---------------------|------------|
| 37001    | 1 x 1,5                                | 5,7 - 7,1              | 14,4                | 58,0                | 16         |
| 37002    | 1 x 2,5                                | 6,3 - 7,9              | 24,0                | 71,0                | 14         |
| 37003    | 1 x 4                                  | 7,2 - 9,0              | 38,0                | 100,0               | 12         |
| 37004    | 1 x 6                                  | 7,9 - 9,8              | 58,0                | 130,0               | 10         |
| 37005    | 1 x 10                                 | 9,5 - 11,9             | 96,0                | 230,0               | 8          |
| 37006    | 1 x 16                                 | 10,8 - 13,4            | 154,0               | 290,0               | 6          |
| 37007    | 1 x 25                                 | 12,7 - 15,8            | 240,0               | 420,0               | 4          |
| 37008    | 1 x 35                                 | 14,3 - 17,9            | 336,0               | 530,0               | 2          |
| 37009    | 1 x 50                                 | 16,5 - 20,6            | 480,0               | 750,0               | 1          |
| 37010    | 1 x 70                                 | 18,6 - 23,3            | 672,0               | 960,0               | 2/0        |
| 37011    | 1 x 95                                 | 20,8 - 26,0            | 912,0               | 1250,0              | 3/0        |
| 37012    | 1 x 120                                | 22,8 - 28,6            | 1152,0              | 1560,0              | 4/0        |
| 37013    | 1 x 150                                | 25,2 - 31,4            | 1440,0              | 1900,0              | 300 kcmil  |
| 37014    | 1 x 185                                | 27,6 - 34,4            | 1776,0              | 2300,0              | 350 kcmil  |
| 37015    | 1 x 240                                | 30,6 - 38,3            | 2304,0              | 2950,0              | 500 kcmil  |
| 37016    | 1 x 300                                | 33,5 - 41,9            | 2880,0              | 3600,0              | 600 kcmil  |
| 37017    | 1 x 400                                | 37,4 - 46,8            | 3840,0              | 4600,0              | 750 kcmil  |
| 37018    | 1 x 500                                | 41,3 - 52,0            | 4800,0              | 6000,0              | 1000 kcmil |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|------------------------|---------------------|---------------------|---------|
| 37019    | 2 x 1                                  | 7,7 - 10,0             | 19,0                | 98,0                | 18      |
| 37020    | 2 x 1,5                                | 8,5 - 11,0             | 29,0                | 135,0               | 16      |
| 37021    | 2 x 2,5                                | 10,2 - 13,1            | 48,0                | 193,0               | 14      |
| 37022    | 2 x 4                                  | 11,8 - 15,1            | 77,0                | 280,0               | 12      |
| 37023    | 2 x 6                                  | 13,1 - 16,8            | 115,0               | 330,0               | 10      |
| 37024    | 2 x 10                                 | 17,7 - 22,6            | 192,0               | 586,0               | 8       |
| 37025    | 2 x 16                                 | 20,2 - 25,7            | 307,0               | 810,0               | 6       |
| 37026    | 2 x 25                                 | 24,3 - 30,7            | 480,0               | 1160,0              | 4       |

Continuation ▶

# H07RN-F

## rubber-sheathed cable



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|--|------------------------|---------------------|---------------------|-----------|
| 37027    | 3 G 1                                  | 8,3 - 10,7             | 29,0                | 130,0               | 18        |
| 37028    | 3 G 1,5                                | 9,2 - 11,9             | 43,0                | 165,0               | 16        |
| 37029    | 3 G 2,5                                | 10,9 - 14,0            | 72,0                | 235,0               | 14        |
| 37030    | 3 G 4                                  | 12,7 - 16,2            | 115,0               | 320,0               | 12        |
| 37031    | 3 G 6                                  | 14,1 - 18,0            | 173,0               | 420,0               | 10        |
| 37032    | 3 G 10                                 | 19,1 - 24,2            | 288,0               | 810,0               | 8         |
| 37033    | 3 G 16                                 | 21,8 - 27,6            | 461,0               | 1050,0              | 6         |
| 37034    | 3 G 25                                 | 26,1 - 33,0            | 720,0               | 1250,0              | 4         |
| 37035    | 3 G 35                                 | 29,3 - 37,1            | 1008,0              | 1900,0              | 2         |
| 37036    | 3 G 50                                 | 34,1 - 42,9            | 1440,0              | 2600,0              | 1         |
| 37037    | 3 G 70                                 | 38,4 - 48,3            | 2016,0              | 3400,0              | 2/0       |
| 37038    | 3 G 95                                 | 43,3 - 54,0            | 2736,0              | 4450,0              | 3/0       |
| 37039    | 3 G 120                                | 47,4 - 60,0            | 3456,0              | 5180,0              | 4/0       |
| 37040    | 3 G 150                                | 52,0 - 66,0            | 4320,0              | 6500,0              | 300 kcmil |
| 37041    | 3 G 185                                | 57,0 - 72,0            | 5328,0              | 7860,0              | 350 kcmil |
| 37042    | 3 G 240                                | 65,0 - 82,0            | 6912,0              | 10224,0             | 500 kcmil |
| 37043    | 3 G 300                                | 72,0 - 90,0            | 8640,0              | 12620,0             | 600 kcmil |
| 37044    | 4 G 1                                  | 9,2 - 11,9             | 38,0                | 150,0               | 18        |
| 37045    | 4 G 1,5                                | 10,2 - 13,1            | 58,0                | 200,0               | 16        |
| 37046    | 4 G 2,5                                | 12,1 - 15,5            | 96,0                | 290,0               | 14        |
| 37047    | 4 G 4                                  | 14,0 - 17,9            | 154,0               | 395,0               | 12        |
| 37048    | 4 G 6                                  | 15,7 - 20,0            | 230,0               | 540,0               | 10        |
| 37049    | 4 G 10                                 | 20,9 - 26,5            | 384,0               | 950,0               | 8         |
| 37050    | 4 G 16                                 | 23,8 - 30,1            | 614,0               | 1260,0              | 6         |
| 37051    | 4 G 25                                 | 28,9 - 36,6            | 960,0               | 1860,0              | 4         |
| 37052    | 4 G 35                                 | 32,5 - 41,1            | 1344,0              | 2380,0              | 2         |
| 37053    | 4 G 50                                 | 37,7 - 47,5            | 1920,0              | 3190,0              | 1         |
| 37054    | 4 G 70                                 | 42,7 - 54,0            | 2688,0              | 4260,0              | 2/0       |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No.   |
|----------|--|------------------------|---------------------|---------------------|-----------|
| 37055    | 4 G 95                                 | 48,4 - 61,0            | 3648,0              | 5600,0              | 3/0       |
| 37056    | 4 G 120                                | 53,0 - 66,0            | 4608,0              | 6830,0              | 4/0       |
| 37057    | 4 G 150                                | 58,0 - 73,0            | 5760,0              | 8320,0              | 300 kcmil |
| 37058    | 4 G 185                                | 64,0 - 80,0            | 7104,0              | 9800,0              | 350 kcmil |
| 37059    | 4 G 240                                | 72,0 - 91,0            | 9216,0              | 12100,0             | 500 kcmil |
| 37060    | 4 G 300                                | 80,0 - 101,0           | 11520,0             | 15200,0             | 600 kcmil |
| 37061    | 5 G 1,5                                | 11,2 - 14,4            | 72,0                | 240,0               | 16        |
| 37062    | 5 G 2,5                                | 13,3 - 17,0            | 120,0               | 345,0               | 14        |
| 37063    | 5 G 4                                  | 15,6 - 19,9            | 192,0               | 485,0               | 12        |
| 37064    | 5 G 6                                  | 17,5 - 22,2            | 288,0               | 650,0               | 10        |
| 37065    | 5 G 10                                 | 22,9 - 29,1            | 480,0               | 1200,0              | 8         |
| 37066    | 5 G 16                                 | 26,4 - 33,3            | 768,0               | 1550,0              | 6         |
| 37067    | 5 G 25                                 | 32,0 - 40,4            | 1200,0              | 2250,0              | 4         |
| 37068    | 5 G 35                                 | 35,7 - 45,1            | 1680,0              | 2750,0              | 2         |
| 37091    | 5 G 50                                 | 41,8 - 53,0            | 2400,0              | 3950,0              | 1         |
| 37154    | 5 G 70                                 | 47,5 - 60,0            | 3360,0              | 4740,0              | 2/0       |
| 34090    | 5 G 95                                 | 54,0 - 67,0            | 4560,0              | 6600,0              | 3/0       |
| 34349    | 5 G 120                                | 58,0 - 73,0            | 5760,0              | 8180,0              | 4/0       |
| 34127    | 5 G 150                                | 64,0 - 80,0            | 7200,0              | 10600,0             | 300 kcmil |
| 37092    | 7 G 1,5                                | 14,7 - 18,7            | 101,0               | 375,0               | 16        |
| 37079    | 7 G 2,5                                | 17,1 - 21,8            | 168,0               | 520,0               | 14        |
| 37093    | 12 G 1,5                               | 17,6 - 22,4            | 175,0               | 460,0               | 16        |
| 37096    | 12 G 2,5                               | 20,6 - 26,2            | 288,0               | 760,0               | 14        |
| 37097    | 18 G 2,5                               | 24,4 - 30,9            | 432,0               | 850,0               | 14        |
| 37094    | 19 G 1,5                               | 20,7 - 26,3            | 274,0               | 810,0               | 16        |
| 37098    | 19 G 2,5                               | 25,5 - 31,0            | 456,0               | 1075,0              | 14        |
| 37095    | 24 G 1,5                               | 24,3 - 30,7            | 346,0               | 1015,0              | 16        |
| 37099    | 24 G 2,5                               | 28,8 - 36,4            | 576,0               | 1390,0              | 14        |

Dimensions and specifications may be changed without prior notice. (RF01)

# SOOW

## rubber-sheathed cable



### Technical data

- Rubber-sheathed cable acc. to UL Std.62  
CAN/CSA-C 22.2 No.49
- UL - SOOW  
CSA - SOOW
- **Temperature range**  
-40°C to +90°C
- Permissible **operating temperature**  
at the conductor +90°C
- **Nominal voltage**  
600 V
- **Test voltage**  
2500 V
- **Minimum bending radius**  
flexing 6x cable Ø

### Cable structure

- Copper-conductor bare or tinned, fine wire stranded with AWG dimensions
- Core insulation of rubber (EPR)
- Core identification  
3 cores: BK, WH, GN  
4 cores: BK, WH, RD, GN  
5 cores: BK, WH, RD, GN, OG
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of rubber (CPE)
- Sheath colour: black

### Properties

- Ozone-resistant
- Weather and UV resistant
- Resistant to oils and greases

### Application

Approved, heavy rubber-sheathed cable, for usage in dry, moist, wet rooms as well as outdoors. Used as supply cable in industrial plants and processing facilities, for cranes, hand lamps, lifting devices, construction machineries and motors.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | Part no. | Cross-section mm <sup>2</sup> x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---|-----------|-----------------|---------------------|---------------------|----------|---|-----------|-----------------|---------------------|---------------------|
| 38548    | 1                                       | 3 x 18    | 9,1             | 24,0                | 110,0               | 38557    | 4                                       | 3 x 12    | 15,2            | 95,0                | 323,0               |
| 38549    | 1                                       | 4 x 18    | 9,8             | 32,0                | 130,0               | 38558    | 4                                       | 4 x 12    | 16,5            | 127,0               | 389,0               |
| 38550    | 1                                       | 5 x 18    | 11,7            | 40,0                | 183,0               | 38559    | 4                                       | 5 x 12    | 17,8            | 159,0               | 475,0               |
| 38551    | 1,5                                     | 3 x 16    | 10,1            | 38,0                | 134,0               | 38560    | 6                                       | 3 x 10    | 16,5            | 152,0               | 419,0               |
| 38552    | 1,5                                     | 4 x 16    | 10,6            | 51,0                | 160,0               | 38561    | 6                                       | 4 x 10    | 18,0            | 202,0               | 500,0               |
| 38553    | 1,5                                     | 5 x 16    | 12,5            | 63,0                | 222,0               | 38562    | 6                                       | 5 x 10    | 19,3            | 253,0               | 609,0               |
| 38554    | 2,5                                     | 3 x 14    | 13,3            | 60,0                | 240,0               | 38563    | 10                                      | 3 x 8     | 21,1            | 241,0               | 673,0               |
| 38555    | 2,5                                     | 4 x 14    | 14,4            | 80,0                | 286,0               | 38564    | 10                                      | 4 x 8     | 23,5            | 322,0               | 859,0               |
| 38556    | 2,5                                     | 5 x 14    | 16,4            | 100,0               | 374,0               | 38565    | 10                                      | 5 x 8     | 25,4            | 402,0               | 1017,0              |

Dimensions and specifications may be changed without prior notice. (RF01)



# HELUWIND® WK POWERLINE ALU MULTI

0,6/1 kV, finely stranded aluminium conductor



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
0,6/1kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 6x cable Ø
- **Flame retardant**  
EN 60332-1 Low Smoke Emission

## Cable structure

- Aluminium conductor, finely stranded
- Special PVC insulation
- Other colours on request
- Core identification: colour code
- Special PVC compound sheath  
On request: rubber insulated outer sheath
- Sheath colour: black

## Properties

- Oil resistant
- UV resistant
- Flexible
- Lightweight
- Robust
- Durable
- Easy to assemble

## Note

For more information, especially on custom cables and connectivity solutions, please contact us:  
wind@helukabel.de

## Application

The HELUWIND® WK POWERLINE ALU MULTI is a highly flexible aluminium cable with a fine wire stranded structure. Thanks to its high level of flexibility and reduced weight, this cable is suitable for many industrial applications.

**The HELUWIND® WK POWERLINE ALU MULTI may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A.**

The cable is also available in other insulation materials and in a halogen-free design.

= Product conforms with Low-Voltage Directive 2014/35/EU.

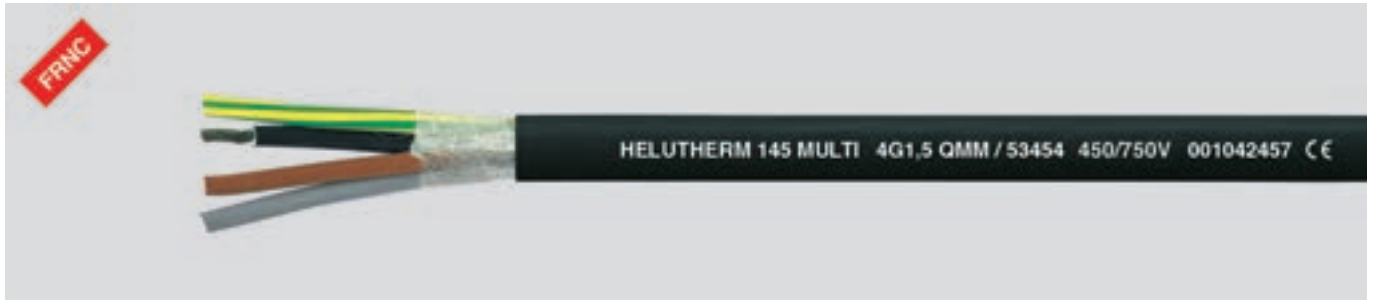
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|-----------------|-------------------|---------------------|
| 711083   | 4x50                                   | 38,8            | 590,0             | 980,0               |
| 711084   | 4x70                                   | 43,0            | 824,0             | 1280,0              |
| 711085   | 4x95                                   | 50,0            | 1120,0            | 1640,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|-----------------|-------------------|---------------------|
| 711086   | 4x120                                  | 54,5            | 1420,0            | 2005,0              |
| 711087   | 4x150                                  | 58,0            | 1764,0            | 2320,0              |

Dimensions and specifications may be changed without prior notice.

# HELUTHERM® 145 MULTI

flexible, cross-linked, halogen-free, meter marking



## Technical data

- Halogen-free control and connecting cable with increased heat resistance
- **Temperature range**  
flexing -35°C to +120°C  
fixed installation -55°C to +145°C  
in short-circuit +250°C
- **Nominal voltage**  
up to 1,0 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
with protected fixed installation  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 600/1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
in operation 8x cable Ø  
fixed installation 4x cable Ø
- **Caloric load values**  
see "Technical Informations"
- **Power ratings table**  
see "Technical Informations"
- **Approval**  
Germanischer Lloyd

## Cable structure

- Tinned Cu wires, acc. to  
DIN VDE 0295 cl.5, BS 6360 cl.5  
and IEC 60228 cl. 5
- Core insulation of halogen-free,  
cross-linked polyolefin-copolymer
- Core identification to DIN VDE 0293-308  
- for 2 cores BN, BU  
- up to 5 cores coloured  
- from 6 cores, black with continuous  
white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with  
optimal lay length
- Fleece wrapping
- Outer sheath of halogen-free,  
cross-linked Polyolefin-Copolymer
- Sheath colour: black
- With meter marking

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- Also available in other colours on request
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:

### HELUTHERM® 145 MULTI-C

## Properties

- Reduced flame propagation
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- Are resistant to melting, even when in  
contact with a soldering iron at  
temperatures of between 300°C and  
380°C, because of the cross-linking for  
the insulation material
- The materials used during manufacturing  
are cadmium-free, contain no silicone  
and are free from substances harmful  
to the wetting properties of lacquers

## Tests

- Flame test (unit flame test) acc. to  
DIN VDE 0482-332-3-22, BS 4066 part 3,  
DIN EN 60332-3-22, IEC 60332-3-22  
(previously DIN VDE 0472  
part 804 test method C)
- Flame test (cable) acc. to  
DIN VDE 0482-332-1-2, DIN EN 60332-1-2,  
IEC 60332-1-2 (equivalent DIN VDE 0472  
part 804 test method B)
- Corrosiveness of combustion gases  
acc. to DIN VDE 0482 part 267,  
DIN EN 50267-2-2, IEC 60754-2  
(equivalent DIN VDE 0472 part 813)
- Halogen-free  
acc. to DIN VDE 0482 part 267,  
DIN EN 50267-2-1, IEC 60754-1  
(equivalent DIN VDE 0472 part 815)
- Smoke density  
acc. to DIN VDE 0482 part 1034-1+2,  
DIN EN 61034-1+2, IEC 61034-1+2,  
BS 7622 part 1+2  
(previously DIN VDE 0472 part 816)

## Application

These halogen-free, cross-linked and temperature resistant wiring and control cables with enhanced fire-behaviour properties are used for wiring up the lighting fixtures, heaters, electric machines (temperature class B), switching systems and distribution switchboards. A very long service life is also given on account of their excellent high-temperature stability. These cables exhibit good resistance to weathering as well as being very stable to temperature, moisture, ozone and UV radiation. These cables are therefore mainly used for traffic control systems and diverse outdoor applications. The development of smoke is low and no corrosive gases are liberated during combustion of these halogen-free cables in case of fire. The risk of toxic fumes is considerably less in the event of fire because the caloric load values is lower. Precious time can thus be won for a disciplined evacuation, and unnecessary loss of life can be prevented. The extent of the damage to costly control and monitoring systems and the concrete and steel structures of buildings and plant due to fire is reduced by this. Injuries to persons and damage to materials can be prevented. A lower conductor cross section is possible in certain circumstances because of the high thermal load and thus savings in the space and weight required can be made. These wiring and control cables provide a significant contribution in safety engineering and environmental protection.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km | AWG-No. | Part no. | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km | AWG-No. |
|----------|--|--------------------|---------------------------|------------------------|---------|----------|--|--------------------|---------------------------|------------------------|---------|
| 53376    | 1 x 0,25                                     | 2,9                | 2,4                       | 11,4                   | 24      | 53381    | 6 G 0,25                                     | 6,5                | 14,4                      | 58,0                   | 24      |
| 52630    | 1 G 0,25                                     | 2,9                | 2,4                       | 11,4                   | 24      | 53382    | 7 G 0,25                                     | 6,9                | 16,8                      | 64,0                   | 24      |
| 53377    | 2 x 0,25                                     | 4,6                | 4,8                       | 28,7                   | 24      | 53383    | 8 G 0,25                                     | 7,3                | 19,2                      | 71,0                   | 24      |
| 53378    | 3 G 0,25                                     | 4,9                | 7,2                       | 33,7                   | 24      | 53384    | 10 G 0,25                                    | 8,1                | 24,0                      | 84,0                   | 24      |
| 53379    | 4 G 0,25                                     | 5,5                | 9,6                       | 41,8                   | 24      | 53385    | 12 G 0,25                                    | 8,1                | 28,8                      | 90,0                   | 24      |
| 53380    | 5 G 0,25                                     | 5,8                | 12,0                      | 47,0                   | 24      | 53386    | 14 G 0,25                                    | 8,6                | 33,6                      | 102,0                  | 24      |

Continuation ▶

# HELUTHERM® 145 MULTI

flexible, cross-linked, halogen-free, meter marking



| Part no. | No.cores x cross-sec. mm² | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------|-----------------|---------------------|---------------------|---------|
| 53387    | 16 G 0,25                 | 8,9             | 38,4                | 114,0               | 24      |
| 53388    | 19 G 0,25                 | 10,1            | 45,6                | 132,0               | 24      |
| 53389    | 21 G 0,25                 | 10,5            | 50,4                | 145,0               | 24      |
| 52631    | 1 G 0,5                   | 3,2             | 4,8                 | 15,7                | 20      |
| 53391    | 1 x 0,5                   | 3,2             | 4,8                 | 15,7                | 20      |
| 53392    | 2 x 0,5                   | 5,1             | 9,6                 | 39,6                | 20      |
| 53393    | 3 G 0,5                   | 5,5             | 14,4                | 48,1                | 20      |
| 53394    | 4 G 0,5                   | 5,9             | 19,2                | 51,0                | 20      |
| 53395    | 5 G 0,5                   | 6,7             | 24,0                | 64,0                | 20      |
| 53396    | 6 G 0,5                   | 7,1             | 28,8                | 74,0                | 20      |
| 53397    | 7 G 0,5                   | 7,8             | 33,6                | 88,0                | 20      |
| 53398    | 8 G 0,5                   | 8,6             | 38,4                | 102,0               | 20      |
| 53399    | 10 G 0,5                  | 9,4             | 48,0                | 123,0               | 20      |
| 53400    | 12 G 0,5                  | 9,4             | 57,6                | 135,0               | 20      |
| 53401    | 14 G 0,5                  | 10,0            | 67,2                | 153,0               | 20      |
| 53402    | 16 G 0,5                  | 10,7            | 76,8                | 176,0               | 20      |
| 53403    | 19 G 0,5                  | 12,4            | 91,2                | 213,0               | 20      |
| 53404    | 21 G 0,5                  | 13,0            | 100,8               | 234,0               | 20      |
| 53405    | 24 G 0,5                  | 14,0            | 115,2               | 263,0               | 20      |
| 53406    | 25 G 0,5                  | 14,0            | 120,0               | 269,0               | 20      |
| 53407    | 27 G 0,5                  | 14,0            | 129,6               | 280,0               | 20      |
| 53408    | 30 G 0,5                  | 15,0            | 144,0               | 311,0               | 20      |
| 53409    | 33 G 0,5                  | 15,0            | 158,4               | 343,0               | 20      |
| 53410    | 37 G 0,5                  | 17,0            | 177,6               | 392,0               | 20      |
| 52632    | 1 G 0,75                  | 3,5             | 7,2                 | 19,8                | 19      |
| 53411    | 1 x 0,75                  | 3,5             | 7,2                 | 19,8                | 19      |
| 53412    | 2 x 0,75                  | 5,9             | 14,4                | 40,0                | 19      |
| 53413    | 3 G 0,75                  | 6,2             | 21,6                | 53,0                | 19      |
| 53414    | 4 G 0,75                  | 6,9             | 28,8                | 69,0                | 19      |
| 53415    | 5 G 0,75                  | 7,7             | 36,0                | 86,0                | 19      |
| 53416    | 6 G 0,75                  | 8,3             | 43,2                | 101,0               | 19      |
| 53417    | 7 G 0,75                  | 9,1             | 50,4                | 117,0               | 19      |
| 53418    | 8 G 0,75                  | 10,2            | 57,6                | 140,0               | 19      |
| 53419    | 10 G 0,75                 | 11,1            | 72,0                | 167,0               | 19      |
| 53420    | 12 G 0,75                 | 11,1            | 86,4                | 183,0               | 19      |
| 53421    | 14 G 0,75                 | 11,7            | 100,8               | 212,0               | 19      |
| 53422    | 16 G 0,75                 | 12,5            | 115,2               | 239,0               | 19      |
| 53423    | 19 G 0,75                 | 14,0            | 136,8               | 290,0               | 19      |
| 53424    | 21 G 0,75                 | 15,0            | 151,2               | 323,0               | 19      |
| 53425    | 24 G 0,75                 | 16,0            | 172,8               | 364,0               | 19      |
| 53426    | 25 G 0,75                 | 16,0            | 180,0               | 371,0               | 19      |
| 53427    | 27 G 0,75                 | 16,0            | 194,4               | 387,0               | 19      |
| 53428    | 30 G 0,75                 | 17,0            | 216,0               | 429,0               | 19      |
| 53429    | 33 G 0,75                 | 18,0            | 237,6               | 468,0               | 19      |
| 53430    | 37 G 0,75                 | 19,0            | 266,4               | 550,0               | 19      |
| 52633    | 1 G 1                     | 3,9             | 9,6                 | 25,2                | 18      |
| 53431    | 1 x 1                     | 3,9             | 9,6                 | 25,2                | 18      |
| 53432    | 2 x 1                     | 6,3             | 19,2                | 50,0                | 18      |
| 53433    | 3 G 1                     | 6,8             | 28,8                | 66,0                | 18      |
| 53434    | 4 G 1                     | 7,4             | 38,4                | 86,0                | 18      |
| 53435    | 5 G 1                     | 8,3             | 48,0                | 106,0               | 18      |
| 53436    | 6 G 1                     | 8,9             | 57,6                | 127,0               | 18      |
| 53437    | 7 G 1                     | 9,9             | 67,2                | 155,0               | 18      |
| 53438    | 8 G 1                     | 11,0            | 76,8                | 187,0               | 18      |
| 53439    | 10 G 1                    | 12,1            | 96,0                | 214,0               | 18      |
| 53440    | 12 G 1                    | 12,1            | 115,2               | 230,0               | 18      |
| 53441    | 14 G 1                    | 12,7            | 134,4               | 266,0               | 18      |
| 53442    | 16 G 1                    | 13,6            | 153,6               | 301,0               | 18      |
| 53443    | 19 G 1                    | 15,1            | 182,4               | 377,0               | 18      |
| 53444    | 21 G 1                    | 16,0            | 201,6               | 419,0               | 18      |
| 53445    | 24 G 1                    | 17,1            | 230,4               | 464,0               | 18      |
| 53446    | 25 G 1                    | 17,1            | 240,0               | 472,0               | 18      |
| 53447    | 27 G 1                    | 17,1            | 259,2               | 488,0               | 18      |
| 53448    | 30 G 1                    | 17,7            | 288,0               | 536,0               | 18      |
| 53449    | 33 G 1                    | 18,9            | 316,8               | 605,0               | 18      |
| 53450    | 37 G 1                    | 20,3            | 355,2               | 690,0               | 18      |
| 52634    | 1 G 1,5                   | 4,3             | 14,4                | 32,3                | 16      |
| 53451    | 1 x 1,5                   | 4,3             | 14,4                | 32,3                | 16      |
| 53452    | 2 x 1,5                   | 7,6             | 28,8                | 69,0                | 16      |
| 53453    | 3 G 1,5                   | 8,1             | 43,2                | 93,0                | 16      |
| 53454    | 4 G 1,5                   | 8,8             | 57,6                | 120,0               | 16      |
| 53455    | 5 G 1,5                   | 9,8             | 72,0                | 152,0               | 16      |
| 53456    | 6 G 1,5                   | 10,9            | 86,4                | 187,0               | 16      |
| 53457    | 7 G 1,5                   | 12,0            | 100,8               | 222,0               | 16      |
| 53458    | 8 G 1,5                   | 14,0            | 115,2               | 263,0               | 16      |
| 53459    | 10 G 1,5                  | 14,6            | 144,0               | 308,0               | 16      |
| 53460    | 12 G 1,5                  | 14,6            | 172,8               | 330,0               | 16      |
| 53461    | 14 G 1,5                  | 15,4            | 201,6               | 383,0               | 16      |
| 53462    | 16 G 1,5                  | 16,2            | 230,4               | 438,0               | 16      |
| 53463    | 19 G 1,5                  | 18,3            | 273,6               | 554,0               | 16      |
| 53464    | 21 G 1,5                  | 19,7            | 302,4               | 614,0               | 16      |
| 53465    | 24 G 1,5                  | 21,1            | 345,6               | 791,0               | 16      |
| 53466    | 25 G 1,5                  | 21,1            | 360,0               | 701,0               | 16      |
| 53467    | 27 G 1,5                  | 21,1            | 388,8               | 723,0               | 16      |
| 53468    | 30 G 1,5                  | 21,8            | 432,0               | 796,0               | 16      |
| 53469    | 33 G 1,5                  | 22,6            | 475,2               | 880,0               | 16      |
| 53470    | 37 G 1,5                  | 24,8            | 532,8               | 1026,0              | 16      |
| 52635    | 1 G 2,5                   | 5,0             | 24,0                | 46,9                | 14      |

| Part no. | No.cores x cross-sec. mm² | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------|-----------------|---------------------|---------------------|---------|
| 53471    | 1 x 2,5                   | 5,0             | 24,0                | 46,9                | 14      |
| 53472    | 2 x 2,5                   | 9,0             | 48,0                | 99,0                | 14      |
| 53473    | 3 G 2,5                   | 9,8             | 72,0                | 140,0               | 14      |
| 53474    | 4 G 2,5                   | 10,8            | 96,0                | 183,0               | 14      |
| 53475    | 5 G 2,5                   | 12,0            | 120,0               | 231,0               | 14      |
| 53476    | 6 G 2,5                   | 13,2            | 144,0               | 280,0               | 14      |
| 53477    | 7 G 2,5                   | 14,6            | 168,0               | 336,0               | 14      |
| 53478    | 8 G 2,5                   | 15,7            | 192,0               | 397,0               | 14      |
| 53479    | 10 G 2,5                  | 17,7            | 240,0               | 460,0               | 14      |
| 53480    | 12 G 2,5                  | 18,7            | 288,0               | 500,0               | 14      |
| 53481    | 14 G 2,5                  | 19,0            | 336,0               | 593,0               | 14      |
| 53482    | 16 G 2,5                  | 20,1            | 384,0               | 675,0               | 14      |
| 53483    | 19 G 2,5                  | 20,7            | 456,0               | 835,0               | 14      |
| 53484    | 21 G 2,5                  | 23,7            | 504,0               | 939,0               | 14      |
| 53485    | 24 G 2,5                  | 25,8            | 576,0               | 1047,0              | 14      |
| 53486    | 25 G 2,5                  | 25,8            | 600,0               | 1067,0              | 14      |
| 53487    | 27 G 2,5                  | 25,8            | 648,0               | 1107,0              | 14      |
| 53488    | 30 G 2,5                  | 26,7            | 720,0               | 1219,0              | 14      |
| 53489    | 33 G 2,5                  | 28,0            | 792,0               | 1349,0              | 14      |
| 53490    | 37 G 2,5                  | 30,6            | 888,0               | 1565,0              | 14      |
| 52636    | 1 G 4                     | 5,6             | 38,4                | 96,0                | 12      |
| 53491    | 1 x 4                     | 5,6             | 38,4                | 96,0                | 12      |
| 53492    | 2 x 4                     | 10,2            | 76,8                | 159,0               | 12      |
| 53493    | 3 G 4                     | 10,9            | 115,2               | 197,0               | 12      |
| 53494    | 4 G 4                     | 12,2            | 153,6               | 260,0               | 12      |
| 53495    | 5 G 4                     | 13,5            | 192,0               | 329,0               | 12      |
| 53496    | 6 G 4                     | 14,9            | 230,4               | 398,0               | 12      |
| 53497    | 7 G 4                     | 16,4            | 268,8               | 478,0               | 12      |
| 53498    | 8 G 4                     | 17,6            | 307,2               | 553,0               | 12      |
| 53499    | 10 G 4                    | 20,1            | 384,0               | 663,0               | 12      |
| 53500    | 12 G 4                    | 20,1            | 460,8               | 725,0               | 12      |
| 53501    | 14 G 4                    | 21,5            | 537,6               | 797,0               | 12      |
| 52637    | 1 G 6                     | 6,1             | 57,6                | 108,0               | 10      |
| 53502    | 1 x 6                     | 6,1             | 57,6                | 108,0               | 10      |
| 53503    | 2 x 6                     | 11,6            | 115,2               | 216,0               | 10      |
| 53504    | 3 G 6                     | 12,4            | 172,8               | 285,0               | 10      |
| 53505    | 4 G 6                     | 13,8            | 230,4               | 375,0               | 10      |
| 53506    | 5 G 6                     | 15,4            | 288,0               | 465,0               | 10      |
| 53507    | 6 G 6                     | 16,7            | 345,6               | 544,0               | 10      |
| 53508    | 7 G 6                     | 18,3            | 403,2               | 664,0               | 10      |
| 52638    | 1 G 10                    | 7,7             | 96,0                | 144,0               | 8       |
| 53509    | 1 x 10                    | 7,7             | 96,0                | 144,0               | 8       |
| 53510    | 2 x 10                    | 14,7            | 192,0               | 351,0               | 8       |
| 53511    | 3 G 10                    | 15,7            | 288,0               | 475,0               | 8       |
| 53512    | 4 G 10                    | 17,5            | 384,0               | 630,0               | 8       |
| 53513    | 5 G 10                    | 19,6            | 480,0               | 782,0               | 8       |
| 53514    | 6 G 10                    | 21,7            | 576,0               | 914,0               | 8       |
| 53515    | 7 G 10                    | 23,7            | 672,0               | 1092,0              | 8       |
| 52639    | 1 G 16                    | 9,1             | 153,6               | 205,0               | 6       |
| 53516    | 1 x 16                    | 9,1             | 153,6               | 205,0               | 6       |
| 53517    | 2 x 16                    | 17,7            | 307,2               | 495,0               | 6       |
| 53518    | 3 G 16                    | 19,3            | 460,8               | 691,0               | 6       |
| 53519    | 4 G 16                    | 21,5            | 614,4               | 905,0               | 6       |
| 53520    | 5 G 16                    | 23,9            | 768,0               | 1129,0              | 6       |
| 53521    | 6 G 16                    | 26,2            | 921,6               | 1327,0              | 6       |
| 53522    | 7 G 16                    | 28,9            | 1075,2              | 1590,0              | 6       |
| 52640    | 1 G 25                    | 10,0            | 240,0               | 336,0               | 4       |
| 53523    | 1 x 25                    | 10,9            | 240,0               | 336,0               | 4       |
| 53524    | 2 x 25                    | 21,3            | 480,0               | 833,0               | 4       |
| 53525    | 3 G 25                    | 22,7            | 720,0               | 1139,0              | 4       |
| 53526    | 4 G 25                    | 25,4            | 960,0               | 1489,0              | 4       |
| 53527    | 5 G 25                    | 28,1            | 1200,0              | 1863,0              | 4       |
| 53528    | 6 G 25                    | 31,1            | 1440,0              | 2275,0              | 4       |
| 53529    | 7 G 25                    | 34,5            | 1680,0              | 2633,0              | 4       |
| 52641    | 1 G 35                    | 12,1            | 336,0               | 454,0               | 2       |
| 53530    | 1 x 35                    | 12,1            | 336,0               | 454,0               | 2       |
| 53531    | 2 x 35                    | 23,7            | 672,0               | 1104,0              | 2       |
| 53532    | 3 G 35                    | 25,5            | 1008,0              | 1513,0              | 2       |
| 53533    | 4 G 35                    | 28,4            | 1344,0              | 1992,0              | 2       |
| 53534    | 5 G 35                    | 31,3            | 1680,0              | 2488,0              | 2       |
| 52642    | 1 G 50                    | 14,9            | 480,0               | 638,0               | 1       |
| 53535    | 1 x 50                    | 14,9            | 480,0               | 638,0               | 1       |
| 53536    | 2 x 50                    | 29,3            | 960,0               | 1573,0              | 1       |
| 53537    | 3 G 50                    | 31,5            | 1440,0              | 2154,0              | 1       |
| 53538    | 4 G 50                    | 35,3            | 1920,0              | 2819,0              | 1       |
| 53539    | 5 G 50                    | 39,1            | 2400,0              | 3505,0              | 1       |
| 52643    | 1 G 70                    | 17,1            | 672,0               | 875,0               | 2/0     |
| 53540    | 1 x 70                    | 17,1            | 672,0               | 875,0               | 2/0     |
| 53541    | 2 x 70                    | 33,7            | 1344,0              | 2157,0              | 2/0     |
| 53542    | 3 G 70                    | 36,4            | 2016,0              | 2946,0              | 2/0     |
| 53543    | 4 G 70                    | 40,3            | 2688,0              | 3888,0              | 2/0     |
| 53544    | 5 G 70                    | 44,5            | 3360,0              | 4864,0              | 2/0     |
| 52644    | 1 G 95                    | 19,2            | 912,0               | 1149,0              | 3/0     |
| 53545    | 1 x 95                    | 19,2            | 912,0               | 1149,0              | 3/0     |
| 53546    | 2 x 95                    | 37,5            | 1824,0              | 2763,0              | 3/0     |
| 53547    | 3 G 95                    | 40,0            | 2736,0              | 3835,0              | 3/0     |
| 53548    | 4 G 95                    | 45,3            | 3648,0              | 5052,0              | 3/0     |
| 53549    | 5 G 95                    | 50,7            | 4560,0              | 6307,0              | 3/0     |

Dimensions and specifications may be changed without prior notice. (RE01)

# HELUTHERM® 145 MULTI-C

flexible, cross-linked, halogen-free, Cu-screened, EMC-preferred type



## Technical data

- Temperature-resistant and halogen-free connection and control cable
- **Temperature range**  
flexing -35°C to +120°C  
fixed installation -55°C to +145°C  
in short-circuit +250°C
- **Nominal voltage**  
up to 1,0 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
with protected fixed installation  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 600/1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
in operation 8x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Caloric load values**  
see "Technical Informations"
- **Power ratings table**  
see "Technical Informations"
- **Approval**  
Germanischer Lloyd

## Cable structure

- Tinned copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked, halogen-free polyolefin-copolymer
- Core identification black cores with continuous white numbering
- Cores stranded in layers with optimal lay length
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of cross-linked, halogen-free polyolefin-copolymer
- Sheath colour: black
- With meter marking

## Note

- Also available in other colours on request
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**HELUTHERM® 145 MULTI**

## Properties

- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- These control cables are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test (unit flame test) acc. to DIN VDE 0482-332-3-22, BS 4066 Teil 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Flame test (cable) acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Application

These halogen-free, cross-linked and temperature resistant wiring and control cables with enhanced fire-behaviour properties are used for wiring up the lighting fixtures, heaters, electric machines (temperature class B), switching systems and distribution switchboards. A very long service life is also given on account of their excellent high-temperature stability. These cables exhibit good resistance to weathering as well as being very stable to temperature, moisture, ozone and UV radiation. These cables are therefore mainly used for traffic control systems and diverse outdoor applications. The development of smoke is low and no corrosive gases are liberated during combustion of these halogen-free cables in case of fire. The risk of toxic fumes is considerably less in the event of fire because the caloric load values is lower. Precious time can thus be won for a disciplined evacuation, and unnecessary loss of life can be prevented. The extent of the damage to costly control and monitoring systems and the concrete and steel structures of buildings and plant due to fire is reduced by this. Injuries to persons and damage to materials can be prevented. A lower conductor cross section is possible in certain circumstances because of the high thermal load and thus savings in the space and weight required can be made. These wiring and control cables provide a significant contribution in safety engineering and environmental protection.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|---------|
| 52194    | 2 x 0,25                               | 5,0             | 16,0                | 36,0                | 24      | 52196    | 5 x 0,25                               | 6,4             | 29,0                | 68,0                | 24      |
| 52195    | 3 x 0,25                               | 5,5             | 21,0                | 44,0                | 24      | 52197    | 7 x 0,25                               | 7,5             | 37,0                | 95,0                | 24      |

Continuation ▶

# HELUTHERM® 145 MULTI-C

flexible, cross-linked, halogen-free, Cu-screened, EMC-preferred type



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|----------|--|-----------------|---------------------|---------------------|---------|
| 52198    | 1 x 0,5                                | 3,7             | 15,0                | 24,0                | 20      | 52246    | 7 x 1,5                                | 12,6            | 136,0               | 264,0               | 16      |
| 52199    | 2 x 0,5                                | 5,6             | 29,0                | 55,0                | 20      | 52247    | 8 x 1,5                                | 13,7            | 172,0               | 308,0               | 16      |
| 52200    | 3 x 0,5                                | 6,1             | 38,0                | 64,0                | 20      | 52248    | 10 x 1,5                               | 15,0            | 193,0               | 361,0               | 16      |
| 52201    | 4 x 0,5                                | 6,7             | 45,0                | 78,0                | 20      | 52249    | 12 x 1,5                               | 15,0            | 222,0               | 383,0               | 16      |
| 52202    | 5 x 0,5                                | 7,3             | 51,0                | 95,0                | 20      | 52250    | 14 x 1,5                               | 16,0            | 272,0               | 458,0               | 16      |
| 52203    | 6 x 0,5                                | 7,9             | 66,0                | 106,0               | 20      | 52251    | 16 x 1,5                               | 17,0            | 285,0               | 515,0               | 16      |
| 52204    | 7 x 0,5                                | 8,4             | 68,0                | 122,0               | 20      | 52252    | 19 x 1,5                               | 19,3            | 331,0               | 639,0               | 16      |
| 52205    | 8 x 0,5                                | 9,0             | 80,0                | 138,0               | 20      | 52253    | 21 x 1,5                               | 20,3            | 367,0               | 705,0               | 16      |
| 52206    | 10 x 0,5                               | 10,0            | 93,0                | 161,0               | 20      | 51000    | 25 x 1,5                               | 21,7            | 526,0               | 841,0               | 16      |
| 52207    | 12 x 0,5                               | 10,0            | 107,0               | 170,0               | 20      | 52254    | 1 x 2,5                                | 5,6             | 28,0                | 59,0                | 14      |
| 52208    | 14 x 0,5                               | 11,0            | 122,0               | 193,0               | 20      | 52255    | 2 x 2,5                                | 9,8             | 96,0                | 148,0               | 14      |
| 52209    | 16 x 0,5                               | 11,7            | 129,0               | 216,0               | 20      | 52256    | 3 x 2,5                                | 10,4            | 146,0               | 183,0               | 14      |
| 52210    | 19 x 0,5                               | 12,8            | 158,0               | 253,0               | 20      | 52257    | 4 x 2,5                                | 11,5            | 150,0               | 221,0               | 14      |
| 52211    | 21 x 0,5                               | 13,5            | 167,0               | 281,0               | 20      | 52258    | 5 x 2,5                                | 12,6            | 200,0               | 273,0               | 14      |
| 52212    | 1 x 0,75                               | 4,0             | 18,0                | 29,0                | 19      | 52259    | 6 x 2,5                                | 13,8            | 227,0               | 326,0               | 14      |
| 52213    | 2 x 0,75                               | 6,6             | 38,0                | 71,0                | 19      | 52260    | 7 x 2,5                                | 15,3            | 235,0               | 397,0               | 14      |
| 52214    | 3 x 0,75                               | 6,9             | 50,0                | 82,0                | 19      | 52261    | 8 x 2,5                                | 16,5            | 265,0               | 475,0               | 14      |
| 52215    | 4 x 0,75                               | 7,6             | 58,0                | 100,0               | 19      | 52262    | 10 x 2,5                               | 18,3            | 326,0               | 542,0               | 14      |
| 52216    | 5 x 0,75                               | 8,3             | 70,0                | 117,0               | 19      | 52263    | 12 x 2,5                               | 18,3            | 376,0               | 582,0               | 14      |
| 52217    | 6 x 0,75                               | 8,9             | 85,0                | 135,0               | 18      | 52264    | 14 x 2,5                               | 19,6            | 428,0               | 681,0               | 14      |
| 52218    | 7 x 0,75                               | 9,9             | 90,0                | 158,0               | 19      | 52265    | 16 x 2,5                               | 20,7            | 480,0               | 778,0               | 14      |
| 52219    | 8 x 0,75                               | 10,6            | 110,0               | 178,0               | 19      | 52266    | 19 x 2,5                               | 23,5            | 557,0               | 948,0               | 14      |
| 52220    | 10 x 0,75                              | 11,5            | 140,0               | 207,0               | 19      | 52267    | 21 x 2,5                               | 24,4            | 606,0               | 1042,0              | 14      |
| 52221    | 12 x 0,75                              | 11,5            | 148,0               | 220,0               | 19      | 52268    | 1 x 4                                  | 6,3             | 56,0                | 86,0                | 12      |
| 52222    | 14 x 0,75                              | 12,2            | 167,0               | 250,0               | 19      | 52269    | 2 x 4                                  | 10,9            | 135,0               | 196,0               | 12      |
| 52223    | 16 x 0,75                              | 12,9            | 183,0               | 282,0               | 19      | 52270    | 3 x 4                                  | 11,5            | 178,0               | 248,0               | 12      |
| 52224    | 19 x 0,75                              | 14,5            | 212,0               | 335,0               | 19      | 52271    | 4 x 4                                  | 12,8            | 220,0               | 316,0               | 12      |
| 52225    | 21 x 0,75                              | 15,3            | 230,0               | 370,0               | 19      | 52272    | 5 x 4                                  | 14,3            | 259,0               | 376,0               | 12      |
| 52226    | 1 x 1                                  | 4,2             | 20,0                | 33,0                | 18      | 52273    | 6 x 4                                  | 15,6            | 302,0               | 452,0               | 12      |
| 52227    | 2 x 1                                  | 7,0             | 46,0                | 78,0                | 18      | 52274    | 7 x 4                                  | 17,0            | 355,0               | 555,0               | 12      |
| 52228    | 3 x 1                                  | 7,4             | 56,0                | 92,0                | 18      | 52275    | 8 x 4                                  | 18,3            | 392,0               | 655,0               | 12      |
| 52229    | 4 x 1                                  | 8,1             | 66,0                | 112,0               | 18      | 52276    | 10 x 4                                 | 20,7            | 480,0               | 767,0               | 12      |
| 52230    | 5 x 1                                  | 8,9             | 95,0                | 134,0               | 18      | 52277    | 12 x 4                                 | 20,7            | 557,0               | 829,0               | 12      |
| 52231    | 6 x 1                                  | 9,5             | 105,0               | 164,0               | 18      | 52278    | 14 x 4                                 | 22,1            | 636,0               | 948,0               | 12      |
| 52232    | 7 x 1                                  | 10,5            | 109,0               | 192,0               | 18      | 52279    | 1 x 6                                  | 6,9             | 81,0                | 108,0               | 10      |
| 52233    | 8 x 1                                  | 11,4            | 130,0               | 219,0               | 18      | 52280    | 2 x 6                                  | 12,1            | 175,0               | 255,0               | 10      |
| 52234    | 10 x 1                                 | 12,5            | 138,0               | 254,0               | 18      | 52281    | 3 x 6                                  | 12,8            | 240,0               | 330,0               | 10      |
| 52235    | 12 x 1                                 | 12,5            | 164,0               | 270,0               | 18      | 52282    | 4 x 6                                  | 14,3            | 305,0               | 429,0               | 10      |
| 52236    | 14 x 1                                 | 13,5            | 198,0               | 308,0               | 18      | 52283    | 5 x 6                                  | 16,0            | 441,0               | 536,0               | 10      |
| 52237    | 16 x 1                                 | 14,3            | 203,0               | 350,0               | 18      | 52284    | 6 x 6                                  | 17,4            | 473,0               | 624,0               | 10      |
| 52238    | 19 x 1                                 | 16,2            | 235,0               | 447,0               | 18      | 52285    | 7 x 6                                  | 19,3            | 505,0               | 751,0               | 10      |
| 52239    | 21 x 1                                 | 17,0            | 257,0               | 492,0               | 18      | 52286    | 1 x 10                                 | 8,4             | 124,0               | 170,0               | 8       |
| 52240    | 1 x 1,5                                | 4,8             | 22,0                | 42,0                | 16      | 52287    | 2 x 10                                 | 15,1            | 265,0               | 409,0               | 8       |
| 52241    | 2 x 1,5                                | 8,2             | 58,0                | 105,0               | 16      | 52288    | 3 x 10                                 | 16,4            | 370,0               | 550,0               | 8       |
| 52242    | 3 x 1,5                                | 8,7             | 71,0                | 121,0               | 16      | 52289    | 4 x 10                                 | 18,1            | 485,0               | 715,0               | 8       |
| 52243    | 4 x 1,5                                | 9,4             | 86,0                | 156,0               | 16      | 52290    | 5 x 10                                 | 20,2            | 610,0               | 882,0               | 8       |
| 52244    | 5 x 1,5                                | 10,5            | 104,0               | 188,0               | 16      | 52291    | 6 x 10                                 | 22,3            | 715,0               | 1026,0              | 8       |
| 52245    | 6 x 1,5                                | 11,5            | 118,0               | 225,0               | 16      | 52292    | 7 x 10                                 | 24,3            | 820,0               | 1195,0              | 8       |

Dimensions and specifications may be changed without prior notice. (RE01)







H07 V-K / (H)07 V-K

**FIVENORM**

THHN/THWN

H05Z-K/H07z-K

# ■ SINGLE CONDUCTORS

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# HELUWIND® WK POWERLINE ALU SINGLE

0,6/1 kV, flexible aluminium stranded wires



## Technical data

- **Temperature range**  
flexing -20°C to +90°C  
fixed installation -40°C to +105°C
- Permissible conductor **operating temperature** +105°C up to 3000h
- **Nominal voltage**  
0,6/1 kV
- **Test voltage**  
2,5 kV
- **Minimum bending radius**  
4x cable Ø acc. to  
DIN VDE 0298 Part 3, Table 2
- **Flame test**  
IEC 60332-1-2
- **Approvals**  
conforms to DIN VDE 0250-813  
UL/CSA in preparation

## Cable structure

- Fine-wire aluminium strands
- Special insulation black
- Other colours available upon request

## Properties

- UV resistant
- Oil resistant
- Easy to assemble
- Recyclable

## Note

For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The HELUWIND® WK POWERLINE ALU Single is a highly flexible, fine-wire, single conductor with a heat-resistant wire insulation. Its reduced weight of up to 50% over comparable copper wires (H07-VK) provides a huge advantage in many applications.

**The HELUWIND® WK POWERLINE ALU Single may only be used with certified connection technology from HELUKABEL®. This includes C8 crimp connections and screwed connections; both described in the "Connection Technology" section and tested in accordance with IEC 61238-1 cl. A. A space-saving welding technique is available as an additional option.**

The wire is also available in a halogen-free design, with UL/CSA approval, and a rated voltage of 1.8/3 kV. Suitable for the interior wiring of devices, distributors, and switchboards as well as for protected laying in and on lamps with a nominal voltage up to 1000 V AC or up to 750 V DC towards the end. Not suitable for direct laying on trays, gutters, or tubs.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 709914   | 1x70                                   | -       | 15,9            | 206,0             | 315,0               |
| 709915   | 1x95                                   | -       | 17,2            | 280,0             | 420,0               |
| 709916   | 1x120                                  | -       | 18,2            | 355,0             | 507,0               |
| 709917   | 1x150                                  | -       | 19,2            | 441,0             | 601,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | AL weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|-------------------|---------------------|
| 709918   | 1x185                                  | -       | 22,1            | 544,0             | 950,0               |
| 709919   | 1x240                                  | -       | 25,1            | 706,0             | 1060,0              |
| 709920   | 1x300                                  | -       | 27,8            | 882,0             | 1290,0              |
| 709921   | 1x400                                  | -       | 32,7            | 1176,0            | 1460,0              |

Dimensions and specifications may be changed without prior notice.

# H07V-K / (H)07V-K

PVC-Single Cores, fine wire stranded



## Technical data

- PVC single cores to  
DIN VDE 0285-525-2-31/  
DIN EN 50525-2-31 and IEC 60227-3
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -30°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 450/750 V
- **Test voltage**  
2500 V
- **Insulation resistance**  
min. 10 MOhm x km
- **Minimum bending radius**  
fixed installation  
core Ø ≤ 8 mm: 4x core Ø  
core Ø > 8-12 mm: 5x core Ø  
core Ø > 12 mm: 6x core Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare Cu-conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC  
compound type T11 to  
DIN VDE 0207-363-3 / DIN EN 50363-3  
and IEC 60227-3
- Core identification: see table below

## Properties

- The materials used during manufacturing  
are cadmium-free, contain no silicone  
and are free from substances harmful  
to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant  
acc. to DIN VDE 0482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2  
(equivalent DIN VDE 0472 part 804  
test method B)

## Note

- The following colours are recommended  
(only single colour): black, white, blue, grey,  
brown, red, orange, turquoise, violet and  
pink. Two-coloured combinations are not  
allowed, with exceptions of green-yellow.
- Colours yellow, green, transparent only in  
(H)07V-K available.
- Two-coloured combination is only  
permitted for (H)07V-K.

## Application

These single cores are suitable for laying in tubes, under and surface mounting of plasters and also in closed installation conduits. These are not allowed to install for direct laying on cable trays, channels or tanks. These types are permitted for the inner wiring of equipment, distributor and switchboards and also for protective laying to the lightings with a nominal voltage up to 1000 V alternating current or up to 750 V direct current against earth.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

## H07V-K, (H)07V-K

| Cross-sec. mm <sup>2</sup> app. RAL | Outer Ø min. - max. mm | Cop. weight kg / km | BK   | GN-YE | BU   | BN   | RD   | WH   | GY   | VT   | YE   | PK   | GN   | TRANS | D-BU | OG   | 2-col. | U-BU |
|-------------------------------------|------------------------|---------------------|------|-------|------|------|------|------|------|------|------|------|------|-------|------|------|--------|------|
|                                     |                        |                     | 9005 | -     | 5015 | 8003 | 3000 | 9003 | 7001 | 4005 | 1021 | 3015 | 6018 | -     | 5010 | 2003 | -      | 5002 |



### Coil in cardboard (100m)

#### Packing

#### H07V-K coil

| Part no. | Outer Ø min. - max. mm | Cop. weight kg / km | 29129 | 29130 | 29131 | 29132 | 29133 | 29134 | 29135 | 29136 | 29137 | 29138 | 29139 | 29140 | 29141 | 29142 | 29144 | 26395 |
|----------|------------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1,5      | 2,8 - 3,4              | 14,4                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 2,5      | 3,4 - 4,1              | 24,0                | 29145 | 29146 | 29147 | 29148 | 29149 | 29150 | 29151 | 29152 | 29153 | 29154 | 29155 | 29156 | 29157 | 29158 | 29160 | 26396 |
| 4        | 3,9 - 4,8              | 38,0                | 29161 | 29162 | 29163 | 29164 | 29165 | 29166 | 29167 | 29168 | 29169 | 29170 | 29171 | 29172 | 29173 | 29174 | 29176 | 26397 |
| 6        | 4,4 - 5,3              | 58,0                | 29177 | 29178 | 29179 | 29180 | 29181 | 29182 | 29183 | 29184 | 29185 | 29186 | 29187 | 29188 | 29189 | 29190 | 29192 | 26398 |



### Spool (with various capacity)

#### Packing

#### H07V-K spool

| Part no. | Outer Ø min. - max. mm | Cop. weight kg / km | 26690 | 26691 | 26692 | 26693 | 26694 | 26695 | 26696 | 26697 | 26698 | 26699 | 26700 | 26701 | 26702 | 26703 | 26705 | 26399 |
|----------|------------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1,5      | 2,8 - 3,4              | 14,4                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 2,5      | 3,4 - 4,1              | 24,0                | 26706 | 26707 | 26708 | 26709 | 26710 | 26711 | 26712 | 26713 | 26714 | 26715 | 26716 | 26717 | 26718 | 26719 | 26721 | 26400 |
| 4        | 3,9 - 4,8              | 38,0                | 26722 | 26723 | 26724 | 26725 | 26726 | 26727 | 26728 | 26729 | 26730 | 26731 | 26732 | 26733 | 26734 | 26735 | 26737 | 26401 |
| 6        | 4,4 - 5,3              | 58,0                | 26738 | 26739 | 26740 | 26741 | 26742 | 26743 | 26744 | 26745 | 26746 | 26747 | 26748 | 26749 | 26750 | 26751 | 26753 | 26402 |

Continuation ▶

# H07V-K / (H)07V-K

## PVC-Single Cores, fine wire stranded

### H05V-U, (H)05V-U, (H)07V-U



| Cross-sec. mm <sup>2</sup><br>app. RAL | Outer Ø min. - max. mm | Cop. weight kg / km | BK   | GN-YE | BU   | BN   | RD   | WH   | GY   | VT   | YE   | PK   | GN   | TRANS | D-BU | OG   | 2-col. | U-BU |
|--|------------------------|---------------------|------|-------|------|------|------|------|------|------|------|------|------|-------|------|------|--------|------|
|  |                        |                     | 9005 | -     | 5015 | 8003 | 3000 | 9003 | 7001 | 4005 | 1021 | 3015 | 6018 | -     | 5010 | 2003 | -      | 5002 |



**Packing** **Barrel (with various capacity)**

**H07V-K barrel**

|          |           |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------|-----------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Part no. |           |      | 26755 | 26756 | 26757 | 26758 | 26759 | 26760 | 26761 | 26762 | 26763 | 26764 | 26765 | 26766 | 26767 | 26768 | 26770 | 26403 |
| 1,5      | 2,8 - 3,4 | 14,4 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |           |      | 26771 | 26772 | 26773 | 26774 | 26775 | 26776 | 26777 | 26778 | 26779 | 26780 | 26781 | 26782 | 26783 | 26784 | 26786 | 26404 |
| 2,5      | 3,4 - 4,1 | 24,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |           |      | 26787 | 26788 | 26789 | 26790 | 26791 | 26792 | 26793 | 26794 | 26795 | 26796 | 26797 | 26798 | 26799 | 26800 | 26802 | 26819 |
| 4        | 3,9 - 4,8 | 38,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |           |      | 26803 | 26804 | 26805 | 26806 | 26807 | 26808 | 26809 | 26810 | 26811 | 26812 | 26813 | 26814 | 26815 | 26816 | 26818 | 26820 |
| 6        | 4,4 - 5,3 | 58,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |



**Packing** **Coil in foil (100m)**

**H07V-K coil**

|          |             |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------|-------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Part no. |             |        | 26060 | 26061 | 26062 | 26063 | 26064 | 26065 | 26066 | 26067 | 26068 | 26069 | 26092 | 26099 | 26108 | 26109 | 26111 | 26821 |
| 1,5      | 2,8 - 3,4   | 14,4   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 26112 | 26113 | 26114 | 26115 | 26116 | 26117 | 26118 | 26119 | 29855 | 29856 | 29857 | 29858 | 29859 | 29890 | 29892 | 26822 |
| 2,5      | 3,4 - 4,1   | 24,0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29893 | 29894 | 29895 | 29896 | 29897 | 29898 | 29899 | 29905 | 29906 | 29907 | 29908 | 29909 | 29910 | 29911 | 29913 | 26823 |
| 4        | 3,9 - 4,8   | 38,0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29914 | 29915 | 29916 | 29917 | 29918 | 29919 | 29921 | 29922 | 29923 | 29924 | 29925 | 29926 | 29927 | 29928 | 29933 | 26824 |
| 6        | 4,4 - 5,3   | 58,0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29193 | 29194 | 29195 | 29196 | 29197 | 29198 | 29199 | 29200 | 29201 | 29202 | 29203 | 29204 | 29205 | 29206 | 29208 | -     |
| 10       | 5,7 - 6,8   | 96,0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29209 | 29210 | 29211 | 29212 | 29213 | 29214 | 29215 | 29216 | 29217 | 29218 | 29219 | 29220 | 29221 | 29222 | 29224 | -     |
| 16       | 6,7 - 8,1   | 154,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29225 | 29226 | 29227 | 29228 | 29229 | 29230 | 29231 | 29232 | 29233 | 29234 | 29235 | 29236 | 29237 | 29238 | 29240 | -     |
| 25       | 8,4 - 10,2  | 240,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29241 | 29242 | 29243 | 29244 | 29245 | 29246 | 29247 | 29248 | 29249 | 29250 | 29251 | 29252 | 29253 | 29254 | 29256 | -     |
| 35       | 9,7 - 11,7  | 336,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29257 | 29258 | 29259 | 29260 | 29261 | 29262 | 29263 | 29264 | 29265 | 29266 | 29267 | 29268 | 29269 | 29270 | 29272 | -     |
| 50       | 11,5 - 13,9 | 480,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29273 | 29274 | 29275 | 29276 | 29277 | 29278 | 29279 | 29280 | 29281 | 29282 | 29283 | 29284 | 29285 | 29286 | 29288 | -     |
| 70       | 13,2 - 16,0 | 672,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29289 | 29290 | 29291 | 29292 | 29293 | 29294 | 29295 | 29296 | 29297 | 29298 | 29299 | 29300 | 29301 | 29302 | 29304 | -     |
| 95       | 15,1 - 18,2 | 912,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29418 | 29419 | 29420 | 29421 | 29422 | 29423 | 29424 | 29425 | 29426 | 29427 | 29428 | 29429 | 29430 | 29431 | 29433 | -     |
| 120      | 16,7 - 20,2 | 1152,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29434 | 29435 | 29436 | 29437 | 29438 | 29439 | 29440 | 29441 | 29442 | 29443 | 29444 | 29445 | 29446 | 29447 | 29449 | -     |
| 150      | 18,6 - 22,5 | 1440,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29494 | 29495 | 29496 | 29497 | 29498 | 29499 | 29590 | 29591 | 29592 | 29593 | 29594 | 29595 | 29596 | 29597 | 29599 | -     |
| 185      | 20,6 - 24,9 | 1776,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Part no. |             |        | 29813 | 29814 | 29815 | 29816 | 29817 | 29818 | 29819 | 29840 | 29841 | 29842 | 29843 | 29844 | 29845 | 29846 | 29848 | -     |
| 240      | 23,5 - 28,4 | 2304,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |



**Packing** **Drum**

**H07V-K drum**

|          |             |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
|----------|-------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| Part no. |             |        | 26825 | 26826 | 26827 | 26828 | 26829 | 26830 | 26831 | 26832 | 26833 | 26834 | 26835 | 26836 | 26837 | 26838 | 26840 | - |
| 10       | 5,7 - 6,8   | 96,0   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26841 | 26842 | 26843 | 26844 | 26845 | 26846 | 26847 | 26848 | 26849 | 26850 | 26851 | 26852 | 26853 | 26854 | 26856 | - |
| 16       | 6,7 - 8,1   | 154,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26857 | 26858 | 26859 | 26860 | 26861 | 26862 | 26863 | 26864 | 26865 | 26866 | 26867 | 26868 | 26869 | 26870 | 26872 | - |
| 25       | 8,4 - 10,2  | 240,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26873 | 26874 | 26875 | 26876 | 26877 | 26878 | 26879 | 26880 | 26881 | 26882 | 26883 | 26884 | 26885 | 26886 | 26888 | - |
| 35       | 9,7 - 11,7  | 336,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26889 | 26890 | 26891 | 26892 | 26893 | 26894 | 26895 | 26896 | 26897 | 26898 | 26899 | 26900 | 26901 | 26902 | 26904 | - |
| 50       | 11,5 - 13,9 | 480,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26905 | 26906 | 26907 | 26908 | 26909 | 26910 | 26911 | 26912 | 26913 | 26914 | 26915 | 26916 | 26917 | 26918 | 26920 | - |
| 70       | 13,2 - 16,0 | 672,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 26921 | 26922 | 26923 | 26924 | 26925 | 26926 | 26927 | 26928 | 26929 | 26930 | 26931 | 26932 | 26933 | 26934 | 26936 | - |
| 95       | 15,1 - 18,2 | 912,0  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 29305 | 29306 | 29307 | 29308 | 29309 | 29310 | 29311 | 29312 | 29313 | 29314 | 29315 | 29316 | 29317 | 29318 | 29320 | - |
| 120      | 16,7 - 20,2 | 1152,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 29321 | 29322 | 29323 | 29324 | 29325 | 29326 | 29327 | 29328 | 29329 | 29330 | 29331 | 29332 | 29333 | 29334 | 29336 | - |
| 150      | 18,6 - 22,5 | 1440,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 29337 | 29338 | 29339 | 29340 | 29341 | 29342 | 29343 | 29344 | 29345 | 29346 | 29347 | 29348 | 29349 | 29350 | 29352 | - |
| 185      | 20,6 - 24,9 | 1776,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 29353 | 29354 | 29355 | 29356 | 29357 | 29358 | 29359 | 29360 | 29361 | 29362 | 29363 | 29364 | 29365 | 29366 | 29368 | - |
| 240      | 23,5 - 28,4 | 2304,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |
| Part no. |             |        | 28878 | 28879 | 28880 | 28881 | 28882 | 28883 | 28884 | 28885 | 28886 | 28887 | 28888 | -     | 28889 | 28890 | 28891 | - |
| 300      | 26,0 - 30,5 | 2880,0 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |

Dimensions and specifications may be changed without prior notice. (RK01)

# H05Z-K / H07Z-K

single core, halogen-free



## Technical data

- Single cores for low emission of smoke and corrosive gases in case of fire to DIN VDE 0285-525-3-41 / DIN EN 50525-3-41
- **Conductor resistance** acc. to DIN VDE 0295 cl.5
- **Temperature range** -40°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
H05Z-K =  $U_0/U$  300/500 V  
H07Z-K =  $U_0/U$  450/750 V
- **Test voltage** 2500 V
- **Insulation resistance** at 90°C to DIN VDE 0282 part 9
- **Minimum bending radius** fixed installation  
core  $\varnothing \leq 8$  mm: 4x core  $\varnothing$   
core  $\varnothing > 8-12$  mm: 5x core  $\varnothing$   
core  $\varnothing > 12$  mm: 6x core  $\varnothing$
- **Radiation resistance** up to  $20 \times 10^6$  cJ/kg (up to 20 Mrad)

## Cable structure

- Bare Cu-conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Separating foil over conductor permitted
- Core insulation of cross-linked polyolefin compound type EI5 to DIN VDE 0207-363-5 / DIN EN 50363-5
- Core identification: see table below
- **LSOH**= Low Smoke Zero Halogen

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- Self-extinguishing and flame retardant acc. o DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
  - Ozone resistant acc. to DIN VDE 0473-811-403, DIN EN 60811-403
  - Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
  - Halogen-free acc. to DIN VDE 0285-525-1, DIN EN 50525-1 appendix B

## Note

- Type H07Z-K  
Colour yellow only as (H)07Z-K available

## Application

Halogen-free single-core wires are used for installation in dry environments for wiring up lighting fixtures and units where valuable assets are to be protected from further damage resulting from fire. These types are suitable for laying in tubes on and under plaster, as well as in closed installation ducts.

**H07Z-K**, suitable for protected, permanent laying in or on lighting installations or switching and control equipment up to 1000 V AC or 750 V DC to earth.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

### H05Z-K

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | D-BU  | OG    | U-BU  |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Part no. 0,5               | 2,1 - 2,6              | 4,8                 | 9,0                 | 52872 | 52873 | 52874 | 52875 | 52876 | 52877 | 52878 | 52879 | 52880 | 52945 | 52946 | 53071 |
| Part no. 0,75              | 2,2 - 2,8              | 7,2                 | 12,4                | 52881 | 52882 | 52883 | 52884 | 52885 | 52886 | 52887 | 52888 | 52889 | 52947 | 52948 | 53072 |
| Part no. 1                 | 2,4 - 2,9              | 9,6                 | 15,0                | 52890 | 52891 | 52892 | 52893 | 52894 | 52895 | 52896 | 52897 | 52898 | 52949 | 52950 | 53073 |

### H07Z-K

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | D-BU  | OG    | U-BU  |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Part no. 1,5               | 2,8 - 3,5              | 14,4                | 24,0                | 51768 | 51769 | 51770 | 51771 | 51772 | 51773 | 51774 | 51775 | 51776 | 52951 | 52952 | 53074 |
| Part no. 2,5               | 3,4 - 4,3              | 24,0                | 35,0                | 51777 | 51778 | 51779 | 51780 | 51781 | 51782 | 51783 | 51784 | 51785 | 52953 | 52954 | 53075 |
| Part no. 4                 | 3,9 - 4,9              | 38,0                | 51,0                | 51786 | 51787 | 51788 | 51789 | 51790 | 51791 | 51792 | 51793 | 51794 | 52955 | 52956 | 53076 |
| Part no. 6                 | 4,4 - 5,5              | 58,0                | 71,0                | 51795 | 51796 | 51797 | 51798 | 51799 | 51800 | 51801 | 51802 | 51803 | 52957 | 52958 | 53077 |
| Part no. 10                | 5,7 - 7,1              | 96,0                | 118,0               | 51804 | 51805 | 51806 | 51807 | 51808 | 51809 | 51810 | 51811 | 51812 | 52959 | 52960 | 53078 |
| Part no. 16                | 6,7 - 8,4              | 154,0               | 180,0               | 51813 | 51814 | 51815 | 51816 | 51817 | 51818 | 51819 | 51820 | 51821 | 52961 | 52962 | 53079 |
| Part no. 25                | 8,4 - 10,6             | 240,0               | 278,0               | 51822 | 51823 | 51824 | 51825 | 51826 | 51827 | 51828 | 51829 | 51830 | 52963 | 52964 | 53080 |
| Part no. 35                | 9,7 - 12,1             | 336,0               | 375,0               | 51831 | 51832 | 51833 | 51834 | 51835 | 51836 | 51837 | 51838 | 51839 | 52965 | 52966 | 53081 |
| Part no. 50                | 11,5 - 14,4            | 480,0               | 560,0               | 51840 | 51841 | 51842 | 51843 | 51844 | 51845 | 51846 | 51847 | 51848 | 52967 | 52968 | 53082 |

Continuation ▶



# H05Z-K / H07Z-K

single core, halogen-free



## H07Z-K

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | D-BU  | OG    | U-BU  |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Part no. 70                | 13,2 - 16,6            | 672,0               | 780,0               | 51849 | 51850 | 51851 | 51852 | 51853 | 51854 | 51855 | 51856 | 51857 | 52969 | 52970 | 53083 |
| Part no. 95                | 15,1 - 18,8            | 912,0               | 952,0               | 51858 | 51859 | 51860 | 51861 | 51862 | 51863 | 51864 | 51865 | 51866 | 52971 | 52972 | 53084 |
| Part no. 120               | 16,7 - 20,9            | 1152,0              | 1200,0              | 51867 | 51868 | 51869 | 51870 | 51871 | 51872 | 51873 | 51874 | 51875 | 52973 | 52974 | 53085 |
| Part no. 150               | 18,6 - 23,3            | 1440,0              | 1505,0              | 51876 | 51877 | 51878 | 51879 | 51880 | 51881 | 51882 | 51883 | 51884 | 52975 | 52976 | 53086 |
| Part no. 185               | 20,6 - 25,8            | 1776,0              | 1845,0              | 51885 | 51886 | 51887 | 51888 | 51889 | 51890 | 51891 | 51892 | 51893 | 52977 | 52978 | 53087 |
| Part no. 240               | 23,5 - 29,4            | 2304,0              | 2400,0              | 51894 | 51895 | 51896 | 51897 | 51898 | 51899 | 51900 | 51901 | 51902 | 52979 | 52980 | 53088 |

## H05Z-K, barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | RD/WH | BU/WH | BN/WH | D-BU/WH |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|---------|
| Part no. 0,5               | 2,1 - 2,6              | 4,8                 | 9,0                 | 51392 | 51393 | 51394 | 51395   |
| Part no. 0,75              | 2,2 - 2,8              | 7,2                 | 12,4                | 51396 | 51397 | 51398 | 51399   |
| Part no. 1                 | 2,2 - 2,8              | 9,6                 | 15,0                | 51400 | 51401 | 51402 | 51403   |

## H07Z-K, barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | RD/WH | BU/WH | BN/WH | D-BU/WH |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|---------|
| Part no. 1,5               | 2,8 - 3,5              | 14,4                | 24,0                | 51404 | 51405 | 51406 | 51407   |
| Part no. 2,5               | 3,4 - 4,3              | 24,0                | 35,0                | 51408 | 51409 | 51410 | 51411   |
| Part no. 4                 | 3,9 - 4,9              | 38,0                | 51,0                | 51412 | 51413 | 51414 | 51415   |
| Part no. 6                 | 4,4 - 5,5              | 58,0                | 71,0                | 51416 | 51417 | 51418 | 50899   |

## H05Z-K two colour

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE | D-BU  | OG    | U-BU |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|----|-------|-------|------|
| Part no. 0,5               | 2,1 - 2,6              | 4,8                 | 9,0                 | 52809 | 52810 | 52811 | 52812 | 52813 | 52814 | 52815 | 52816 | -  | 52817 | 52819 | -    |
| Part no. 0,75              | 2,2 - 2,8              | 7,2                 | 12,4                | 52821 | 52822 | 52823 | 52824 | 52825 | 52826 | 52827 | 52828 | -  | 52829 | 52831 | -    |
| Part no. 1                 | 2,4 - 2,9              | 9,6                 | 15,0                | 52833 | 52834 | 52835 | 52836 | 52837 | 52838 | 52839 | 52840 | -  | 52841 | 52843 | -    |

## H07Z-K two colour

| Cross-sec. mm <sup>2</sup> | Outer Ø min. - max. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE | D-BU  | OG    | U-BU |
|----------------------------|------------------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|----|-------|-------|------|
| Part no. 1,5               | 2,8 - 3,5              | 14,4                | 24,0                | 52845 | 52846 | 52847 | 52848 | 52849 | 52850 | 52851 | 52852 | -  | 52853 | 52855 | -    |
| Part no. 2,5               | 3,4 - 4,3              | 24,0                | 35,0                | 52857 | 52858 | 52859 | 52860 | 52861 | 52862 | 52863 | 52864 | -  | 52865 | 52867 | -    |
| Part no. 4                 | 3,9 - 4,9              | 38,0                | 51,0                | 52135 | 52136 | 52137 | 52138 | 52139 | 52140 | 52141 | 52142 | -  | 52143 | 52144 | -    |
| Part no. 6                 | 4,4 - 5,5              | 58,0                | 71,0                | 52145 | 52146 | 52147 | 52148 | 52149 | 52150 | 52151 | 52152 | -  | 52153 | 52154 | -    |

Dimensions and specifications may be changed without prior notice. (RK01)

# FIVENORM

**HAR-UL-CSA-AWM-MTW, PVC single core, UL Style 10269/UL Standard 1063, 600 V, 105°C**



## Technical data

- PVC-single cores acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31, UL Std.1063, UL Style 10269 and CSA-TEW and CSA-AWM I A/B
- **Temperature range**  
H05V2-K / H07V2-K  
flexing +5°C to +90°C  
fixed installation -40°C to +90°C  
UL (AWM) -40°C to +105°C  
UL (MTW) -40°C to +90°C  
CSA (TEW) -40°C to +105°C
- **Nominal voltage**  
up to 1 mm<sup>2</sup> H05V2-K: U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> H07V2-K: U<sub>0</sub>/U 450/750 V  
UL (AWM) 1000 V (AC)  
UL (AWM) 1250 V (DC)  
UL (MTW) 600 V  
CSA (TEW) 600 V
- **Test voltage**  
H05V2-K = 2000 V  
H07V2-K = 2500 V
- **Test voltage** (Spark Test)  
0,5 mm<sup>2</sup> = 5 kV  
≥ 0,75 mm<sup>2</sup> = 6 kV
- **Insulation resistance**  
min. 20 MΩm x km
- **Minimum bending radius**  
fixed installation for core Ø:  
≤ 8 mm: 4x core Ø  
> 8-12 mm: 5x core Ø  
> 12 mm: 6x core Ø

## Cable structure

- Bare copper fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5, acc. to UL Std.758
- Core insulation of PVC compound type T13 to DIN VDE 0207-363-3/DIN EN 50363-3 CSA-C 22.2 No. 210 tab.12 class H and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- Tests**
- PCV self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- Tinned conductor on request.
- up to = 1,0 mm<sup>2</sup> = H05V2-K, from 1,5 mm<sup>2</sup> up to 35 mm<sup>2</sup> = H07V2-K. Cross-sections up to 35 mm<sup>2</sup> is acc. to DIN VDE 0285-525-2-31. Due to this cross section >35 mm<sup>2</sup> is the type H07V-K but with an increased heat-resistant PVC-compound T13.
- **Type H05V:**  
approved one-colour mark: black, blue, brown, grey, orange, pink, red, turquoise, violet, white, green and yellow.  
Two-coloured mark in any combination of the above individual colours.
- **Type H07V:**  
approved mark: black, blue, brown, grey, orange, pink, red, turquoise, violet, white and green-yellow.  
Other marks are available as (H).

## Application

Five norms approved connecting jumper wire primarily designed for exportes, used in machine tools. The approbation of HAR, UL-AWM, UL-MTW, CSA-AWM, CSA-Equipment-wire make possible an economical storekeeping and simplification of parts list.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Cross-sec. mm <sup>2</sup> / AWG-no. | Outer Ø app. mm | Cop. weight kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | PK    | GN    | TRANS | D-BU  | OG    | o.col. | 2-col. |
|--------------------------------------|-----------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| <b>app. RAL</b>                      |                 |                     | 9005  | -     | 5015  | 8003  | 3000  | 1013  | 7000  | 4005  | 1021  | 3015  | 6018  | -     | 5010  | 2003  | -      | -      |
| Part no.                             |                 |                     | 64075 | 64076 | 64077 | 64078 | 64079 | 64080 | 64081 | 64082 | 64083 | 64084 | 64085 | 64086 | 64087 | 64088 | 64089  | 64090  |
| 0,5 / 22                             | 2,5             | 5,2                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        |        |
| Part no.                             |                 |                     | 64091 | 64092 | 64093 | 64094 | 64095 | 64096 | 64097 | 64098 | 64099 | 64100 | 64101 | 64102 | 64103 | 64104 | 64105  | 64106  |
| 0,75 / 20                            | 2,65            | 7,2                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        |        |
| Part no.                             |                 |                     | 64107 | 64108 | 64109 | 64110 | 64111 | 64112 | 64113 | 64114 | 64115 | 64116 | 64117 | 64118 | 64119 | 64120 | 64121  | 64122  |
| 1 / 18                               | 2,8             | 9,6                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |        |        |

Continuation ▶

# FIVENORM

**HAR-UL-CSA-AWM-MTW, PVC single core, UL Style 10269/UL Standard 1063, 600 V, 105°C**



| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BK            | GN-YE      | BU            | BN            | RD            | WH            | GY            | VT            | YE            | PK            | GN            | TRANS      | D-BU          | OG            | o.col.     | 2-col.     |
|---|-----------------|---------------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|---------------|---------------|------------|------------|
| Part no. 1,5 / 16                             | 3,05            | 14,4                | 9005<br>64123 | -<br>64124 | 5015<br>64125 | 8003<br>64126 | 3000<br>64127 | 1013<br>64128 | 7000<br>64129 | 4005<br>64130 | 1021<br>64131 | 3015<br>64132 | 6018<br>64133 | -<br>64134 | 5010<br>64135 | 2003<br>64136 | -<br>64137 | -<br>64138 |
| Part no. 2,5 / 14                             | 3,6             | 24,0                | 64139         | 64140      | 64141         | 64142         | 64143         | 64144         | 64145         | 64146         | 64147         | 64148         | 64149         | 64150      | 64151         | 64152         | 64153      | 64154      |
| Part no. 4 / 12                               | 4,1             | 38,0                | 64155         | 64156      | 64157         | 64158         | 64159         | 64160         | 64161         | 64162         | 64163         | 64164         | 64165         | 64166      | 64167         | 64168         | 64169      | 64170      |
| Part no. 6 / 10                               | 4,8             | 58,0                | 64171         | 64172      | 64173         | 64174         | 64175         | 64176         | 64177         | 64178         | 64179         | 64180         | 64181         | 64182      | 64183         | 64184         | 64185      | 64186      |
| Part no. 10 / 8                               | 6,4             | 96,0                | 64187         | 64188      | 64189         | 64190         | 64191         | 64192         | 64193         | 64194         | 64195         | 64196         | 64197         | 64198      | 64199         | 64200         | 64201      | 64202      |
| Part no. 16 / 6                               | 8,1             | 154,0               | 64203         | 64204      | 64205         | 64206         | 64207         | 64208         | 64209         | 64210         | 64211         | 64212         | 64213         | 64214      | 64215         | 64216         | 64217      | 64218      |
| Part no. 25 / 4                               | 9,6             | 240,0               | 64219         | 64220      | 64221         | 64222         | 64223         | 64224         | 64225         | 64226         | 64227         | 64228         | 64229         | 64230      | 64231         | 64232         | 64233      | 64234      |
| Part no. 35 / 2                               | 10,8            | 336,0               | 64235         | 64236      | 64237         | 64238         | 64239         | 64240         | 64241         | 64242         | 64243         | 64244         | 64245         | 64246      | 64247         | 64248         | 64249      | 64250      |
| Part no. 50 / 1                               | 13,6            | 480,0               | 64251         | 64252      | 64253         | 64254         | 64255         | 64256         | 64257         | 64258         | 64259         | 64260         | 64261         | 64262      | 64263         | 64264         | 64265      | 64266      |
| Part no. 70 / 2/0                             | 15,2            | 672,0               | 64267         | 64268      | 64269         | 64270         | 64271         | 64272         | 64273         | 64274         | 64275         | 64276         | 64277         | 64278      | 64279         | 64280         | 64281      | 64282      |
| Part no. 95 / 3/0                             | 16,8            | 912,0               | 64283         | 64284      | 64285         | 64286         | 64287         | 64288         | 64289         | 64290         | 64291         | 64292         | 64293         | 64294      | 64295         | 64296         | 64297      | 64298      |
| Part no. 120 / 4/0                            | 19,5            | 1152,0              | 64299         | 64300      | 64301         | 64302         | 64303         | 64304         | 64305         | 64306         | 64307         | 64308         | 64309         | 64310      | 64311         | 64312         | 64313      | 64314      |
| Part no. 150 / 300 kcmil                      | 22,2            | 1440,0              | 64315         | 64316      | 64317         | 64318         | 64319         | 64320         | 64321         | 64322         | 64323         | 64324         | 64325         | 64326      | 64327         | 64328         | 64329      | 64330      |

## Barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BK            | GN-YE      | BU            | BN            | RD            | WH            | GY            | VT            | YE            | PK            | GN            | TRANS      | D-BU          | OG            | o.col.     | 2-col.     |
|---|-----------------|---------------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|---------------|---------------|------------|------------|
| Part no. 0,5 / 22                             | 2,5             | 5,2                 | 9005<br>65402 | -<br>65403 | 5015<br>65404 | 8003<br>65405 | 3000<br>65406 | 1013<br>65407 | 7000<br>65408 | 4005<br>65409 | 1021<br>65413 | 3015<br>65410 | 6018<br>65412 | -<br>65414 | 5010<br>65411 | 2003<br>65411 | -<br>65411 | -<br>65411 |
| Part no. 0,75 / 20                            | 2,65            | 7,2                 | 65415         | 65416      | 65417         | 65418         | 65419         | 65420         | 65421         | 65422         | 65426         | 65423         | 65425         | 65427      | 65428         | 65429         | 65430      | 65431      |
| Part no. 1 / 18                               | 2,8             | 9,6                 | 65428         | 65429      | 65430         | 65431         | 65432         | 65433         | 65434         | 65435         | 65439         | 65436         | 65438         | 65440      | 65437         | 65438         | 65439      | 65440      |

## Barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BK            | GN-YE      | BU            | BN            | RD            | WH            | GY            | VT            | YE            | PK            | GN            | TRANS      | D-BU          | OG            | o.col.     | 2-col.     |
|---|-----------------|---------------------|---------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------|---------------|---------------|------------|------------|
| Part no. 1,5 / 16                             | 3,05            | 14,4                | 9005<br>65441 | -<br>65442 | 5015<br>65443 | 8003<br>65444 | 3000<br>65445 | 1013<br>65446 | 7000<br>65447 | 4005<br>65448 | 1021<br>65452 | 3015<br>65449 | 6018<br>65451 | -<br>65453 | 5010<br>65450 | 2003<br>65450 | -<br>65450 | -<br>65450 |
| Part no. 2,5 / 14                             | 3,6             | 24,0                | 65454         | 65455      | 65456         | 65457         | 65458         | 65459         | 65460         | 65461         | 65465         | 65462         | 65464         | 65466      | 65467         | 65468         | 65469      | 65470      |
| Part no. 4 / 12                               | 4,1             | 38,0                | 65467         | 65468      | 65469         | 65470         | 65471         | 65472         | 65473         | 65474         | 65478         | 65475         | 65477         | 65479      | 65480         | 65481         | 65482      | 65483      |
| Part no. 6 / 10                               | 4,8             | 58,0                | 65550         | 65551      | 65552         | 65553         | 65554         | 65555         | 65556         | 65557         | 65558         | 65559         | 65560         | 65561      | 65562         | 65563         | 65564      | 65565      |

## Two colour

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BU/WH | WH/BU | D-BU/WH | WH/OG | WH/RD | BK/OG | D-BU/OG | RD/WH | WH/D-BU | YE/BN | OG/BU |
|---|-----------------|---------------------|-------|-------|---------|-------|-------|-------|---------|-------|---------|-------|-------|
| Part no. 0,5 / 22                             | 2,5             | 5,2                 | 63402 | 63403 | 63404   | 63405 | 63406 | 63482 | 63332   | 63352 | 63372   | 65386 | 69625 |
| Part no. 0,75 / 20                            | 2,65            | 7,2                 | 63407 | 63408 | 63409   | 63410 | 63411 | 63483 | 63333   | 63353 | 63373   | 65387 | 69626 |
| Part no. 1 / 18                               | 2,8             | 9,6                 | 63412 | 63413 | 63414   | 63415 | 63416 | 63484 | 63334   | 63354 | 63374   | 65388 | 69627 |

## Two colour

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | WH/YE | OG/D-BU | YE/BU | BU/OG | OG/RD | OG/BK | OG/WH | YE/RD | BK/YE |
|---|-----------------|---------------------|-------|---------|-------|-------|-------|-------|-------|-------|-------|
| Part no. 0,5 / 22                             | 2,5             | 5,2                 | 69827 | 69828   | 69829 | 69830 | 69831 | 69832 | 69833 | 69834 | 69835 |
| Part no. 0,75 / 20                            | 2,65            | 7,2                 | 69836 | 69837   | 69838 | 69839 | 69840 | 69841 | 69842 | 69843 | 69844 |
| Part no. 1 / 18                               | 2,8             | 9,6                 | 69845 | 69846   | 69847 | 69848 | 69849 | 69850 | 69851 | 69852 | 69853 |

Continuation ▶

# FIVENORM

**HAR-UL-CSA-AWM-MTW, PVC single core, UL Style 10269/UL Standard 1063, 600 V, 105°C**



## Two colour

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BU/WH | WH/BU | D-BU/WH | WH/OG | WH/RD | BK/OG | D-BU/OG | RD/WH | WH/D-BU | YE/BN | OG/BU |
|---|-----------------|---------------------|-------|-------|---------|-------|-------|-------|---------|-------|---------|-------|-------|
| Part no. 1,5 / 16                             | 3,05            | 14,4                | 63417 | 63418 | 63419   | 63420 | 63421 | 63485 | 63335   | 63355 | 63375   | 65389 | 69628 |
| Part no. 2,5 / 14                             | 3,6             | 24,0                | 63422 | 63423 | 63424   | 63425 | 63426 | 63486 | 63336   | 63356 | 63376   | 65390 | 69629 |
| Part no. 4 / 12                               | 4,1             | 38,0                | 63427 | 63428 | 63429   | 63430 | 63431 | 63487 | 63337   | 63357 | 63377   | 65391 | 69630 |
| Part no. 6 / 10                               | 4,8             | 58,0                | 63432 | 63433 | 63434   | 63435 | 63436 | 63488 | 63338   | 63358 | 63378   | 65392 | 69655 |
| Part no. 10 / 8                               | 6,4             | 96,0                | 63437 | 63438 | 63439   | 63440 | 63441 | 63489 | 63339   | 63359 | 63379   | 65393 | 69656 |
| Part no. 16 / 6                               | 8,1             | 154,0               | 63442 | 63443 | 63444   | 63445 | 63446 | 63490 | 63340   | 63360 | 63380   | 65394 | 69657 |
| Part no. 25 / 4                               | 9,6             | 240,0               | 63447 | 63448 | 63449   | 63450 | 63451 | 63491 | 63342   | 63362 | 63382   | 65395 | 69658 |
| Part no. 35 / 2                               | 10,8            | 336,0               | 63452 | 63453 | 63454   | 63455 | 63456 | 63492 | 63343   | 63363 | 63383   | 65396 | 69659 |
| Part no. 50 / 1                               | 13,6            | 480,0               | 63457 | 63458 | 63459   | 63460 | 63461 | 63493 | 63344   | 63364 | 63384   | 65397 | 69660 |
| Part no. 70 / 2/0                             | 15,2            | 627,0               | 63462 | 63463 | 63464   | 63465 | 63466 | 63494 | 63345   | 63365 | 63385   | 65398 | 69738 |
| Part no. 95 / 3/0                             | 16,8            | 912,0               | 63467 | 63468 | 63469   | 63470 | 63471 | 63495 | 63346   | 63366 | 63386   | 65499 | 69739 |
| Part no. 120 / 4/0                            | 19,5            | 1152,0              | 63472 | 63473 | 63474   | 63475 | 63476 | 63496 | 63347   | 63367 | 63387   | 65400 | 69740 |
| Part no. 150 / 300 kcmil                      | 22,2            | 1440,0              | 63477 | 63478 | 63479   | 63480 | 63481 | 63497 | 63348   | 63368 | 63388   | 65401 | 69741 |

## Two colour

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | WH/YE | OG/D-BU | YE/BU | BU/OG | OG/RD | OG/BK | OG/WH | YE/RD | BK/YE |
|---|-----------------|---------------------|-------|---------|-------|-------|-------|-------|-------|-------|-------|
| Part no. 1,5 / 16                             | 3,05            | 14,4                | 69854 | 69855   | 69856 | 69857 | 69858 | 69859 | 69860 | 69861 | 69862 |
| Part no. 2,5 / 14                             | 3,6             | 24,0                | 69863 | 69864   | 69865 | 69866 | 69867 | 69868 | 69869 | 69870 | 69871 |
| Part no. 4 / 12                               | 4,1             | 38,0                | 69872 | 69873   | 69874 | 69875 | 69876 | 69877 | 69878 | 69879 | 69880 |
| Part no. 6 / 10                               | 4,8             | 58,0                | 69881 | 69882   | 69883 | 69884 | 69885 | 69886 | 69887 | 69888 | 69889 |
| Part no. 10 / 8                               | 6,4             | 96,0                | 69890 | 69891   | 69892 | 69893 | 69894 | 69895 | 69896 | 69897 | 69898 |
| Part no. 16 / 6                               | 8,1             | 154,0               | 69899 | 69900   | 69901 | 69902 | 69903 | 69904 | 69905 | 69906 | 69907 |

## Two colour, barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BU/WH | WH/BU | D-BU/WH | WH/OG | WH/RD | BK/OG | D-BU/OG | RD/WH | WH/D-BU | YE/BN | OG/BU |
|---|-----------------|---------------------|-------|-------|---------|-------|-------|-------|---------|-------|---------|-------|-------|
| Part no. 0,5 / 22                             | 2,5             | 5,2                 | 65479 | 65480 | 65481   | 65482 | 65483 | 65484 | 65485   | 65486 | 65487   | 65488 | 65489 |
| Part no. 0,75 / 20                            | 2,65            | 7,2                 | 65490 | 65491 | 65492   | 65493 | 65494 | 65495 | 65496   | 65497 | 65498   | 65502 | 65503 |
| Part no. 1 / 18                               | 2,8             | 9,6                 | 65504 | 65505 | 65506   | 65507 | 65508 | 65509 | 65510   | 65511 | 65512   | 65514 | 65515 |

## Two colour, barrel (with various capacity)

| Cross-sec. mm <sup>2</sup> / AWG-no. app. RAL | Outer Ø app. mm | Cop. weight kg / km | BU/WH | WH/BU | D-BU/WH | WH/OG | WH/RD | BK/OG | D-BU/OG | RD/WH | WH/D-BU | YE/BN | OG/BU |
|---|-----------------|---------------------|-------|-------|---------|-------|-------|-------|---------|-------|---------|-------|-------|
| Part no. 1,5 / 16                             | 3,05            | 14,4                | 65516 | 65517 | 65518   | 65519 | 65520 | 65521 | 65522   | 65523 | 65524   | 65525 | 65526 |
| Part no. 2,5 / 14                             | 3,6             | 24,0                | 65527 | 65528 | 65529   | 65530 | 65531 | 65532 | 65533   | 65534 | 65535   | 65536 | 65537 |
| Part no. 4 / 12                               | 4,1             | 38,0                | 65538 | 65539 | 65540   | 65541 | 65542 | 65543 | 65544   | 65545 | 65546   | 65547 | 65548 |

Dimensions and specifications may be changed without prior notice. (RN06)

# HELUTHERM® 145

flexible, cross-linked, halogen-free



## Technical data

- Halogen-free single cores with increased heat resistance
- **Temperature range**  
flexing -35°C to +120°C  
fixed installation -55°C to +145°C
- **Nominal voltage**  
up to 1 mm<sup>2</sup> = U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> = U<sub>0</sub>/U 450/ 750 V  
at fixed and protected installation  
from 1,5 mm<sup>2</sup> = U<sub>0</sub>/U 600/1000 V
- **Test voltage**  
3500 V
- **Minimum bending radius**  
flexing 12,5x core Ø  
fixed installation 4x core Ø
- **Caloric load values**  
see "Technical Informations"
- **Approval**  
Germanischer Lloyd

## Cable structure

- Tinned copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyolefin-copolymer cross-linked and halogen-free
- Core identification, see table below

## Tests

- Flame test (unit flame test) acc. to DIN VDE 0482-332-3-22, BS 4066 Teil 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Flame test (cable) acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Properties

- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- These single-core cables are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- Due to the high temperature profile the cross section of conductor can under certain circumstances be reduced, hereby enabling a saving in space requirement and weight
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Application

These temperature resistant single-core cables are used for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in equipment and plant and machinery, suitable for laying in tubes on and under plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. These cables are not approved for direct routing on racks, gutters or tanks. These halogen-free single core cables are characterised by their amazingly high long-time resistance to temperature and feature among the leading halogen-free, flame resistant products in the world. These single core cables significantly contribute to safety and the environment.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | GN    | D-BU  | OG    | BEIGE | 2-col. |
|----------------------------|-----------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Part no. 0,25              | 1,6             | 2,4                 | 4,0                 | 50999 | 50998 | 51070 | 51071 | 51072 | 51073 | 51074 | 51075 | 51076 | 51078 | 51079 | 51077 | 51164 | 51165  |
| Part no. 0,34              | 1,7             | 3,2                 | 5,0                 | 51167 | 51166 | 51168 | 51169 | 51170 | 51171 | 51172 | 51173 | 51174 | 51176 | 51177 | 51175 | 51178 | 51179  |
| Part no. 0,5               | 1,9             | 4,8                 | 7,0                 | 51281 | 51280 | 51282 | 51283 | 51284 | 51285 | 51286 | 51287 | 51288 | 51290 | 51291 | 51289 | 51292 | 51293  |
| Part no. 0,75              | 2,2             | 7,2                 | 11,0                | 51295 | 51294 | 51296 | 51297 | 51298 | 51299 | 51300 | 51301 | 51302 | 51304 | 51305 | 51303 | 51306 | 51307  |
| Part no. 1                 | 2,5             | 9,6                 | 14,0                | 51309 | 51308 | 51310 | 51311 | 51312 | 51313 | 51314 | 51315 | 51316 | 51318 | 51319 | 51317 | 51320 | 51321  |
| Part no. 1,5               | 2,9             | 14,4                | 20,0                | 51323 | 51322 | 51324 | 51325 | 51326 | 51327 | 51328 | 51329 | 51330 | 51332 | 51333 | 51331 | 51334 | 51335  |
| Part no. 2,5               | 3,5             | 24,0                | 30,0                | 51337 | 51336 | 51338 | 51339 | 51340 | 51341 | 51342 | 51343 | 51344 | 51346 | 51347 | 51345 | 51348 | 51349  |
| Part no. 4                 | 4,3             | 38,0                | 47,0                | 51351 | 51350 | 51352 | 51353 | 51354 | 51355 | 51356 | 51357 | 51358 | 51360 | 51361 | 51359 | 51362 | 51363  |
| Part no. 6                 | 5,0             | 58,0                | 72,0                | 51365 | 51364 | 51366 | 51367 | 51368 | 51369 | 51370 | 51371 | 51372 | 51374 | 51375 | 51373 | 51376 | 51377  |
| Part no. 10                | 6,3             | 96,0                | 120,0               | 51379 | 51378 | 51380 | 51381 | 51382 | 51383 | 51384 | 51385 | 51386 | 51388 | 51389 | 51387 | 51390 | 51391  |

Continuation ▶

# HELUTHERM® 145

flexible, cross-linked, halogen-free



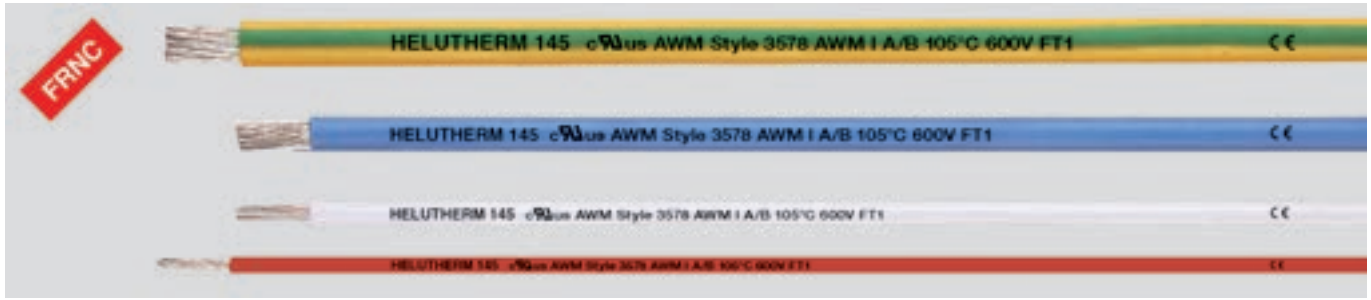
| Cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | GN    | D-BU  | OG    | BEIGE | 2-col. |
|----------------------------|-----------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Part no. 16                | 7,3             | 154,0               | 182,0               | 51420 | 51419 | 51421 | 51422 | 51423 | 51424 | 51425 | 51426 | 51427 | 51429 | 51430 | 51428 | 51431 | 51432  |
| Part no. 25                | 9,6             | 240,0               | 272,0               | 51434 | 51433 | 51435 | 51436 | 51437 | 51438 | 51439 | 51440 | 51441 | 51443 | 51444 | 51442 | 51445 | 51446  |
| Part no. 35                | 10,8            | 336,0               | 371,0               | 51448 | 51447 | 51449 | 51450 | 51451 | 51452 | 51453 | 51454 | 51455 | 51457 | 51458 | 51456 | 51459 | 51460  |
| Part no. 50                | 12,6            | 480,0               | 530,0               | 51462 | 51461 | 51463 | 51464 | 51465 | 51466 | 51467 | 51468 | 51469 | 51471 | 51472 | 51470 | 51473 | 51474  |
| Part no. 70                | 14,6            | 672,0               | 730,0               | 51476 | 51475 | 51477 | 51478 | 51479 | 51480 | 51481 | 51482 | 51483 | 51485 | 51486 | 51484 | 51487 | 51488  |
| Part no. 95                | 16,5            | 912,0               | 964,0               | 51490 | 51489 | 51491 | 51492 | 51493 | 51494 | 51495 | 51496 | 51497 | 51499 | 51500 | 51498 | 51501 | 51502  |
| Part no. 120               | 18,0            | 1152,0              | 1235,0              | 51504 | 51503 | 51505 | 51506 | 51507 | 51508 | 51509 | 51510 | 51511 | 51513 | 51514 | 51512 | 51515 | 51516  |
| Part no. 150               | 20,0            | 1440,0              | 1523,0              | 51518 | 51517 | 51519 | 51520 | 51521 | 51522 | 51523 | 51524 | 51525 | 51527 | 51528 | 51526 | 51529 | 51530  |
| Part no. 185               | 22,2            | 1776,0              | 1850,0              | 51532 | 51531 | 51533 | 51534 | 51535 | 51536 | 51537 | 51538 | 51539 | 51541 | 51542 | 51540 | 51543 | 51544  |
| Part no. 240               | 24,5            | 2304,0              | 2432,0              | 51546 | 51545 | 51547 | 51548 | 51549 | 51550 | 51551 | 51552 | 51553 | 51555 | 51556 | 51554 | 51557 | 51558  |

Dimensions and specifications may be changed without prior notice. (RK01)



# HELUTHERM® 145

600 V, flexible single core, cross-linked, halogen-free



## Technical data

- Halogen-free single cores with increased heat resistance acc. to UL Style 3578 CSA C22.2 No. 210
- **Temperature range**  
flexing -35°C to +120°C  
fixed installation -55°C to +145°C  
UL/CSA  
flexing -35°C to +105°C  
fixed installation -55°C to +105°C
- **Nominal voltage**  
600 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 12,5x core Ø  
fixed installation 4x core Ø
- **Caloric load values**  
see "Technical Informations"
- **Power ratings table**  
see "Technical Informations"
- **Approval**  
Germanischer Lloyd

## Cable structure

- Tinned Cu wires, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
  - Core insulation of cross-linked polyolefin-copolymer
  - Core identification, see table below
- Tests**
- Flame test acc. to DIN VDE 0482-332-3-22, BS 4066 part 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
  - Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
  - Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
  - Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Properties

- Halogen-free
- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- Due to the high temperature profile the cross section of conductor can under certain circumstances be reduced, hereby enabling a saving in space requirement and weight
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Application

These temperature resistant single-core cables are used for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in equipment and plant and machinery, suitable for installation on, in and beneath plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. These cables are not approved for direct routing on racks, gutters or tanks. These halogen-free single core cables are characterised by their amazingly high long-time resistance to temperature and feature among the leading halogen-free, flame resistant products in the world.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Cross-sec. mm² | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | BK    | GN-YE | BU    | BN    | RD    | WH    | GY    | VT    | YE    | PK    | GN    | OG    | BEIGE | 2-col. |
|----------------|-----------------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Part no. 0,25  | 2,3             | 2,4                 | 7,0                 | 59473 | 59472 | 59474 | 59475 | 59476 | 59477 | 59478 | 59479 | 59480 | 59483 | 59482 | 59481 | 59484 | 59485  |
| Part no. 0,5   | 2,6             | 4,8                 | 11,0                | 59487 | 59486 | 59488 | 59489 | 59490 | 59491 | 59492 | 59493 | 59494 | 59497 | 59496 | 59495 | 59498 | 59499  |
| Part no. 0,75  | 2,8             | 7,2                 | 14,0                | 59501 | 59500 | 59502 | 59503 | 59504 | 59505 | 59506 | 59507 | 59508 | 59511 | 59510 | 59509 | 59512 | 59513  |
| Part no. 1     | 2,9             | 9,6                 | 17,0                | 59515 | 59514 | 59516 | 59517 | 59518 | 59519 | 59520 | 59521 | 59522 | 59525 | 59524 | 59523 | 59526 | 59527  |
| Part no. 1,5   | 3,1             | 14,4                | 22,0                | 59529 | 59528 | 59530 | 59531 | 59532 | 59533 | 59534 | 59535 | 59536 | 59539 | 59538 | 59537 | 59540 | 59541  |
| Part no. 2,5   | 3,6             | 24,0                | 33,0                | 59543 | 59542 | 59544 | 59545 | 59546 | 59547 | 59548 | 59549 | 59550 | 59553 | 59552 | 59551 | 59554 | 59555  |
| Part no. 4     | 4,3             | 38,4                | 53,0                | 59557 | 59556 | 59558 | 59559 | 59560 | 59561 | 59562 | 59563 | 59564 | 59567 | 59566 | 59565 | 59568 | 59569  |
| Part no. 6     | 5,0             | 57,6                | 78,0                | 59571 | 59570 | 59572 | 59573 | 59574 | 59575 | 59576 | 59577 | 59578 | 59581 | 59580 | 59579 | 59582 | 59583  |
| Part no. 10    | 6,4             | 96,0                | 136,0               | 59585 | 59584 | 59586 | 59587 | 59588 | 59589 | 59590 | 59591 | 59592 | 59595 | 59594 | 59593 | 59596 | 59597  |
| Part no. 16    | 7,5             | 154,0               | 203,0               | 59599 | 59598 | 59600 | 59601 | 59602 | 59603 | 59604 | 59605 | 59606 | 59609 | 59608 | 59607 | 59610 | 59611  |
| Part no. 25    | 9,6             | 240,0               | 300,0               | 59613 | 59612 | 59614 | 59615 | 59616 | 59617 | 59618 | 59619 | 59620 | 59623 | 59622 | 59621 | 59624 | 59625  |
| Part no. 35    | 10,8            | 336,0               | 405,0               | 59627 | 59626 | 59628 | 59629 | 59630 | 59631 | 59632 | 59633 | 59634 | 59637 | 59636 | 59635 | 59638 | 59639  |
| Part no. 50    | 12,6            | 480,0               | 580,0               | 59641 | 59640 | 59642 | 59643 | 59644 | 59645 | 59646 | 59647 | 59648 | 59651 | 59650 | 59649 | 59652 | 59653  |

Dimensions and specifications may be changed without prior notice. (RN06)

# THHN / THWN

90°C, 600 V, UL listed, PVC + nylon single core



## Technical data

- PVC + Nylon insulated single cores to UL Std.83 and UL Std.1063 (MTW)
- **Temperature range**  
**THHN** dry environments: 90°C  
**THWN** wet environments: 75°C
- **Nominal voltage**  
600 V
- **Minimum bending radius**  
8x core Ø
- **Test voltage** (Spark test)  
 AWG 14 to AWG 10 = 7,5 kV  
 AWG 8 to AWG 2/0 = 10 kV  
 AWG 3/0 to AWG 4/0 = 12,5 kV  
 kcmil 250 to kcmil 500 = 15 kV  
 kcmil 600 to kcmil 1000 = 17,5 kV

## Cable structure

- Bare copper conductor, with AWG dimensions
- Core insulation of PVC and Nylon-sheath
- Core identification coloured

## Properties

### Resistant against

- Oils
- Gasoline
- Water
- Acids
- Ozone
- Lyes
- Sunlight
- Abrasion

### Note

- 1 kcmil = 1000 circ mils = 0,5067 mm<sup>2</sup>.
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:  
 0 = green  
 1 = black  
 2 = blue  
 3 = brown  
 4 = red  
 5 = white  
 6 = grey  
 7 = yellow  
 8 = orange  
 9 = pink

## Application

For the electrical installation of machine tools and the relative control. THWN = Thermoplastic PVC-insulated building wire, Heat resistant 75°C, for Wet and dry locations, flame retardant. THHN = Thermoplastic PVC-insulated building wire, Nylon sheath, 90°C, 600 V, for dry and damp locations.  
 ☞☞ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | AWG-No. | Cond. make-up n x wire Ø | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------|--------------------------|-----------------|---------------------|---------------------|
| 6320x    | 2,08                          | 14      | 19 x 0,38                | 3,0             | 20,7                | 25,0                |
| 6321x    | 3,32                          | 12      | 19 x 0,48                | 3,4             | 33,0                | 37,0                |
| 6322x    | 5,26                          | 10      | 19 x 0,6                 | 4,3             | 51,6                | 60,0                |
| 6323x    | 8,35                          | 8       | 19 x 0,75                | 5,5             | 80,6                | 95,0                |
| 6324x    | 13,39                         | 6       | 19 x 0,96                | 6,6             | 125,0               | 143,0               |
| 6325x    | 21,14                         | 4       | 19 x 1,19                | 8,4             | 201,0               | 229,0               |
| 6326x    | 26,65                         | 3       | 19 x 1,336               | 9,1             | 253,0               | 282,0               |
| 6327x    | 33,61                         | 2       | 19 x 1,5                 | 10,0            | 317,0               | 349,0               |
| 6328x    | 42,38                         | 1       | 19 x 1,686               | 11,4            | 399,0               | 449,0               |
| 6329x    | 53,47                         | 1/0     | 19 x 1,89                | 12,4            | 500,0               | 557,0               |
| 6330x    | 67,4                          | 2/0     | 19 x 2,126               | 13,7            | 631,0               | 691,0               |
| 6331x    | 84,97                         | 3/0     | 19 x 2,387               | 15,0            | 792,0               | 861,0               |
| 6332x    | 107,17                        | 4/0     | 19 x 2,68                | 16,5            | 996,0               | 1069,0              |

| Part no. | Cross-section mm <sup>2</sup> | AWG-No.    | Cond. make-up n x wire Ø | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|------------|--------------------------|-----------------|---------------------|---------------------|
| 63331    | 127                           | 250 kcmil  | 37 x 2,088               | 18,29           | 1178,0              | 1277,0              |
| 63341    | 152                           | 300 kcmil  | 37 x 2,286               | 19,56           | 1410,0              | 1515,0              |
| 63351    | 178                           | 350 kcmil  | 37 x 2,47                | 21,08           | 1645,0              | 1753,0              |
| 63361    | 203                           | 400 kcmil  | 37 x 2,7                 | 22,35           | 1902,0              | 1998,0              |
| 63371    | 254                           | 500 kcmil  | 37 x 2,95                | 24,13           | 2345,0              | 2466,0              |
| 63381    | 304                           | 600 kcmil  | 61 x 2,52                | 26,75           | 2920,0              | 3000,0              |
| 63391    | 380                           | 750 kcmil  | 61 x 2,82                | 29,36           | 3658,0              | 3713,0              |
| 63401    | 507                           | 1000 kcmil | 61 x 3,25                | 33,27           | 4858,0              | 4870,0              |

Dimensions and specifications may be changed without prior notice. (RN06)

DATAFLAMM

**SUPER-PAAR-TRONIC-C-PUR**

DATAFLAMM-C

Control cable UL (LiYY-TP)

PAAR-TRONIC-CY

DATAFLAMM-C-PAAR



## ■ DATA CABLES

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# PAAR-TRONIC-CY

EMC-preferred type, flexible, Cu-screened, colour coded to DIN 47100, meter marking



## Technical data

- Special PVC data cables for electronic control adapted to DIN VDE 0812 and 0814
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -30°C to +80°C
- **Operating peak voltage**  
(not for heavy current installation purposes)  
350 V
- **Test voltage**  
core/core 1200 V  
core/screen 800 V
- **Breakdown voltage**  
min. 2400 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Plant capacity** (approx.-value) at 800 Hz  
core/core 0,14 mm<sup>2</sup> = 120 pF/m  
core/core 0,25 mm<sup>2</sup> = 150 pF/m  
core/screen 0,14 mm<sup>2</sup> = 240 pF/m  
core/screen 0,25 mm<sup>2</sup> = 270 pF/m
- **Inductance**  
approx. 0,65 mH/km
- **Impedance**  
approx. 78 Ohm
- **K<sub>1</sub>-coupling**  
approx. 300 pF/100 m
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, from 0,5 mm<sup>2</sup> to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:  
0,14 mm<sup>2</sup> = 18x0,1 mm  
0,25 mm<sup>2</sup> = 14x0,15 mm  
0,34 mm<sup>2</sup> = 7x0,25 mm
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Foil wrapping
- Drain wire, tinned
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour: grey (RAL 7032) also available in other colours on request
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PCV self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

### PAAR-TRONIC

## Application

These data control cables are used for flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. PAAR-TRONIC-CY is well suited for use in areas subject to signal interference. The high level of screening reduces substantially the effects of electrical disturbances from parallel running wiring etc. The copper screening is also often used as an "earth". The twisted pairs conform favourable cross-talk attenuation values.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 21001    | 1 x 2 x 0,14                           | 4,0             | 15,6                | 34,0                | 26      |
| 21002    | 2 x 2 x 0,14                           | 5,0             | 18,5                | 40,0                | 26      |
| 21003    | 3 x 2 x 0,14                           | 5,7             | 23,0                | 49,0                | 26      |
| 21004    | 4 x 2 x 0,14                           | 6,1             | 26,6                | 55,0                | 26      |
| 21005    | 5 x 2 x 0,14                           | 6,8             | 30,7                | 66,0                | 26      |

| Part no. | No. pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 21006    | 6 x 2 x 0,14                           | 7,2             | 48,5                | 86,0                | 26      |
| 21007    | 7 x 2 x 0,14                           | 7,2             | 51,1                | 91,0                | 26      |
| 21008    | 8 x 2 x 0,14                           | 8,2             | 53,7                | 97,0                | 26      |
| 21009    | 10 x 2 x 0,14                          | 9,1             | 59,0                | 109,0               | 26      |
| 21010    | 12 x 2 x 0,14                          | 9,6             | 66,0                | 141,0               | 26      |

Continuation ▶



# PAAR-TRONIC-CY

EMC-preferred type, flexible, Cu-screened, colour coded to DIN 47100, meter marking



| Part no. | No.pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. | Part no. | No.pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 21011    | 14 x 2 x 0,14                         | 10,4            | 74,0                | 148,0               | 26      | 19972    | 3 x 2 x 0,34                          | 7,2             | 44,9                | 78,0                | 22      |
| 21012    | 15 x 2 x 0,14                         | 10,6            | 76,0                | 152,0               | 26      | 19973    | 4 x 2 x 0,34                          | 8,1             | 54,2                | 90,0                | 22      |
| 21013    | 16 x 2 x 0,14                         | 10,7            | 79,0                | 155,0               | 26      | 19974    | 5 x 2 x 0,34                          | 9,0             | 63,5                | 110,0               | 22      |
| 21014    | 18 x 2 x 0,14                         | 11,2            | 83,0                | 171,0               | 26      | 19975    | 6 x 2 x 0,34                          | 10,0            | 73,1                | 130,0               | 22      |
| 21015    | 20 x 2 x 0,14                         | 11,4            | 97,0                | 183,0               | 26      | 19976    | 7 x 2 x 0,34                          | 10,0            | 79,5                | 145,0               | 22      |
| 21016    | 22 x 2 x 0,14                         | 12,3            | 103,0               | 205,0               | 26      | 19977    | 8 x 2 x 0,34                          | 10,8            | 88,4                | 150,0               | 22      |
| 21017    | 24 x 2 x 0,14                         | 12,8            | 111,0               | 228,0               | 26      | 19978    | 9 x 2 x 0,34                          | 11,1            | 99,3                | 170,0               | 22      |
| 21018    | 25 x 2 x 0,14                         | 12,9            | 113,0               | 239,0               | 26      | 19979    | 10 x 2 x 0,34                         | 12,2            | 106,9               | 190,0               | 22      |
| 21019    | 26 x 2 x 0,14                         | 13,0            | 122,0               | 245,0               | 26      | 19980    | 12 x 2 x 0,34                         | 12,9            | 122,1               | 220,0               | 22      |
| 21020    | 27 x 2 x 0,14                         | 13,1            | 125,0               | 251,0               | 26      | 19981    | 14 x 2 x 0,34                         | 13,9            | 138,2               | 245,0               | 22      |
| 21021    | 28 x 2 x 0,14                         | 14,0            | 128,0               | 258,0               | 26      | 19982    | 16 x 2 x 0,34                         | 14,5            | 154,2               | 250,0               | 22      |
| 21022    | 30 x 2 x 0,14                         | 14,1            | 140,0               | 270,0               | 26      | 19983    | 18 x 2 x 0,34                         | 15,3            | 197,9               | 275,0               | 22      |
| 21023    | 32 x 2 x 0,14                         | 14,8            | 145,0               | 284,0               | 26      | 19984    | 21 x 2 x 0,34                         | 16,3            | 214,4               | 300,0               | 22      |
| 21024    | 34 x 2 x 0,14                         | 14,9            | 150,0               | 300,0               | 26      | 19985    | 25 x 2 x 0,34                         | 17,6            | 238,5               | 400,0               | 22      |
| 21025    | 36 x 2 x 0,14                         | 15,6            | 156,0               | 316,0               | 26      | 19986    | 27 x 2 x 0,34                         | 18,0            | 262,5               | 410,0               | 22      |
| 21026    | 38 x 2 x 0,14                         | 16,4            | 162,0               | 350,0               | 26      | 19987    | 30 x 2 x 0,34                         | 19,5            | 286,6               | 440,0               | 22      |
| 21027    | 40 x 2 x 0,14                         | 16,8            | 177,0               | 370,0               | 26      | 19988    | 34 x 2 x 0,34                         | 20,8            | 310,1               | 510,0               | 22      |
| 21028    | 44 x 2 x 0,14                         | 17,0            | 181,0               | 390,0               | 26      | 19989    | 37 x 2 x 0,34                         | 21,4            | 368,7               | 550,0               | 22      |
| 21029    | 46 x 2 x 0,14                         | 17,2            | 195,0               | 430,0               | 26      | 19990    | 40 x 2 x 0,34                         | 22,1            | 392,6               | 590,0               | 22      |
| 21030    | 50 x 2 x 0,14                         | 18,0            | 202,0               | 440,0               | 26      | 19991    | 44 x 2 x 0,34                         | 23,0            | 424,3               | 600,0               | 22      |
| 21031    | 52 x 2 x 0,14                         | 18,2            | 206,0               | 460,0               | 26      | 19992    | 50 x 2 x 0,34                         | 24,5            | 455,9               | 650,0               | 22      |
| 21032    | 55 x 2 x 0,14                         | 18,7            | 210,0               | 480,0               | 26      | 19993    | 52 x 2 x 0,34                         | 24,7            | 487,6               | 680,0               | 22      |
| 21033    | 1 x 2 x 0,25                          | 4,4             | 15,0                | 45,0                | 24      | 19994    | 56 x 2 x 0,34                         | 26,1            | 518,5               | 750,0               | 22      |
| 21034    | 2 x 2 x 0,25                          | 5,8             | 28,0                | 53,0                | 24      | 19995    | 61 x 2 x 0,34                         | 27,5            | 557,2               | 840,0               | 22      |
| 21035    | 3 x 2 x 0,25                          | 6,4             | 32,0                | 65,0                | 24      | 17047    | 1 x 2 x 0,5                           | 5,3             | 24,0                | 60,0                | 20      |
| 21036    | 4 x 2 x 0,25                          | 7,2             | 38,0                | 80,0                | 24      | 17001    | 2 x 2 x 0,5                           | 7,6             | 54,0                | 89,0                | 20      |
| 21037    | 5 x 2 x 0,25                          | 8,1             | 55,0                | 98,0                | 24      | 17002    | 3 x 2 x 0,5                           | 8,2             | 70,0                | 104,0               | 20      |
| 21038    | 6 x 2 x 0,25                          | 8,8             | 65,0                | 114,0               | 24      | 17003    | 4 x 2 x 0,5                           | 9,0             | 91,0                | 126,0               | 20      |
| 21039    | 7 x 2 x 0,25                          | 8,8             | 70,0                | 121,0               | 24      | 17004    | 5 x 2 x 0,5                           | 9,9             | 105,0               | 148,0               | 20      |
| 21040    | 8 x 2 x 0,25                          | 9,4             | 75,0                | 129,0               | 24      | 17005    | 6 x 2 x 0,5                           | 10,9            | 120,0               | 171,0               | 20      |
| 21041    | 10 x 2 x 0,25                         | 10,8            | 110,0               | 157,0               | 24      | 17006    | 8 x 2 x 0,5                           | 12,0            | 144,0               | 290,0               | 20      |
| 21042    | 12 x 2 x 0,25                         | 11,4            | 117,0               | 189,0               | 24      | 17007    | 10 x 2 x 0,5                          | 13,8            | 178,0               | 320,0               | 20      |
| 21043    | 14 x 2 x 0,25                         | 12,0            | 122,0               | 213,0               | 24      | 17008    | 12 x 2 x 0,5                          | 14,5            | 199,0               | 361,0               | 20      |
| 21044    | 15 x 2 x 0,25                         | 12,5            | 134,0               | 225,0               | 24      | 17009    | 16 x 2 x 0,5                          | 16,1            | 254,0               | 421,0               | 20      |
| 21045    | 16 x 2 x 0,25                         | 12,6            | 143,0               | 237,0               | 24      | 17010    | 20 x 2 x 0,5                          | 18,4            | 302,0               | 580,0               | 20      |
| 21046    | 18 x 2 x 0,25                         | 13,3            | 148,0               | 248,0               | 24      | 17011    | 25 x 2 x 0,5                          | 21,0            | 344,0               | 740,0               | 20      |
| 21047    | 20 x 2 x 0,25                         | 14,0            | 162,0               | 275,0               | 24      | 17048    | 1 x 2 x 0,75                          | 6,0             | 28,0                | 71,0                | 19      |
| 21048    | 22 x 2 x 0,25                         | 15,0            | 172,0               | 303,0               | 24      | 17012    | 2 x 2 x 0,75                          | 8,7             | 58,0                | 105,0               | 19      |
| 21049    | 24 x 2 x 0,25                         | 15,7            | 223,0               | 330,0               | 24      | 17013    | 3 x 2 x 0,75                          | 9,3             | 84,0                | 128,0               | 19      |
| 21050    | 25 x 2 x 0,25                         | 15,8            | 233,0               | 343,0               | 24      | 17014    | 4 x 2 x 0,75                          | 10,6            | 108,0               | 156,0               | 19      |
| 21051    | 26 x 2 x 0,25                         | 15,9            | 238,0               | 345,0               | 24      | 17015    | 5 x 2 x 0,75                          | 11,7            | 126,0               | 189,0               | 19      |
| 21052    | 27 x 2 x 0,25                         | 16,0            | 244,0               | 350,0               | 24      | 17016    | 6 x 2 x 0,75                          | 12,7            | 146,0               | 216,0               | 19      |
| 21053    | 28 x 2 x 0,25                         | 16,6            | 249,0               | 360,0               | 24      | 17017    | 8 x 2 x 0,75                          | 14,4            | 180,0               | 309,0               | 19      |
| 21054    | 30 x 2 x 0,25                         | 17,0            | 254,0               | 375,0               | 24      | 17018    | 10 x 2 x 0,75                         | 15,6            | 220,0               | 355,0               | 19      |
| 21055    | 32 x 2 x 0,25                         | 17,6            | 290,0               | 400,0               | 24      | 17019    | 12 x 2 x 0,75                         | 16,8            | 261,0               | 405,0               | 19      |
| 21056    | 34 x 2 x 0,25                         | 17,9            | 312,0               | 410,0               | 24      | 17020    | 16 x 2 x 0,75                         | 18,7            | 328,0               | 565,0               | 19      |
| 21057    | 36 x 2 x 0,25                         | 18,6            | 322,0               | 420,0               | 24      | 17021    | 20 x 2 x 0,75                         | 20,9            | 392,0               | 700,0               | 19      |
| 21058    | 38 x 2 x 0,25                         | 19,0            | 339,0               | 450,0               | 24      | 17022    | 25 x 2 x 0,75                         | 23,2            | 470,0               | 950,0               | 19      |
| 21059    | 40 x 2 x 0,25                         | 19,7            | 349,0               | 485,0               | 24      | 17049    | 1 x 2 x 1                             | 6,3             | 46,0                | 75,0                | 18      |
| 21060    | 44 x 2 x 0,25                         | 20,7            | 359,0               | 500,0               | 24      | 17050    | 2 x 2 x 1                             | 9,1             | 82,0                | 116,0               | 18      |
| 21061    | 46 x 2 x 0,25                         | 21,2            | 398,0               | 540,0               | 24      | 17051    | 3 x 2 x 1                             | 9,8             | 103,0               | 140,0               | 18      |
| 21062    | 50 x 2 x 0,25                         | 22,0            | 403,0               | 550,0               | 24      | 17052    | 4 x 2 x 1                             | 10,9            | 132,0               | 191,0               | 18      |
| 21063    | 52 x 2 x 0,25                         | 22,0            | 435,0               | 580,0               | 24      | 17053    | 1 x 2 x 1,5                           | 7,2             | 63,0                | 84,0                | 16      |
| 21064    | 55 x 2 x 0,25                         | 22,5            | 464,0               | 630,0               | 24      | 17054    | 2 x 2 x 1,5                           | 10,7            | 111,0               | 122,0               | 16      |
| 19970    | 1 x 2 x 0,34                          | 5,0             | 16,0                | 58,0                | 22      | 17055    | 3 x 2 x 1,5                           | 11,4            | 136,0               | 194,0               | 16      |
| 19971    | 2 x 2 x 0,34                          | 6,7             | 36,9                | 65,0                | 22      | 17056    | 4 x 2 x 1,5                           | 12,8            | 172,0               | 240,0               | 16      |

Dimensions and specifications may be changed without prior notice. (RB01)





## Technical data

- Halogen-free special data cable
- **Temperature range**  
flexing +5°C to +70°C  
fixed installation -40°C to +70°C
- **Operating peak voltage**  
(not for heavy current installation purposes)  
0,14 mm<sup>2</sup> = 350 V  
≥ 0,25 mm<sup>2</sup> = 500 V
- **Test voltage**  
0,14 mm<sup>2</sup> = 800 V  
≥ 0,25 mm<sup>2</sup> = 1200 V
- **Insulation resistance**  
min. 2 GOhm x km
- **Capacitance**  
core/core < 70 nF/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, fine wire to DIN VDE 0812
- Conductor construction:  
0,34 mm<sup>2</sup> = 7x0,25 mm
- Core insulation of PE compound type LD/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100, without colour repetition
- Cores stranded in layers with optimal lay length
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour: grey (RAL 7005)
- With meter marking

## Properties

- PE-insulated cores, compared with PVC-insulated cores, assure a remarkable and more favourable capacitance values

## Tests

- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type: **DATAFLAMM®-C**

## Application

DATAFLAMM® halogen-free data cables are used as connecting cable for signal, measuring, control, call-announcing and two-way intercom speaking systems, clock installations, electronic weighing equipment and electrical apparatus for office requirements. The cables are suitable for installation in dry, damp and wet environments. These cables are generally installed in telecommunication apparatus and data transmission systems in public buildings, laboratories, trading centres where the freedom from halogen in case of fire and the flame propagation must be avoided. The halogen-free thermoplastic sheath produce neither corrosive nor toxic gases.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52300    | 2 x 0,14                               | 3,3             | 2,6                 | 14,0                | 26      |
| 52301    | 3 x 0,14                               | 3,5             | 4,0                 | 17,0                | 26      |
| 52302    | 4 x 0,14                               | 3,7             | 5,3                 | 19,0                | 26      |
| 52303    | 5 x 0,14                               | 4,0             | 6,6                 | 23,0                | 26      |
| 52304    | 6 x 0,14                               | 4,3             | 7,9                 | 25,0                | 26      |
| 52305    | 7 x 0,14                               | 4,3             | 9,2                 | 27,0                | 26      |
| 52306    | 8 x 0,14                               | 4,6             | 10,3                | 30,0                | 26      |
| 52307    | 10 x 0,14                              | 5,4             | 13,2                | 38,0                | 26      |
| 52308    | 12 x 0,14                              | 5,7             | 16,0                | 45,0                | 26      |
| 52309    | 15 x 0,14                              | 6,1             | 20,1                | 57,0                | 26      |
| 52310    | 18 x 0,14                              | 6,7             | 23,7                | 65,0                | 26      |
| 52311    | 21 x 0,14                              | 7,0             | 27,9                | 76,0                | 26      |
| 52312    | 25 x 0,14                              | 7,8             | 33,4                | 88,0                | 26      |
| 52313    | 30 x 0,14                              | 8,2             | 39,3                | 98,0                | 26      |
| 52314    | 34 x 0,14                              | 8,8             | 45,5                | 111,0               | 26      |
| 52315    | 40 x 0,14                              | 9,5             | 53,6                | 139,0               | 26      |
| 52316    | 50 x 0,14                              | 10,5            | 64,9                | 164,0               | 26      |
| 52317    | 2 x 0,25                               | 3,8             | 4,7                 | 18,0                | 24      |
| 52318    | 3 x 0,25                               | 4,0             | 7,1                 | 21,0                | 24      |
| 52319    | 4 x 0,25                               | 4,3             | 9,5                 | 26,0                | 24      |
| 52320    | 5 x 0,25                               | 4,7             | 12,0                | 31,0                | 24      |
| 52321    | 7 x 0,25                               | 5,1             | 16,6                | 40,0                | 24      |
| 52322    | 10 x 0,25                              | 6,4             | 24,0                | 56,0                | 24      |
| 52323    | 12 x 0,25                              | 6,6             | 28,6                | 64,0                | 24      |
| 52324    | 15 x 0,25                              | 7,4             | 36,0                | 80,0                | 24      |
| 52430    | 18 x 0,25                              | 7,9             | 43,2                | 90,0                | 24      |
| 52431    | 21 x 0,25                              | 8,6             | 50,4                | 105,0               | 24      |
| 52325    | 25 x 0,25                              | 9,4             | 59,8                | 121,0               | 24      |
| 52326    | 34 x 0,25                              | 11,0            | 81,3                | 168,0               | 24      |
| 52327    | 40 x 0,25                              | 12,0            | 96,0                | 196,0               | 24      |
| 52328    | 2 x 0,34                               | 4,4             | 6,4                 | 25,0                | 22      |
| 52329    | 3 x 0,34                               | 4,7             | 9,7                 | 30,0                | 22      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52330    | 4 x 0,34                               | 5,0             | 13,0                | 35,0                | 22      |
| 52331    | 5 x 0,34                               | 5,5             | 16,4                | 43,0                | 22      |
| 52332    | 7 x 0,34                               | 6,0             | 22,7                | 58,0                | 22      |
| 52333    | 10 x 0,34                              | 7,8             | 32,4                | 80,0                | 22      |
| 52334    | 12 x 0,34                              | 8,0             | 39,1                | 91,0                | 22      |
| 52335    | 15 x 0,34                              | 9,0             | 49,1                | 115,0               | 22      |
| 52336    | 18 x 0,34                              | 9,8             | 59,1                | 135,0               | 22      |
| 52337    | 21 x 0,34                              | 10,4            | 68,3                | 154,0               | 22      |
| 52338    | 25 x 0,34                              | 12,0            | 81,4                | 180,0               | 22      |
| 52339    | 34 x 0,34                              | 13,6            | 111,1               | 233,0               | 22      |
| 52340    | 40 x 0,34                              | 14,8            | 130,5               | 272,0               | 22      |
| 52341    | 2 x 0,5                                | 4,6             | 9,5                 | 30,0                | 20      |
| 52342    | 3 x 0,5                                | 4,9             | 14,2                | 36,0                | 20      |
| 52343    | 4 x 0,5                                | 5,3             | 19,2                | 43,0                | 20      |
| 52344    | 5 x 0,5                                | 5,9             | 24,0                | 56,0                | 20      |
| 52345    | 7 x 0,5                                | 6,4             | 33,7                | 70,0                | 20      |
| 52346    | 10 x 0,5                               | 8,3             | 48,0                | 101,0               | 20      |
| 52347    | 12 x 0,5                               | 8,6             | 57,4                | 117,0               | 20      |
| 52348    | 15 x 0,5                               | 9,8             | 72,0                | 145,0               | 20      |
| 52349    | 18 x 0,5                               | 10,5            | 86,4                | 171,0               | 20      |
| 52350    | 21 x 0,5                               | 11,1            | 101,0               | 197,0               | 20      |
| 52351    | 25 x 0,5                               | 12,6            | 120,0               | 230,0               | 20      |
| 52352    | 30 x 0,5                               | 13,3            | 142,6               | 269,0               | 20      |
| 52353    | 34 x 0,5                               | 14,5            | 163,1               | 301,0               | 20      |
| 52354    | 40 x 0,5                               | 15,8            | 192,0               | 365,0               | 20      |
| 52355    | 2 x 0,75                               | 5,2             | 14,3                | 40,0                | 19      |
| 52356    | 3 x 0,75                               | 5,5             | 21,5                | 51,0                | 19      |
| 52357    | 4 x 0,75                               | 6,0             | 28,6                | 61,0                | 19      |
| 52358    | 5 x 0,75                               | 6,7             | 36,1                | 76,0                | 19      |
| 52359    | 7 x 0,75                               | 7,3             | 50,3                | 97,0                | 19      |
| 52360    | 10 x 0,75                              | 9,8             | 72,0                | 137,0               | 19      |
| 52361    | 12 x 0,75                              | 10,0            | 86,2                | 167,0               | 19      |

Dimensions and specifications may be changed without prior notice. (RB01)

# DATAFLAMM® -C

EMC-preferred type, halogen-free, screened, meter marking



## Technical data

- Halogen-free special data cable
- **Temperature range**  
flexing +5°C to +70°C  
fixed installation -40°C to +70°C
- **Operating peak voltage**  
(not for heavy current installation purposes)  
0,14 mm<sup>2</sup> = 350 V  
≥ 0,25 mm<sup>2</sup> = 500 V
- **Test voltage**  
0,14 mm<sup>2</sup> = 800 V  
≥ 0,25 mm<sup>2</sup> = 1200 V
- **Insulation resistance**  
min. 2 GOhm x km
- **Capacitance**  
core/core < 70 nF/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0812, fine wire
- Conductor construction:  
0,34 mm<sup>2</sup> = 7x0,25 mm
- Core insulation of PE compound type LD/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100
- Cores stranded in layers with optimal lay length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour: grey (RAL 7005)
- With meter marking

## Properties

- PE-insulated cores, compared with PVC-insulated cores, assure a remarkable and more favourable capacitance values

### Tests

- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2

### Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type: **DATAFLAMM®**

## Application

As a connecting and interconnecting cable for signaling, measuring, control and intercom purposes for the use in paging and intercom systems, clock systems, weighing equipment and office machines. The cables can be laid on or under plaster, in dry, damp and wet rooms as well as masonry and concrete. Areas of use are telecommunications and information processing systems in public buildings, laboratories, warehouses and other buildings in which the release of halogens in the event of fire must be avoided. Due to the screening without interference against foreign encoder or high-frequency signals.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52365    | 2 x 0,14                               | 3,7             | 12,4                | 21,0                | 26      |
| 52366    | 3 x 0,14                               | 3,9             | 14,0                | 25,0                | 26      |
| 52367    | 4 x 0,14                               | 4,1             | 15,8                | 26,0                | 26      |
| 52368    | 5 x 0,14                               | 4,4             | 19,5                | 32,0                | 26      |
| 52369    | 7 x 0,14                               | 4,7             | 23,4                | 39,0                | 26      |
| 52370    | 10 x 0,14                              | 5,9             | 28,4                | 54,0                | 26      |
| 52371    | 12 x 0,14                              | 6,0             | 31,4                | 69,0                | 26      |
| 52372    | 14 x 0,14                              | 6,4             | 37,5                | 76,0                | 26      |
| 52373    | 16 x 0,14                              | 6,7             | 43,4                | 82,0                | 26      |
| 52374    | 18 x 0,14                              | 7,0             | 51,4                | 90,0                | 26      |
| 52375    | 21 x 0,14                              | 7,4             | 61,8                | 102,0               | 26      |
| 52376    | 25 x 0,14                              | 8,3             | 76,0                | 121,0               | 26      |
| 52377    | 30 x 0,14                              | 8,6             | 92,7                | 146,0               | 26      |
| 52378    | 34 x 0,14                              | 9,4             | 121,0               | 167,0               | 26      |
| 52379    | 40 x 0,14                              | 10,2            | 126,1               | 170,0               | 26      |
| 52380    | 2 x 0,25                               | 4,3             | 14,6                | 23,0                | 24      |
| 52381    | 3 x 0,25                               | 4,5             | 17,0                | 28,0                | 24      |
| 52382    | 4 x 0,25                               | 4,8             | 20,6                | 34,0                | 24      |
| 52384    | 5 x 0,25                               | 5,2             | 24,7                | 42,0                | 24      |
| 52385    | 7 x 0,25                               | 5,6             | 31,2                | 49,0                | 24      |
| 52386    | 10 x 0,25                              | 7,2             | 42,1                | 81,0                | 24      |
| 52387    | 12 x 0,25                              | 7,3             | 47,5                | 88,0                | 24      |
| 52388    | 14 x 0,25                              | 7,9             | 52,7                | 100,0               | 24      |
| 52389    | 16 x 0,25                              | 8,3             | 58,1                | 113,0               | 24      |
| 52390    | 18 x 0,25                              | 9,1             | 78,0                | 126,0               | 24      |
| 52391    | 21 x 0,25                              | 9,5             | 94,3                | 144,0               | 24      |
| 52392    | 25 x 0,25                              | 10,6            | 116,5               | 164,0               | 24      |
| 52393    | 30 x 0,25                              | 11,1            | 132,2               | 191,0               | 24      |
| 52394    | 34 x 0,25                              | 11,9            | 144,6               | 214,0               | 24      |
| 52395    | 40 x 0,25                              | 13,0            | 163,3               | 245,0               | 24      |
| 52396    | 2 x 0,34                               | 4,8             | 16,9                | 31,0                | 22      |
| 52397    | 3 x 0,34                               | 5,1             | 20,6                | 38,0                | 22      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52398    | 4 x 0,34                               | 5,5             | 24,5                | 47,0                | 22      |
| 52399    | 5 x 0,34                               | 6,0             | 30,0                | 58,0                | 22      |
| 52400    | 7 x 0,34                               | 6,4             | 38,2                | 76,0                | 22      |
| 52401    | 10 x 0,34                              | 8,0             | 62,2                | 110,0               | 22      |
| 52402    | 12 x 0,34                              | 8,5             | 69,4                | 123,0               | 22      |
| 52403    | 14 x 0,34                              | 9,0             | 82,1                | 140,0               | 22      |
| 52404    | 16 x 0,34                              | 9,5             | 95,0                | 157,0               | 22      |
| 52405    | 18 x 0,34                              | 10,2            | 107,3               | 172,0               | 22      |
| 52406    | 21 x 0,34                              | 10,8            | 122,4               | 195,0               | 22      |
| 52407    | 25 x 0,34                              | 12,2            | 142,2               | 226,0               | 22      |
| 52408    | 30 x 0,34                              | 12,7            | 162,6               | 261,0               | 22      |
| 52409    | 34 x 0,34                              | 13,7            | 178,9               | 285,0               | 22      |
| 52410    | 40 x 0,34                              | 14,9            | 203,3               | 330,0               | 22      |
| 52411    | 2 x 0,5                                | 5,1             | 23,0                | 37,0                | 20      |
| 52412    | 3 x 0,5                                | 5,5             | 30,0                | 46,0                | 20      |
| 52413    | 4 x 0,5                                | 5,9             | 35,3                | 57,0                | 20      |
| 52414    | 5 x 0,5                                | 6,6             | 52,5                | 77,0                | 20      |
| 52415    | 7 x 0,5                                | 7,1             | 65,3                | 92,0                | 20      |
| 52416    | 10 x 0,5                               | 9,3             | 88,7                | 135,0               | 20      |
| 52417    | 12 x 0,5                               | 9,4             | 98,7                | 148,0               | 20      |
| 52418    | 18 x 0,5                               | 11,1            | 141,2               | 210,0               | 20      |
| 52419    | 21 x 0,5                               | 12,0            | 161,0               | 242,0               | 20      |
| 52420    | 25 x 0,5                               | 13,5            | 187,2               | 285,0               | 20      |
| 52421    | 30 x 0,5                               | 14,2            | 223,2               | 340,0               | 20      |
| 52422    | 40 x 0,5                               | 16,5            | 294,9               | 445,0               | 20      |
| 52423    | 2 x 0,75                               | 5,9             | 30,6                | 45,0                | 19      |
| 52424    | 3 x 0,75                               | 6,2             | 38,1                | 60,0                | 19      |
| 52425    | 4 x 0,75                               | 6,9             | 58,0                | 80,0                | 19      |
| 52426    | 5 x 0,75                               | 7,5             | 68,4                | 97,0                | 19      |
| 52427    | 7 x 0,75                               | 8,1             | 88,4                | 127,0               | 19      |
| 52428    | 10 x 0,75                              | 10,4            | 122,5               | 175,0               | 19      |
| 52429    | 12 x 0,75                              | 10,9            | 137,2               | 196,0               | 19      |

Dimensions and specifications may be changed without prior notice. (RB01)

# DATAFLAMM® -C-PAAR

EMC-preferred type, halogen-free, screened, meter marking



## Technical data

- Halogen-free special data cable
- **Temperature range**  
flexing +5°C to +70°C  
fixed installation -40°C to +70°C
- **Operating peak voltage**  
(not for heavy current installation purposes)  
0,14 mm<sup>2</sup> = 350 V  
≥ 0,25 mm<sup>2</sup> = 500 V
- **Test voltage**  
0,14 mm<sup>2</sup> = 800 V  
≥ 0,25 mm<sup>2</sup> = 1200 V
- **Insulation resistance**  
min. 2 GOhm x km
- **Capacitance**  
core/core < 70 nF/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, fine wire to DIN VDE 0812
- Conductor construction:  
0,34 mm<sup>2</sup> = 7x0,25 mm
- Core insulation of PE compound type LD/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour: grey (RAL 7005)
- With meter marking

## Properties

- PE-insulated cores, compared with PVC-insulated cores, assure a remarkable and more favourable capacitance values

## Tests

- Halogen-free acc. to DIN VDE 0482-754-1, DIN EN 60754-1, IEC 60754-1 (previously DIN VDE 0482-267-2-1)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2, DIN EN 60754-2, IEC 60754-2 (previously DIN VDE 0482-267-2-2)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Are used as connecting cable for signal, measuring, control, call-announcing and two-way intercom speaking systems, clock installations, electronic weighing equipment and electrical apparatus for office requirements. The cables are suitable for installation in dry, damp and wet environments as well as in masonry and concrete. These cables are generally installed in telecommunication apparatus and data transmission systems in public buildings, laboratories, trading centres where the freedom from halogen in case of fire and the flame propagation must be avoided. With screened braiding offers interference-free signal transfer. The halogen-free thermoplastic sheath produce neither corrosive nor toxic gases.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52435    | 2 x 2 x 0,14                           | 4,7             | 22,5                | 37,0                | 26      |
| 52436    | 3 x 2 x 0,14                           | 5,1             | 25,6                | 47,0                | 26      |
| 52437    | 4 x 2 x 0,14                           | 5,8             | 39,1                | 66,0                | 26      |
| 52438    | 5 x 2 x 0,14                           | 6,3             | 45,3                | 76,0                | 26      |
| 52439    | 6 x 2 x 0,14                           | 6,8             | 51,4                | 87,0                | 26      |
| 52440    | 7 x 2 x 0,14                           | 6,8             | 54,2                | 94,0                | 26      |
| 52441    | 10 x 2 x 0,14                          | 8,9             | 68,7                | 119,0               | 26      |
| 52442    | 12 x 2 x 0,14                          | 9,2             | 78,3                | 135,0               | 26      |
| 52443    | 15 x 2 x 0,14                          | 10,0            | 79,9                | 157,0               | 26      |
| 52444    | 18 x 2 x 0,14                          | 11,0            | 99,2                | 190,0               | 26      |
| 52445    | 2 x 2 x 0,25                           | 5,7             | 27,1                | 44,0                | 24      |
| 52446    | 3 x 2 x 0,25                           | 6,2             | 42,4                | 66,0                | 24      |
| 52447    | 4 x 2 x 0,25                           | 7,0             | 54,5                | 81,0                | 24      |
| 52448    | 5 x 2 x 0,25                           | 7,9             | 59,8                | 98,0                | 24      |
| 52449    | 6 x 2 x 0,25                           | 8,6             | 64,6                | 116,0               | 24      |
| 52450    | 7 x 2 x 0,25                           | 8,6             | 71,3                | 120,0               | 24      |
| 52451    | 10 x 2 x 0,25                          | 10,6            | 93,3                | 153,0               | 24      |
| 52452    | 12 x 2 x 0,25                          | 11,4            | 108,0               | 175,0               | 24      |
| 52453    | 15 x 2 x 0,25                          | 12,5            | 123,4               | 213,0               | 24      |
| 52454    | 18 x 2 x 0,25                          | 13,1            | 139,7               | 248,0               | 24      |
| 52455    | 2 x 2 x 0,34                           | 6,5             | 43,3                | 68,0                | 22      |
| 52456    | 3 x 2 x 0,34                           | 7,2             | 55,0                | 92,0                | 22      |
| 52457    | 4 x 2 x 0,34                           | 7,9             | 64,0                | 110,0               | 22      |
| 52458    | 5 x 2 x 0,34                           | 8,8             | 74,5                | 128,0               | 22      |
| 52459    | 6 x 2 x 0,34                           | 9,8             | 85,0                | 147,0               | 22      |

| Part no. | No. pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 52460    | 7 x 2 x 0,34                           | 9,8             | 89,8                | 154,0               | 22      |
| 52461    | 10 x 2 x 0,34                          | 12,2            | 119,8               | 209,0               | 22      |
| 52462    | 12 x 2 x 0,34                          | 12,9            | 139,4               | 245,0               | 22      |
| 52463    | 15 x 2 x 0,34                          | 14,4            | 160,0               | 279,0               | 22      |
| 52464    | 18 x 2 x 0,34                          | 15,3            | 207,2               | 363,0               | 22      |
| 52465    | 2 x 2 x 0,5                            | 7,4             | 50,2                | 76,0                | 20      |
| 52466    | 3 x 2 x 0,5                            | 8,0             | 64,5                | 107,0               | 20      |
| 52467    | 4 x 2 x 0,5                            | 9,0             | 77,2                | 134,0               | 20      |
| 52468    | 5 x 2 x 0,5                            | 9,9             | 96,2                | 150,0               | 20      |
| 52469    | 6 x 2 x 0,5                            | 10,9            | 107,4               | 176,0               | 20      |
| 52470    | 7 x 2 x 0,5                            | 10,9            | 117,3               | 185,0               | 20      |
| 52471    | 10 x 2 x 0,5                           | 13,8            | 158,2               | 275,0               | 20      |
| 52472    | 12 x 2 x 0,5                           | 14,5            | 177,8               | 330,0               | 20      |
| 52473    | 15 x 2 x 0,5                           | 15,8            | 236,4               | 380,0               | 20      |
| 52474    | 18 x 2 x 0,5                           | 17,1            | 265,4               | 450,0               | 20      |
| 52475    | 2 x 2 x 0,75                           | 8,5             | 64,6                | 105,0               | 19      |
| 52476    | 3 x 2 x 0,75                           | 9,3             | 81,7                | 137,0               | 19      |
| 52477    | 4 x 2 x 0,75                           | 10,6            | 107,6               | 166,0               | 19      |
| 52478    | 5 x 2 x 0,75                           | 11,7            | 126,1               | 200,0               | 19      |
| 52479    | 6 x 2 x 0,75                           | 12,7            | 138,6               | 236,0               | 19      |
| 52480    | 7 x 2 x 0,75                           | 12,7            | 153,7               | 255,0               | 19      |
| 52481    | 10 x 2 x 0,75                          | 15,6            | 220,0               | 363,0               | 19      |
| 52482    | 12 x 2 x 0,75                          | 16,8            | 265,5               | 434,0               | 19      |
| 52483    | 15 x 2 x 0,75                          | 18,6            | 327,6               | 500,0               | 19      |
| 52484    | 18 x 2 x 0,75                          | 20,5            | 374,6               | 580,0               | 19      |

Dimensions and specifications may be changed without prior notice. (RB01)

# Command Cable UL (LiYY)

Style 2464, 300 V, 80°C



## Technical data

- Special PVC command cable, approved to UL Style 2464, cores for AWG 26-20 to UL Style 1061/1729 for AWG 18-16 to UL Style 1007/1569
- **Temperature range**  
flexing -10°C to +80°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
1500 V
- **Breakdown voltage**  
min. 3000 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø

## Cable structure

- Tinned copper conductor, fine wire, AWG 26-20 to ASTM-B 174-95 class J-M, AWG 18-16 to ASTM-B 286  
Conductor make-up to:  
0,14 mm<sup>2</sup> = 7x0,162 mm  
0,23 mm<sup>2</sup> = 7x0,202 mm  
0,34 mm<sup>2</sup> = 7x0,254 mm  
0,56 mm<sup>2</sup> = 7x0,32 mm  
0,82 mm<sup>2</sup> = 19x0,235 mm  
1,30 mm<sup>2</sup> = 19x0,31 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL Std.1581 tab.50.182 and 50.183
- Core identification to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC class 43 acc. to UL Std.1581 tab.50.182
- Sheath colour:  
black (international colour code)  
grey (DIN 47100 - preferred type)

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **To a large extent resistant to**  
Oil  
Solvents  
Acids  
Lyes
- **Tests**  
PVC flame retardant acc. to UL VW-1, CSA FT1

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**command cable UL (LiYCY)**

## Application

As a flexible connector and connecting cable, as control, signal and measuring line of machine tools, conveyor belts and plant construction, air conditioning systems, in foundries and steel mills.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWGNo. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km | Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No.cores x<br>cross-sec.<br>mm <sup>2</sup> | AWGNo. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|--------------------------------------|---------------------------------------|---|--------|-----------------------|---------------------------|---------------------------|--------------------------------------|---------------------------------------|---|--------|-----------------------|---------------------------|---------------------------|
| 83137                                | 83045                                 | 2 x 0,14                                    | 26     | 3,6                   | 3,6                       | 13,0                      | 83185                                | 83386                                 | 2 x 0,56                                    | 20     | 4,6                   | 9,8                       | 30,0                      |
| 83138                                | 83046                                 | 3 x 0,14                                    | 26     | 3,8                   | 4,0                       | 15,0                      | 83186                                | 83387                                 | 3 x 0,56                                    | 20     | 4,8                   | 14,6                      | 33,0                      |
| 83139                                | 83047                                 | 4 x 0,14                                    | 26     | 4,0                   | 5,4                       | 18,0                      | 83187                                | 83388                                 | 4 x 0,56                                    | 20     | 5,2                   | 19,4                      | 41,0                      |
| 83140                                | 83048                                 | 6 x 0,14                                    | 26     | 4,6                   | 8,1                       | 25,0                      | 83188                                | 83389                                 | 6 x 0,56                                    | 20     | 6,1                   | 29,0                      | 65,0                      |
| 83141                                | 83049                                 | 10 x 0,14                                   | 26     | 5,6                   | 13,4                      | 38,0                      | 83189                                | 83390                                 | 10 x 0,56                                   | 20     | 7,6                   | 48,2                      | 102,0                     |
| 83142                                | 83050                                 | 12 x 0,14                                   | 26     | 5,8                   | 16,2                      | 46,0                      | 83190                                | 83391                                 | 12 x 0,56                                   | 20     | 7,8                   | 58,2                      | 120,0                     |
| 83143                                | 83055                                 | 16 x 0,14                                   | 26     | 6,3                   | 21,5                      | 56,0                      | 83191                                | 83392                                 | 16 x 0,56                                   | 20     | 8,7                   | 77,3                      | 152,0                     |
| 83144                                | 83056                                 | 18 x 0,14                                   | 26     | 6,6                   | 34,4                      | 62,0                      | 83192                                | 83393                                 | 18 x 0,56                                   | 20     | 9,3                   | 87,0                      | 168,0                     |
| 83145                                | 83057                                 | 24 x 0,14                                   | 26     | 7,5                   | 32,4                      | 82,0                      | 83193                                | 83394                                 | 24 x 0,56                                   | 20     | 10,9                  | 116,3                     | 224,0                     |
| 83146                                | 83058                                 | 27 x 0,14                                   | 26     | 7,6                   | 36,3                      | 97,0                      | 83194                                | 83395                                 | 27 x 0,56                                   | 20     | 11,2                  | 129,8                     | 260,0                     |
| 83147                                | 83059                                 | 30 x 0,14                                   | 26     | 8,0                   | 40,4                      | 110,0                     | 83195                                | 83396                                 | 30 x 0,56                                   | 20     | 11,8                  | 144,6                     | 300,0                     |
| 83153                                | 83130                                 | 2 x 0,23                                    | 24     | 3,8                   | 4,6                       | 16,0                      | 83201                                | 83397                                 | 2 x 0,82                                    | 18     | 6,1                   | 15,2                      | 50,0                      |
| 83154                                | 83131                                 | 3 x 0,23                                    | 24     | 4,0                   | 7,1                       | 19,0                      | 83202                                | 83398                                 | 3 x 0,82                                    | 18     | 6,4                   | 23,2                      | 62,0                      |
| 83155                                | 83132                                 | 4 x 0,23                                    | 24     | 4,3                   | 9,4                       | 23,0                      | 83203                                | 83399                                 | 4 x 0,82                                    | 18     | 6,9                   | 31,3                      | 72,0                      |
| 83156                                | 83133                                 | 6 x 0,23                                    | 24     | 4,9                   | 14,2                      | 32,0                      | 83204                                | 83474                                 | 6 x 0,82                                    | 18     | 8,1                   | 47,0                      | 100,0                     |
| 83157                                | 83134                                 | 10 x 0,23                                   | 24     | 6,0                   | 23,8                      | 55,0                      | 83205                                | 83475                                 | 10 x 0,82                                   | 18     | 10,4                  | 78,2                      | 180,0                     |
| 83158                                | 83135                                 | 12 x 0,23                                   | 24     | 6,2                   | 28,5                      | 60,0                      | 83206                                | 83476                                 | 12 x 0,82                                   | 18     | 10,9                  | 94,0                      | 182,0                     |
| 83159                                | 83136                                 | 16 x 0,23                                   | 24     | 6,8                   | 38,1                      | 75,0                      | 83207                                | 83477                                 | 16 x 0,82                                   | 18     | 12,2                  | 125,1                     | 240,0                     |
| 83160                                | 83371                                 | 18 x 0,23                                   | 24     | 7,1                   | 43,1                      | 82,0                      | 83208                                | 83478                                 | 18 x 0,82                                   | 18     | 13,0                  | 141,1                     | 270,0                     |
| 83161                                | 83372                                 | 24 x 0,23                                   | 24     | 8,1                   | 59,7                      | 116,0                     | 83209                                | 83479                                 | 24 x 0,82                                   | 18     | 15,2                  | 188,2                     | 370,0                     |
| 83162                                | 83373                                 | 27 x 0,23                                   | 24     | 8,4                   | 64,7                      | 140,0                     | 83210                                | 83480                                 | 27 x 0,82                                   | 18     | 15,8                  | 212,0                     | 400,0                     |
| 83163                                | 83374                                 | 30 x 0,23                                   | 24     | 8,9                   | 71,9                      | 150,0                     | 83211                                | 83481                                 | 30 x 0,82                                   | 18     | 16,3                  | 235,6                     | 470,0                     |
| 83169                                | 83375                                 | 2 x 0,34                                    | 22     | 4,1                   | 6,5                       | 25,0                      | 83217                                | 83482                                 | 2 x 1,3                                     | 16     | 6,6                   | 24,4                      | 70,0                      |
| 83170                                | 83376                                 | 3 x 0,34                                    | 22     | 4,3                   | 9,8                       | 30,0                      | 83218                                | 83483                                 | 3 x 1,3                                     | 16     | 7,0                   | 37,1                      | 90,0                      |
| 83171                                | 83377                                 | 4 x 0,34                                    | 22     | 4,6                   | 13,0                      | 45,0                      | 83219                                | 83484                                 | 4 x 1,3                                     | 16     | 7,6                   | 49,4                      | 110,0                     |
| 83172                                | 83378                                 | 6 x 0,34                                    | 22     | 5,4                   | 19,6                      | 60,0                      | 83220                                | 83491                                 | 6 x 1,3                                     | 16     | 9,2                   | 74,2                      | 160,0                     |
| 83173                                | 83379                                 | 10 x 0,34                                   | 22     | 6,6                   | 32,5                      | 80,0                      | 83221                                | 83492                                 | 10 x 1,3                                    | 16     | 11,8                  | 124,0                     | 250,0                     |
| 83174                                | 83380                                 | 12 x 0,34                                   | 22     | 6,8                   | 39,1                      | 105,0                     | 83222                                | 83493                                 | 12 x 1,3                                    | 16     | 12,2                  | 149,0                     | 300,0                     |
| 83175                                | 83381                                 | 16 x 0,34                                   | 22     | 7,5                   | 52,0                      | 130,0                     | 83223                                | 83494                                 | 16 x 1,3                                    | 16     | 13,7                  | 198,7                     | 400,0                     |
| 83176                                | 83382                                 | 18 x 0,34                                   | 22     | 8,1                   | 59,0                      | 140,0                     | 83224                                | 83495                                 | 18 x 1,3                                    | 16     | 14,6                  | 224,0                     | 450,0                     |
| 83177                                | 83383                                 | 24 x 0,34                                   | 22     | 9,4                   | 79,0                      | 190,0                     | 83225                                | 83496                                 | 24 x 1,3                                    | 16     | 17,0                  | 298,4                     | 650,0                     |
| 83178                                | 83384                                 | 27 x 0,34                                   | 22     | 9,7                   | 88,0                      | 207,0                     | 83226                                | 83497                                 | 27 x 1,3                                    | 16     | 17,6                  | 336,0                     | 680,0                     |
| 83179                                | 83385                                 | 30 x 0,34                                   | 22     | 10,2                  | 97,8                      | 225,0                     | 83227                                | 83498                                 | 30 x 1,3                                    | 16     | 18,6                  | 373,6                     | 750,0                     |

Dimensions and specifications may be changed without prior notice. (RN02)

# Command Cable UL (LiYCY)

Style 2464, 300 V, 80°C, EMC-preferred type



## Technical data

- Special PVC command cable, approved to UL Style 2464, cores for AWG 26-20 to UL Style 1061/1729 for AWG 18-16 to UL Style 1007/1569
- **Temperature range**  
flexing -10°C to +80°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
1500 V
- **Breakdown voltage**  
min. 3000 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire, AWG 26-20 to ASTM-B 174-95 class J-M, AWG 18-16 to ASTM-B 286  
Conductor make-up to:  
0,14 mm<sup>2</sup> = 7x0,162 mm  
0,23 mm<sup>2</sup> = 7x0,202 mm  
0,34 mm<sup>2</sup> = 7x0,254 mm  
0,56 mm<sup>2</sup> = 7x0,32 mm  
0,82 mm<sup>2</sup> = 19x0,235 mm  
1,30 mm<sup>2</sup> = 19x0,31 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL Std. 1581 tab.50.182 and 50.183
- Colour coded to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay length
- Separator-foil
- Drain wire
- Tinned copper wire braiding, approx. 85% coverage
- Outer sheath of PVC class 43 acc. to UL Std. 1581 tab.50.182
- Sheath colour:  
black (international colour code)  
grey (DIN 47100 - preferred type)

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **To a large extent resistant to**  
Oil  
Solvents  
Acids  
Lyes

## Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue types:  
**command cable UL (LiYY)**

## Application

As a flexible interconnecting cable for electronics, control and command technology, as well as in measurement, signal, and pulse technology. Fast and inexpensive contacting by cutting and clamping technology.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|--------------------------------------|---------------------------------------|--|---------|-----------------------|---------------------------|---------------------------|
| 83254                                | 83976                                 | 2 x 0,14                                     | 26      | 3,9                   | 12,6                      | 20,0                      |
| 83255                                | 83977                                 | 3 x 0,14                                     | 26      | 4,2                   | 13,7                      | 25,0                      |
| 83256                                | 83978                                 | 4 x 0,14                                     | 26      | 4,4                   | 14,9                      | 28,0                      |
| 83257                                | 83979                                 | 6 x 0,14                                     | 26      | 5,0                   | 18,9                      | 30,0                      |
| 83258                                | 83980                                 | 10 x 0,14                                    | 26      | 6,1                   | 29,5                      | 50,0                      |
| 83259                                | 83981                                 | 12 x 0,14                                    | 26      | 6,3                   | 31,4                      | 53,0                      |
| 83260                                | 83982                                 | 16 x 0,14                                    | 26      | 6,8                   | 43,9                      | 60,0                      |
| 83261                                | 83983                                 | 18 x 0,14                                    | 26      | 7,1                   | 52,1                      | 70,0                      |
| 83262                                | 83984                                 | 24 x 0,14                                    | 26      | 8,0                   | 62,8                      | 100,0                     |
| 83263                                | 83985                                 | 27 x 0,14                                    | 26      | 8,4                   | 66,3                      | 105,0                     |
| 83264                                | 83986                                 | 30 x 0,14                                    | 26      | 8,6                   | 70,4                      | 110,0                     |

| Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|--------------------------------------|---------------------------------------|--|---------|-----------------------|---------------------------|---------------------------|
| 83270                                | 83987                                 | 2 x 0,23                                     | 24      | 4,3                   | 16,1                      | 20,0                      |
| 83271                                | 83988                                 | 3 x 0,23                                     | 24      | 4,5                   | 18,9                      | 25,0                      |
| 83272                                | 83989                                 | 4 x 0,23                                     | 24      | 4,8                   | 23,0                      | 30,0                      |
| 83273                                | 83990                                 | 6 x 0,23                                     | 24      | 5,4                   | 32,8                      | 40,0                      |
| 83274                                | 83991                                 | 10 x 0,23                                    | 24      | 6,5                   | 50,9                      | 60,0                      |
| 83275                                | 83992                                 | 12 x 0,23                                    | 24      | 6,7                   | 59,1                      | 70,0                      |
| 83276                                | 83993                                 | 16 x 0,23                                    | 24      | 7,4                   | 68,4                      | 90,0                      |
| 83277                                | 83994                                 | 18 x 0,23                                    | 24      | 7,7                   | 79,5                      | 123,0                     |
| 83278                                | 83995                                 | 24 x 0,23                                    | 24      | 8,8                   | 97,3                      | 131,0                     |
| 83279                                | 83996                                 | 27 x 0,23                                    | 24      | 9,0                   | 122,0                     | 160,0                     |
| 83280                                | 83997                                 | 30 x 0,23                                    | 24      | 9,3                   | 132,0                     | 170,0                     |

Continuation ▶

# Command Cable UL (LiYCY)

Style 2464, 300 V, 80°C, EMC-preferred type



| Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km | Part no.<br>Sheath<br>colour<br>grey | Part no.<br>Sheath<br>colour<br>black | No. cores x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app.<br>mm | Cop.<br>weight<br>kg / km | Weight<br>app.<br>kg / km |
|--------------------------------------|---------------------------------------|--|---------|-----------------------|---------------------------|---------------------------|--------------------------------------|---------------------------------------|--|---------|-----------------------|---------------------------|---------------------------|
| 83286                                | 65044                                 | 2 x 0,34                                     | 22      | 4,6                   | 18,1                      | 40,0                      | 83318                                | 65066                                 | 2 x 0,82                                     | 18      | 6,5                   | 39,1                      | 60,0                      |
| 83287                                | 65045                                 | 3 x 0,34                                     | 22      | 4,8                   | 22,2                      | 50,0                      | 83319                                | 65067                                 | 3 x 0,82                                     | 18      | 6,8                   | 50,0                      | 75,0                      |
| 83288                                | 65046                                 | 4 x 0,34                                     | 22      | 5,1                   | 28,7                      | 60,0                      | 83320                                | 65068                                 | 4 x 0,82                                     | 18      | 7,4                   | 59,1                      | 90,0                      |
| 83289                                | 65047                                 | 6 x 0,34                                     | 22      | 6,0                   | 45,4                      | 80,0                      | 83321                                | 65069                                 | 6 x 0,82                                     | 18      | 8,8                   | 89,1                      | 125,0                     |
| 83290                                | 65048                                 | 10 x 0,34                                    | 22      | 7,3                   | 66,1                      | 130,0                     | 83322                                | 65070                                 | 10 x 0,82                                    | 18      | 10,9                  | 141,4                     | 180,0                     |
| 83291                                | 65049                                 | 12 x 0,34                                    | 22      | 7,5                   | 70,8                      | 140,0                     | 83323                                | 65071                                 | 12 x 0,82                                    | 18      | 11,2                  | 152,8                     | 220,0                     |
| 83292                                | 65050                                 | 16 x 0,34                                    | 22      | 8,2                   | 88,4                      | 160,0                     | 83324                                | 65072                                 | 16 x 0,82                                    | 18      | 12,9                  | 184,1                     | 290,0                     |
| 83293                                | 65051                                 | 18 x 0,34                                    | 22      | 8,7                   | 104,1                     | 170,0                     | 83325                                | 65073                                 | 18 x 0,82                                    | 18      | 13,5                  | 207,2                     | 300,0                     |
| 83294                                | 65052                                 | 24 x 0,34                                    | 22      | 9,9                   | 129,0                     | 220,0                     | 83326                                | 65074                                 | 24 x 0,82                                    | 18      | 15,6                  | 272,6                     | 450,0                     |
| 83295                                | 65053                                 | 27 x 0,34                                    | 22      | 10,4                  | 138,4                     | 250,0                     | 83327                                | 65075                                 | 27 x 0,82                                    | 18      | 15,9                  | 289,1                     | 470,0                     |
| 83296                                | 65054                                 | 30 x 0,34                                    | 22      | 10,9                  | 159,0                     | 280,0                     | 83328                                | 65076                                 | 30 x 0,82                                    | 18      | 16,6                  | 317,4                     | 490,0                     |
| 83302                                | 65055                                 | 2 x 0,56                                     | 20      | 5,1                   | 29,4                      | 50,0                      | 83334                                | 65077                                 | 2 x 1,3                                      | 16      | 6,9                   | 59,1                      | 90,0                      |
| 83303                                | 65056                                 | 3 x 0,56                                     | 20      | 5,3                   | 39,7                      | 55,0                      | 83335                                | 65078                                 | 3 x 1,3                                      | 16      | 7,3                   | 74,1                      | 160,0                     |
| 83304                                | 65057                                 | 4 x 0,56                                     | 20      | 5,6                   | 46,1                      | 61,0                      | 83336                                | 65079                                 | 4 x 1,3                                      | 16      | 7,9                   | 96,4                      | 200,0                     |
| 83305                                | 65058                                 | 6 x 0,56                                     | 20      | 6,6                   | 66,8                      | 90,0                      | 83337                                | 65080                                 | 6 x 1,3                                      | 16      | 9,6                   | 137,4                     | 290,0                     |
| 83306                                | 65059                                 | 10 x 0,56                                    | 20      | 8,1                   | 93,1                      | 133,0                     | 83338                                | 65081                                 | 10 x 1,3                                     | 16      | 12,4                  | 191,7                     | 450,0                     |
| 83307                                | 65060                                 | 12 x 0,56                                    | 20      | 8,4                   | 117,4                     | 151,0                     | 83339                                | 65082                                 | 12 x 1,3                                     | 16      | 12,8                  | 251,7                     | 600,0                     |
| 83308                                | 65061                                 | 16 x 0,56                                    | 20      | 9,5                   | 130,4                     | 190,0                     | 83340                                | 65083                                 | 16 x 1,3                                     | 16      | 12,8                  | 276,1                     | 650,0                     |
| 83309                                | 65062                                 | 18 x 0,56                                    | 20      | 9,9                   | 151,4                     | 216,0                     | 83341                                | 65084                                 | 18 x 1,3                                     | 16      | 15,5                  | 364,1                     | 680,0                     |
| 83310                                | 65063                                 | 24 x 0,56                                    | 20      | 11,5                  | 237,0                     | 339,0                     | 83342                                | 65085                                 | 24 x 1,3                                     | 16      | 18,1                  | 442,4                     | 900,0                     |
| 83311                                | 65064                                 | 27 x 0,56                                    | 20      | 12,0                  | 257,4                     | 374,0                     | 83343                                | 65086                                 | 27 x 1,3                                     | 16      | 18,7                  | 494,7                     | 990,0                     |
| 83312                                | 65065                                 | 30 x 0,56                                    | 20      | 12,4                  | 297,0                     | 397,0                     | 83344                                | 65087                                 | 30 x 1,3                                     | 16      | 19,5                  | 521,4                     | 1050,0                    |

Dimensions and specifications may be changed without prior notice. (RN02)



# Command Cable UL (LiYY-TP)

Style 2464, 300 V, 80°C



## Technical data

- Special PVC command cable approved to UL Style 2464, cores acc. to UL Style 1061/1729
- **Temperature range**  
flexing -10°C to +80°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
1500 V
- **Breakdown voltage**  
min. 3000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø

## Cable structure

- Tinned copper conductor, fine wire, acc. to ASTM-B 174-95 class J-M  
Conductor make-up to:  
0,14 mm<sup>2</sup> = 7x0,162 mm  
0,23 mm<sup>2</sup> = 7x0,202 mm  
0,34 mm<sup>2</sup> = 7x0,254 mm  
0,56 mm<sup>2</sup> = 7x0,32 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL Std. 1581 tab.50.182 and 50183
- Core identification (pair) to DIN 47100, with colour repetition from pair no. 23 or international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Separator-foil
- Outer sheath of special PVC class 43 acc. to UL Std. 1581 tab.50.182
- Sheath colour:  
black (international colour code)  
grey (DIN 47100 - preferred type)

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **To a large extent resistant to**  
Oil  
Solvents  
Acids  
Lyes

## Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**command cable UL (LiYCY-TP)**

## Application

Twisted pair control cable for use in tool making machinery conveyor system and production lines, in industrial plants and in air conditioning as well as in the steel producing industries.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no.<br>Sheath<br>colour | No.pairs x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km |
|------------------------------|---|---------|--------------------|---------------------------|------------------------|
| 83904                        | 1 x 2 x 0,14                                | 26      | 3,6                | 2,7                       | 20,0                   |
| 83905                        | 2 x 2 x 0,14                                | 26      | 5,1                | 5,4                       | 24,0                   |
| 83906                        | 3 x 2 x 0,14                                | 26      | 5,3                | 8,1                       | 30,0                   |
| 83907                        | 4 x 2 x 0,14                                | 26      | 5,8                | 10,8                      | 38,0                   |
| 83908                        | 5 x 2 x 0,14                                | 26      | 6,2                | 13,6                      | 44,0                   |
| 83909                        | 6 x 2 x 0,14                                | 26      | 6,8                | 16,2                      | 51,0                   |
| 83910                        | 7 x 2 x 0,14                                | 26      | 6,8                | 19,0                      | 57,0                   |
| 83911                        | 8 x 2 x 0,14                                | 26      | 7,3                | 21,7                      | 64,0                   |
| 83912                        | 10 x 2 x 0,14                               | 26      | 7,4                | 26,7                      | 76,0                   |
| 83913                        | 12 x 2 x 0,14                               | 26      | 9,1                | 32,6                      | 93,0                   |
| 83914                        | 14 x 2 x 0,14                               | 26      | 9,8                | 37,4                      | 103,0                  |
| 83915                        | 15 x 2 x 0,14                               | 26      | 10,6               | 40,7                      | 109,0                  |
| 83916                        | 16 x 2 x 0,14                               | 26      | 10,6               | 43,4                      | 112,0                  |
| 83917                        | 18 x 2 x 0,14                               | 26      | 11,1               | 48,5                      | 119,0                  |
| 83918                        | 20 x 2 x 0,14                               | 26      | 11,9               | 54,2                      | 130,0                  |
| 83919                        | 22 x 2 x 0,14                               | 26      | 12,4               | 59,3                      | 150,0                  |
| 83920                        | 24 x 2 x 0,14                               | 26      | 13,1               | 64,7                      | 169,0                  |
| 83921                        | 25 x 2 x 0,14                               | 26      | 13,4               | 67,2                      | 178,0                  |
| 83922                        | 1 x 2 x 0,23                                | 24      | 3,8                | 4,8                       | 32,0                   |
| 83923                        | 2 x 2 x 0,23                                | 24      | 5,3                | 9,7                       | 36,0                   |
| 83924                        | 3 x 2 x 0,23                                | 24      | 5,7                | 14,7                      | 48,0                   |
| 83925                        | 4 x 2 x 0,23                                | 24      | 6,2                | 19,6                      | 56,0                   |
| 83926                        | 5 x 2 x 0,23                                | 24      | 6,6                | 24,6                      | 71,0                   |
| 83927                        | 6 x 2 x 0,23                                | 24      | 7,2                | 29,3                      | 80,0                   |
| 83928                        | 7 x 2 x 0,23                                | 24      | 7,2                | 34,1                      | 89,0                   |
| 83929                        | 8 x 2 x 0,23                                | 24      | 7,8                | 39,1                      | 98,0                   |
| 83930                        | 10 x 2 x 0,23                               | 24      | 9,2                | 48,9                      | 111,0                  |
| 83931                        | 12 x 2 x 0,23                               | 24      | 9,7                | 59,4                      | 135,0                  |
| 83932                        | 14 x 2 x 0,23                               | 24      | 10,2               | 68,7                      | 160,0                  |

| Part no.<br>Sheath<br>colour | No.pairs x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km |
|------------------------------|---|---------|--------------------|---------------------------|------------------------|
| 65214                        | 1 x 2 x 0,14                                | 26      | 3,6                | 2,7                       | 20,0                   |
| 65215                        | 2 x 2 x 0,14                                | 26      | 5,1                | 5,4                       | 24,0                   |
| 65216                        | 3 x 2 x 0,14                                | 26      | 5,3                | 8,1                       | 30,0                   |
| 65217                        | 4 x 2 x 0,14                                | 26      | 5,8                | 10,8                      | 38,0                   |
| 65218                        | 5 x 2 x 0,14                                | 26      | 6,2                | 13,6                      | 44,0                   |
| 65219                        | 6 x 2 x 0,14                                | 26      | 6,8                | 16,2                      | 51,0                   |
| 65220                        | 7 x 2 x 0,14                                | 26      | 6,8                | 19,0                      | 57,0                   |
| 65221                        | 8 x 2 x 0,14                                | 26      | 7,3                | 21,7                      | 64,0                   |
| 65222                        | 10 x 2 x 0,14                               | 26      | 7,4                | 26,7                      | 76,0                   |
| 65223                        | 12 x 2 x 0,14                               | 26      | 9,1                | 32,6                      | 93,0                   |
| 65224                        | 14 x 2 x 0,14                               | 26      | 9,8                | 37,4                      | 103,0                  |
| 65225                        | 15 x 2 x 0,14                               | 26      | 10,6               | 40,7                      | 109,0                  |
| 65226                        | 16 x 2 x 0,14                               | 26      | 10,6               | 43,4                      | 112,0                  |
| 65227                        | 18 x 2 x 0,14                               | 26      | 11,1               | 48,5                      | 119,0                  |
| 65228                        | 20 x 2 x 0,14                               | 26      | 11,9               | 54,2                      | 130,0                  |
| 65229                        | 22 x 2 x 0,14                               | 26      | 12,4               | 59,3                      | 150,0                  |
| 65230                        | 24 x 2 x 0,14                               | 26      | 13,1               | 64,7                      | 169,0                  |
| 65231                        | 25 x 2 x 0,14                               | 26      | 13,4               | 67,2                      | 178,0                  |
| 65232                        | 1 x 2 x 0,23                                | 24      | 3,8                | 4,8                       | 32,0                   |
| 65233                        | 2 x 2 x 0,23                                | 24      | 5,3                | 9,7                       | 36,0                   |
| 65234                        | 3 x 2 x 0,23                                | 24      | 5,7                | 14,7                      | 48,0                   |
| 65235                        | 4 x 2 x 0,23                                | 24      | 6,2                | 19,6                      | 56,0                   |
| 65236                        | 5 x 2 x 0,23                                | 24      | 6,6                | 24,6                      | 71,0                   |
| 65237                        | 6 x 2 x 0,23                                | 24      | 7,2                | 29,3                      | 80,0                   |
| 65238                        | 7 x 2 x 0,23                                | 24      | 7,2                | 34,1                      | 89,0                   |
| 65239                        | 8 x 2 x 0,23                                | 24      | 7,8                | 39,1                      | 98,0                   |
| 65240                        | 10 x 2 x 0,23                               | 24      | 9,2                | 48,9                      | 111,0                  |
| 65241                        | 12 x 2 x 0,23                               | 24      | 9,7                | 59,4                      | 135,0                  |
| 65242                        | 14 x 2 x 0,23                               | 24      | 10,2               | 68,7                      | 160,0                  |

Continuation ▶

# Command Cable UL (LiYY-TP)

Style 2464, 300 V, 80°C

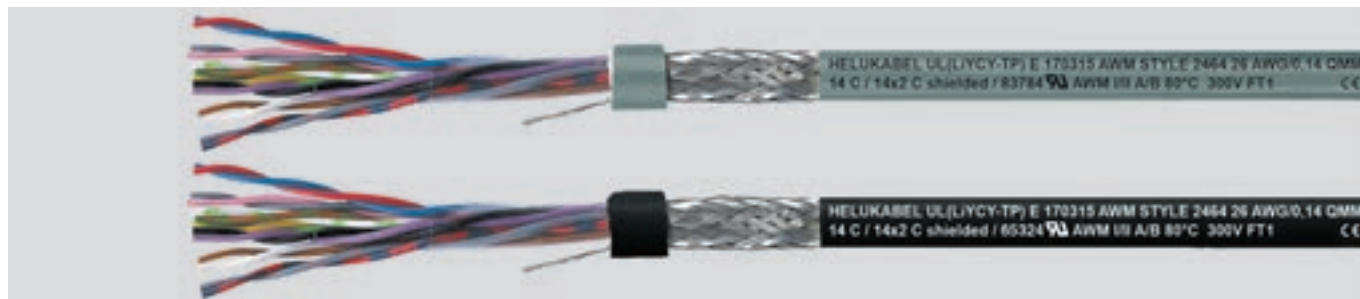


| Part no.<br>Sheath<br>colour | No.pairs x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km | Part no.<br>Sheath<br>colour | No.pairs x<br>cross-sec.<br>mm <sup>2</sup> | AWG-No. | Outer Ø<br>app. mm | Cop.<br>weight<br>kg / km | Weight<br>app. kg / km |
|------------------------------|---|---------|--------------------|---------------------------|------------------------|------------------------------|---|---------|--------------------|---------------------------|------------------------|
| <b>grey</b>                  |   |         |                    |                           |                        | <b>black</b>                 |   |         |                    |                           |                        |
| 83933                        | 15 x 2 x 0,23                               | 24      | 10,9               | 73,7                      | 171,0                  | 65243                        | 15 x 2 x 0,23                               | 24      | 10,9               | 73,7                      | 171,0                  |
| 83934                        | 16 x 2 x 0,23                               | 24      | 10,9               | 79,1                      | 185,0                  | 65244                        | 16 x 2 x 0,23                               | 24      | 10,9               | 79,1                      | 185,0                  |
| 83935                        | 18 x 2 x 0,23                               | 24      | 11,5               | 88,9                      | 209,0                  | 65245                        | 18 x 2 x 0,23                               | 24      | 11,5               | 88,9                      | 209,0                  |
| 83936                        | 20 x 2 x 0,23                               | 24      | 12,2               | 98,4                      | 230,0                  | 65246                        | 20 x 2 x 0,23                               | 24      | 12,2               | 98,4                      | 230,0                  |
| 83937                        | 22 x 2 x 0,23                               | 24      | 13,0               | 108,6                     | 248,0                  | 65247                        | 22 x 2 x 0,23                               | 24      | 13,0               | 108,6                     | 248,0                  |
| 83938                        | 24 x 2 x 0,23                               | 24      | 13,7               | 117,9                     | 279,0                  | 65248                        | 24 x 2 x 0,23                               | 24      | 13,7               | 117,9                     | 279,0                  |
| 83939                        | 25 x 2 x 0,23                               | 24      | 14,2               | 123,5                     | 292,0                  | 65249                        | 25 x 2 x 0,23                               | 24      | 14,2               | 123,5                     | 292,0                  |
| 83940                        | 1 x 2 x 0,34                                | 22      | 4,2                | 6,5                       | 38,0                   | 65250                        | 1 x 2 x 0,34                                | 22      | 4,2                | 6,5                       | 38,0                   |
| 83941                        | 2 x 2 x 0,34                                | 22      | 5,9                | 13,0                      | 44,0                   | 65251                        | 2 x 2 x 0,34                                | 22      | 5,9                | 13,0                      | 44,0                   |
| 83942                        | 3 x 2 x 0,34                                | 22      | 6,3                | 19,5                      | 60,0                   | 65252                        | 3 x 2 x 0,34                                | 22      | 6,3                | 19,5                      | 60,0                   |
| 83943                        | 4 x 2 x 0,34                                | 22      | 7,0                | 26,1                      | 79,0                   | 65253                        | 4 x 2 x 0,34                                | 22      | 7,0                | 26,1                      | 79,0                   |
| 83944                        | 5 x 2 x 0,34                                | 22      | 7,6                | 32,6                      | 92,0                   | 65254                        | 5 x 2 x 0,34                                | 22      | 7,6                | 32,6                      | 92,0                   |
| 83945                        | 6 x 2 x 0,34                                | 22      | 8,2                | 39,2                      | 119,0                  | 65255                        | 6 x 2 x 0,34                                | 22      | 8,2                | 39,2                      | 119,0                  |
| 83946                        | 7 x 2 x 0,34                                | 22      | 8,2                | 45,7                      | 128,0                  | 65256                        | 7 x 2 x 0,34                                | 22      | 8,2                | 45,7                      | 128,0                  |
| 83947                        | 8 x 2 x 0,34                                | 22      | 9,0                | 52,3                      | 139,0                  | 65257                        | 8 x 2 x 0,34                                | 22      | 9,0                | 52,3                      | 139,0                  |
| 83948                        | 10 x 2 x 0,34                               | 22      | 10,7               | 65,3                      | 171,0                  | 65258                        | 10 x 2 x 0,34                               | 22      | 10,7               | 65,3                      | 171,0                  |
| 83949                        | 12 x 2 x 0,34                               | 22      | 11,3               | 78,4                      | 194,0                  | 65259                        | 12 x 2 x 0,34                               | 22      | 11,3               | 78,4                      | 194,0                  |
| 83950                        | 14 x 2 x 0,34                               | 22      | 12,1               | 91,5                      | 222,0                  | 65260                        | 14 x 2 x 0,34                               | 22      | 12,1               | 91,5                      | 222,0                  |
| 83951                        | 15 x 2 x 0,34                               | 22      | 12,7               | 97,8                      | 231,0                  | 65261                        | 15 x 2 x 0,34                               | 22      | 12,7               | 97,8                      | 231,0                  |
| 83952                        | 16 x 2 x 0,34                               | 22      | 12,7               | 104,6                     | 240,0                  | 65262                        | 16 x 2 x 0,34                               | 22      | 12,7               | 104,6                     | 240,0                  |
| 83953                        | 18 x 2 x 0,34                               | 22      | 13,6               | 117,8                     | 264,0                  | 65263                        | 18 x 2 x 0,34                               | 22      | 13,6               | 117,8                     | 264,0                  |
| 83954                        | 20 x 2 x 0,34                               | 22      | 14,4               | 130,7                     | 291,0                  | 65264                        | 20 x 2 x 0,34                               | 22      | 14,4               | 130,7                     | 291,0                  |
| 83955                        | 22 x 2 x 0,34                               | 22      | 15,1               | 143,6                     | 300,0                  | 65265                        | 22 x 2 x 0,34                               | 22      | 15,1               | 143,6                     | 300,0                  |
| 83956                        | 24 x 2 x 0,34                               | 22      | 16,2               | 156,8                     | 359,0                  | 65266                        | 24 x 2 x 0,34                               | 22      | 16,2               | 156,8                     | 359,0                  |
| 83957                        | 25 x 2 x 0,34                               | 22      | 16,7               | 163,3                     | 381,0                  | 65267                        | 25 x 2 x 0,34                               | 22      | 16,7               | 163,3                     | 381,0                  |
| 83958                        | 1 x 2 x 0,56                                | 20      | 4,6                | 10,8                      | 60,0                   | 65268                        | 1 x 2 x 0,56                                | 20      | 4,6                | 10,8                      | 60,0                   |
| 83959                        | 2 x 2 x 0,56                                | 20      | 6,5                | 21,5                      | 80,0                   | 65269                        | 2 x 2 x 0,56                                | 20      | 6,5                | 21,5                      | 80,0                   |
| 83960                        | 3 x 2 x 0,56                                | 20      | 7,1                | 32,3                      | 94,0                   | 65270                        | 3 x 2 x 0,56                                | 20      | 7,1                | 32,3                      | 94,0                   |
| 83961                        | 4 x 2 x 0,56                                | 20      | 7,8                | 43,1                      | 104,0                  | 65271                        | 4 x 2 x 0,56                                | 20      | 7,8                | 43,1                      | 104,0                  |
| 83962                        | 5 x 2 x 0,56                                | 20      | 8,6                | 53,8                      | 130,0                  | 65272                        | 5 x 2 x 0,56                                | 20      | 8,6                | 53,8                      | 130,0                  |
| 83963                        | 6 x 2 x 0,56                                | 20      | 9,6                | 64,6                      | 151,0                  | 65273                        | 6 x 2 x 0,56                                | 20      | 9,6                | 64,6                      | 151,0                  |
| 83964                        | 7 x 2 x 0,56                                | 20      | 9,6                | 75,3                      | 174,0                  | 65274                        | 7 x 2 x 0,56                                | 20      | 9,6                | 75,3                      | 174,0                  |
| 83965                        | 8 x 2 x 0,56                                | 20      | 12,2               | 86,1                      | 262,0                  | 65275                        | 8 x 2 x 0,56                                | 20      | 12,1               | 86,1                      | 262,0                  |
| 83966                        | 10 x 2 x 0,56                               | 20      | 12,5               | 107,7                     | 298,0                  | 65276                        | 10 x 2 x 0,56                               | 20      | 12,5               | 107,7                     | 298,0                  |
| 83967                        | 12 x 2 x 0,56                               | 20      | 13,1               | 129,1                     | 302,0                  | 65277                        | 12 x 2 x 0,56                               | 20      | 13,1               | 129,1                     | 302,0                  |
| 83968                        | 14 x 2 x 0,56                               | 20      | 13,8               | 150,6                     | 327,0                  | 65278                        | 14 x 2 x 0,56                               | 20      | 13,8               | 150,6                     | 327,0                  |
| 83969                        | 15 x 2 x 0,56                               | 20      | 14,7               | 161,3                     | 370,0                  | 65279                        | 15 x 2 x 0,56                               | 20      | 14,7               | 161,3                     | 370,0                  |
| 83970                        | 16 x 2 x 0,56                               | 20      | 14,7               | 172,1                     | 402,0                  | 65280                        | 16 x 2 x 0,56                               | 20      | 14,7               | 172,1                     | 402,0                  |
| 83971                        | 18 x 2 x 0,56                               | 20      | 15,7               | 193,6                     | 480,0                  | 65281                        | 18 x 2 x 0,56                               | 20      | 15,7               | 193,6                     | 480,0                  |
| 83972                        | 20 x 2 x 0,56                               | 20      | 16,7               | 215,1                     | 551,0                  | 65282                        | 20 x 2 x 0,56                               | 20      | 16,7               | 215,1                     | 551,0                  |
| 83973                        | 22 x 2 x 0,56                               | 20      | 17,2               | 236,6                     | 621,0                  | 65283                        | 22 x 2 x 0,56                               | 20      | 17,2               | 236,6                     | 621,0                  |
| 83974                        | 24 x 2 x 0,56                               | 20      | 18,6               | 258,0                     | 703,0                  | 65284                        | 24 x 2 x 0,56                               | 20      | 18,6               | 258,0                     | 703,0                  |
| 83975                        | 25 x 2 x 0,56                               | 20      | 19,2               | 268,9                     | 721,0                  | 65285                        | 25 x 2 x 0,56                               | 20      | 19,2               | 268,9                     | 721,0                  |

Dimensions and specifications may be changed without prior notice. (RN02)

# Command Cable UL (LiYCY-TP)

Style 2464, 300 V, 80°C, Cu-screened, EMC-preferred type



## Technical data

- Special PVC command cable approved to UL Style 2464, cores acc. to UL Style 1061/1729
- **Temperature range**  
flexing -10°C to +80°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
1500 V
- **Breakdown voltage**  
min. 3000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire, acc. to ASTM-B 174-95 class J-M  
Conductor make-up to:  
0,14 mm<sup>2</sup> = 7x0,162 mm  
0,23 mm<sup>2</sup> = 7x0,202 mm  
0,34 mm<sup>2</sup> = 7x0,254 mm  
0,56 mm<sup>2</sup> = 7x0,32 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL Std. 1581 tab.50.182 and 50183
- Core identification (pair) to DIN 47100 with colour repetition from pair no. 23 and above or international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Separator-foil
- Drain wire
- Tinned copper wire braiding, approx. 85% coverage
- Outer sheath of special PVC class 43 acc. to UL Std. 1581 tab.50.182
- Sheath colour:  
black (international colour code)  
grey (DIN 47100 - preferred type)

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **To a large extent resistant to**  
Oil  
Solvents  
Acids  
Lyes

## Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Uncreened analogue type:  
**command cable UL (LiYY-TP)**

## Application

Flexible, screened, twisted pair control and measuring cable; for machine tools, conveyor belts, plant construction, AC technology, steel production. In order to enhance EMC properties, a large contact area on both sides of the copper braiding is recommended.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Sheath colour | Sheath colour black | No.pairs x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------|---------------------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 83774    | grey          | black               | 1 x 2 x 0,14                          | 26      | 4,0             | 15,7                | 32,0                |
| 83775    | grey          | black               | 2 x 2 x 0,14                          | 26      | 5,6             | 19,5                | 39,0                |
| 83776    | grey          | black               | 3 x 2 x 0,14                          | 26      | 5,8             | 23,7                | 47,0                |
| 83777    | grey          | black               | 4 x 2 x 0,14                          | 26      | 6,3             | 26,9                | 55,0                |
| 83778    | grey          | black               | 5 x 2 x 0,14                          | 26      | 6,7             | 31,2                | 68,0                |
| 83779    | grey          | black               | 6 x 2 x 0,14                          | 26      | 7,3             | 49,7                | 86,0                |
| 83780    | grey          | black               | 7 x 2 x 0,14                          | 26      | 7,3             | 52,0                | 92,0                |
| 83781    | grey          | black               | 8 x 2 x 0,14                          | 26      | 7,8             | 53,9                | 97,0                |
| 83782    | grey          | black               | 10 x 2 x 0,14                         | 26      | 9,1             | 59,6                | 111,0               |
| 83783    | grey          | black               | 12 x 2 x 0,14                         | 26      | 9,8             | 67,1                | 141,0               |
| 83784    | grey          | black               | 14 x 2 x 0,14                         | 26      | 10,5            | 75,2                | 150,0               |
| 83785    | grey          | black               | 15 x 2 x 0,14                         | 26      | 11,1            | 77,3                | 154,0               |
| 83786    | grey          | black               | 16 x 2 x 0,14                         | 26      | 11,1            | 80,4                | 155,0               |
| 83787    | grey          | black               | 18 x 2 x 0,14                         | 26      | 11,8            | 84,2                | 170,0               |
| 83788    | grey          | black               | 20 x 2 x 0,14                         | 26      | 12,4            | 98,2                | 183,0               |
| 83789    | grey          | black               | 22 x 2 x 0,14                         | 26      | 13,1            | 104,1               | 207,0               |
| 83790    | grey          | black               | 24 x 2 x 0,14                         | 26      | 13,6            | 112,0               | 228,0               |
| 83791    | grey          | black               | 25 x 2 x 0,14                         | 26      | 15,1            | 114,4               | 239,0               |

| Part no. | Sheath colour | Sheath colour black | No.pairs x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------|---------------------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 83792    | grey          | black               | 1 x 2 x 0,23                          | 24      | 4,2             | 16,4                | 46,0                |
| 83793    | grey          | black               | 2 x 2 x 0,23                          | 24      | 5,9             | 27,4                | 53,0                |
| 83794    | grey          | black               | 3 x 2 x 0,23                          | 24      | 6,2             | 31,7                | 65,0                |
| 83795    | grey          | black               | 4 x 2 x 0,23                          | 24      | 6,7             | 37,4                | 79,0                |
| 83796    | grey          | black               | 5 x 2 x 0,23                          | 24      | 7,2             | 54,7                | 98,0                |
| 83797    | grey          | black               | 6 x 2 x 0,23                          | 24      | 7,7             | 65,6                | 114,0               |
| 83798    | grey          | black               | 7 x 2 x 0,23                          | 24      | 7,7             | 60,2                | 121,0               |
| 83799    | grey          | black               | 8 x 2 x 0,23                          | 24      | 8,4             | 74,1                | 129,0               |
| 83800    | grey          | black               | 10 x 2 x 0,23                         | 24      | 9,9             | 109,3               | 152,0               |
| 83801    | grey          | black               | 12 x 2 x 0,23                         | 24      | 10,2            | 115,8               | 189,0               |
| 83802    | grey          | black               | 14 x 2 x 0,23                         | 24      | 10,9            | 120,7               | 213,0               |
| 83803    | grey          | black               | 15 x 2 x 0,23                         | 24      | 11,4            | 132,4               | 225,0               |
| 83804    | grey          | black               | 16 x 2 x 0,23                         | 24      | 11,4            | 141,6               | 227,0               |
| 83805    | grey          | black               | 18 x 2 x 0,23                         | 24      | 12,2            | 146,6               | 238,0               |
| 83806    | grey          | black               | 20 x 2 x 0,23                         | 24      | 12,7            | 160,6               | 270,0               |
| 83807    | grey          | black               | 22 x 2 x 0,23                         | 24      | 13,5            | 170,8               | 300,0               |
| 83808    | grey          | black               | 24 x 2 x 0,23                         | 24      | 14,5            | 229,7               | 321,0               |
| 83809    | grey          | black               | 25 x 2 x 0,23                         | 24      | 14,8            | 231,4               | 340,0               |

Continuation ▶

# Command Cable UL (LiYCY-TP)

Style 2464, 300 V, 80°C, Cu-screened, EMC-preferred type



| Part no. | Sheath colour | Sheath colour | No.pairs x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | Part no. | Sheath colour | Sheath colour | No.pairs x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------|---------------|---------------------------------------|---------|-----------------|---------------------|---------------------|----------|---------------|---------------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| grey     | black         | black         |                                       |         |                 |                     |                     | grey     | black         | black         |                                       |         |                 |                     |                     |
| 83810    | 65350         | 1 x 2 x 0,34  | 22                                    | 4,6     | 17,0            | 58,0                |                     | 83828    | 65368         | 1 x 2 x 0,56  | 20                                    | 5,0     | 26,0            | 70,0                |                     |
| 83811    | 65351         | 2 x 2 x 0,34  | 22                                    | 6,4     | 36,7            | 65,0                |                     | 83829    | 65369         | 2 x 2 x 0,56  | 20                                    | 7,0     | 56,1            | 89,0                |                     |
| 83812    | 65352         | 3 x 2 x 0,34  | 22                                    | 6,9     | 44,6            | 78,0                |                     | 83830    | 65370         | 3 x 2 x 0,56  | 20                                    | 7,6     | 71,7            | 102,0               |                     |
| 83813    | 65353         | 4 x 2 x 0,34  | 22                                    | 7,5     | 54,1            | 88,0                |                     | 83831    | 65371         | 4 x 2 x 0,56  | 20                                    | 8,3     | 92,4            | 119,0               |                     |
| 83814    | 65354         | 5 x 2 x 0,34  | 22                                    | 8,1     | 63,4            | 110,0               |                     | 83832    | 65372         | 5 x 2 x 0,56  | 20                                    | 9,1     | 107,4           | 140,0               |                     |
| 83815    | 65355         | 6 x 2 x 0,34  | 22                                    | 8,8     | 73,4            | 126,0               |                     | 83833    | 65373         | 6 x 2 x 0,56  | 20                                    | 10,1    | 122,4           | 162,0               |                     |
| 83816    | 65356         | 7 x 2 x 0,34  | 22                                    | 8,8     | 79,4            | 140,0               |                     | 83834    | 65374         | 7 x 2 x 0,56  | 20                                    | 10,1    | 131,7           | 198,0               |                     |
| 83817    | 65357         | 8 x 2 x 0,34  | 22                                    | 9,7     | 88,4            | 148,0               |                     | 83835    | 65375         | 8 x 2 x 0,56  | 20                                    | 12,7    | 144,3           | 272,0               |                     |
| 83818    | 65358         | 10 x 2 x 0,34 | 22                                    | 11,5    | 107,0           | 184,0               |                     | 83836    | 65376         | 10 x 2 x 0,56 | 20                                    | 13,2    | 179,6           | 307,0               |                     |
| 83819    | 65359         | 12 x 2 x 0,34 | 22                                    | 12,0    | 122,4           | 210,0               |                     | 83837    | 65377         | 12 x 2 x 0,56 | 20                                    | 13,6    | 201,7           | 318,0               |                     |
| 83820    | 65360         | 14 x 2 x 0,34 | 22                                    | 12,6    | 138,2           | 241,0               |                     | 83838    | 65378         | 14 x 2 x 0,56 | 20                                    | 14,4    | 221,4           | 342,0               |                     |
| 83821    | 65361         | 15 x 2 x 0,34 | 22                                    | 13,4    | 154,3           | 245,0               |                     | 83839    | 65379         | 15 x 2 x 0,56 | 20                                    | 15,5    | 231,6           | 381,0               |                     |
| 83822    | 65362         | 16 x 2 x 0,34 | 22                                    | 13,4    | 161,4           | 251,0               |                     | 83840    | 65380         | 16 x 2 x 0,56 | 20                                    | 15,5    | 257,1           | 417,0               |                     |
| 83823    | 65363         | 18 x 2 x 0,34 | 22                                    | 14,4    | 197,9           | 275,0               |                     | 83841    | 65381         | 18 x 2 x 0,56 | 20                                    | 16,3    | 282,4           | 494,0               |                     |
| 83824    | 65364         | 20 x 2 x 0,34 | 22                                    | 15,0    | 211,4           | 300,0               |                     | 83842    | 65382         | 20 x 2 x 0,56 | 20                                    | 17,1    | 306,7           | 570,0               |                     |
| 83825    | 65365         | 22 x 2 x 0,34 | 22                                    | 15,9    | 217,6           | 320,0               |                     | 83843    | 65383         | 22 x 2 x 0,56 | 20                                    | 18,0    | 321,8           | 643,0               |                     |
| 83826    | 65366         | 24 x 2 x 0,34 | 22                                    | 17,0    | 230,4           | 371,0               |                     | 83844    | 65384         | 24 x 2 x 0,56 | 20                                    | 19,4    | 342,4           | 724,0               |                     |
| 83827    | 65367         | 25 x 2 x 0,34 | 22                                    | 17,3    | 237,0           | 402,0               |                     | 83845    | 65385         | 25 x 2 x 0,56 | 20                                    | 19,8    | 361,2           | 740,0               |                     |

Dimensions and specifications may be changed without prior notice. (RN02)

# SUPERTRONIC® -PURö

special cable for drag chains, meter marking



## Technical data

- Special PUR drag chain cables adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- Very high flexible due to special construction
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
350 V
- **Test voltage**  
1500 V
- **Breakdown voltage**  
min. 3000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 5x cable Ø  
fixed installation 3x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire, acc. to DIN VDE 0295 cl.6, col. 4 and 5 IEC 60228 cl.6
- **Oil resistant** PVC core insulation TI2, adapted to DIN VDE 0207-363-3 / DIN EN 50363-3, for better sliding abilities
- Core identification to DIN 47100, coloured
- Cores stranded in layers with optimal lay length
- Core wrapping with textile tape
- Outer sheath of special **full-polyurethane** TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour: grey (RAL 7001), surface mat
- With meter marking

## Properties

- **Features**  
High flexibility at low temperature, high abrasion resistance, break and cut-resistant, tear resistant
- **Resistant to**  
UV-radiation, Oxygen, Ozone, Hydrolyse, Oil.
- **Conditional resistant to**  
Microbes, Hydraulic liquidity, Alkalis, Lye.
- The PUR outer sheath is extremely robust with high tear, abrasion and oil-resistance.
- Adhesion-low
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Perfect for use with cable trays. This highly flexible PUR control cable is ideal for use wherever frequent high flexing motion is required, e. g. in robotics or all moving parts. The long working life of this cable makes it both efficient and economic. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see chapter "Technical Informations".

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

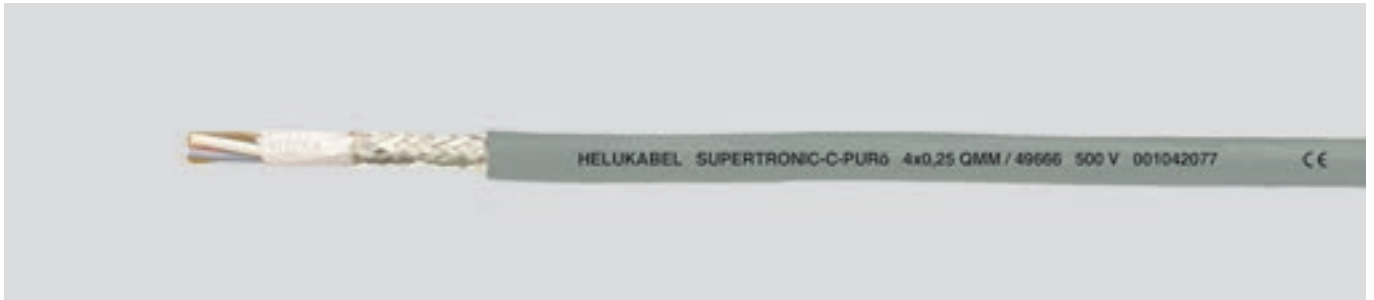
| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 49583    | 2 x 0,14                               | 3,5             | 2,8                 | 22,0                | 26      |
| 49584    | 3 x 0,14                               | 3,7             | 4,1                 | 24,0                | 26      |
| 49585    | 4 x 0,14                               | 3,9             | 5,6                 | 29,0                | 26      |
| 49586    | 5 x 0,14                               | 4,2             | 7,0                 | 33,0                | 26      |
| 49587    | 7 x 0,14                               | 4,9             | 9,8                 | 47,0                | 26      |
| 49588    | 10 x 0,14                              | 6,2             | 14,0                | 59,0                | 26      |
| 49589    | 12 x 0,14                              | 6,4             | 16,8                | 67,0                | 26      |
| 49590    | 14 x 0,14                              | 6,6             | 19,6                | 74,0                | 26      |
| 49591    | 18 x 0,14                              | 7,3             | 25,2                | 86,0                | 26      |
| 49592    | 24 x 0,14                              | 8,5             | 33,6                | 115,0               | 26      |
| 49593    | 25 x 0,14                              | 8,6             | 35,0                | 120,0               | 26      |
| 49594    | 2 x 0,25                               | 4,1             | 5,0                 | 27,0                | 24      |
| 49595    | 3 x 0,25                               | 4,3             | 7,5                 | 33,0                | 24      |
| 49596    | 4 x 0,25                               | 4,8             | 10,0                | 40,0                | 24      |
| 49597    | 5 x 0,25                               | 5,2             | 12,5                | 48,0                | 24      |
| 49598    | 7 x 0,25                               | 6,2             | 17,5                | 60,0                | 24      |
| 49599    | 10 x 0,25                              | 7,4             | 25,0                | 79,0                | 24      |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|--|-----------------|---------------------|---------------------|---------|
| 49600    | 12 x 0,25                              | 7,6             | 30,1                | 91,0                | 24      |
| 49601    | 14 x 0,25                              | 7,9             | 35,0                | 102,0               | 24      |
| 49602    | 18 x 0,25                              | 8,9             | 45,0                | 125,0               | 24      |
| 49603    | 24 x 0,25                              | 10,0            | 60,0                | 163,0               | 24      |
| 49604    | 25 x 0,25                              | 10,6            | 62,5                | 170,0               | 24      |
| 49605    | 2 x 0,34                               | 4,5             | 6,8                 | 32,0                | 22      |
| 49606    | 3 x 0,34                               | 4,9             | 10,2                | 40,0                | 22      |
| 49607    | 4 x 0,34                               | 5,3             | 13,6                | 55,0                | 22      |
| 49608    | 5 x 0,34                               | 5,8             | 17,0                | 60,0                | 22      |
| 49609    | 7 x 0,34                               | 6,9             | 23,8                | 80,0                | 22      |
| 49610    | 10 x 0,34                              | 8,4             | 34,0                | 112,0               | 22      |
| 49611    | 12 x 0,34                              | 8,6             | 40,8                | 127,0               | 22      |
| 49612    | 14 x 0,34                              | 9,0             | 47,6                | 142,0               | 22      |
| 49613    | 18 x 0,34                              | 10,1            | 61,2                | 175,0               | 22      |
| 49614    | 24 x 0,34                              | 12,0            | 81,5                | 229,0               | 22      |
| 49615    | 25 x 0,34                              | 12,2            | 85,0                | 238,0               | 22      |

Dimensions and specifications may be changed without prior notice. (RC03)

# SUPERTRONIC® -C-PURö

special cable for drag chains, halogen-free, EMC-preferred type, meter marking



## Technical data

- Special PUR drag chain cables, screened, adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -30°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
0,14 mm<sup>2</sup> 350 V  
0,25 and 0,34 mm<sup>2</sup> 500 V
- **Test voltage**  
0,14 mm<sup>2</sup> 800 V  
0,25 and 0,34 mm<sup>2</sup> 1200 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Capacitance**  
core/core < 80 nF/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductors, extra fine wire, acc. to DIN VDE 0295 cl.6, col.4 and 5, IEC 60228 cl.6
- Core insulation of PP
- Core identification to DIN 47100, coloured
- Cores stranded in layers with optimal lay length
- Core wrapping with textile tape
- Tinned copper braided screen, approx. 85% coverage.
- Outer sheath of special **full-polyurethane** TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour: grey (RAL 7001), surface mat
- With meter marking

## Properties

- **Features**  
High flexibility at low temperature, high abrasion resistance, break and cut-resistant, tear resistant
- **Resistant to**  
UV-radiation, Oxygen, Ozone, Hydrolyse, Oil
- **Conditional resistant to**  
Microbes, Hydraulic liquidity, Alkalis, Lye
- The PUR outer sheath is extremely robust with high tear, abrasion and oil-resistance
- Adhesion-low
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Used for installation in dry, moist and wet environments as well as for outdoors, for free movement without forced motion and for flexible routing without forced motion, for proven use as drag-chain cables. Suitable as a highly flexible control cable for fast hoisting and bending stresses in machinery and tooling construction, in robotics engineering and for continuously moving machinery parts. The long working life of this cable makes it both efficient and economic. The copper braided screening offers effective protection from both internal and external interference. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see chapter "Technical Informations".

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 49653    | 2 x 0,14                              | 4,1             | 11,2                | 32,0                | 26      |
| 49654    | 3 x 0,14                              | 4,3             | 14,1                | 35,0                | 26      |
| 49655    | 4 x 0,14                              | 4,5             | 15,5                | 40,0                | 26      |
| 49656    | 5 x 0,14                              | 4,8             | 18,3                | 45,0                | 26      |
| 49657    | 7 x 0,14                              | 5,7             | 27,8                | 66,0                | 26      |
| 49658    | 10 x 0,14                             | 6,7             | 39,3                | 86,0                | 26      |
| 49659    | 12 x 0,14                             | 6,9             | 42,1                | 94,0                | 26      |
| 49660    | 14 x 0,14                             | 7,1             | 45,3                | 102,0               | 26      |
| 49661    | 18 x 0,14                             | 7,8             | 54,1                | 118,0               | 26      |
| 49662    | 24 x 0,14                             | 9,0             | 66,3                | 149,0               | 26      |
| 49663    | 25 x 0,14                             | 9,1             | 68,4                | 156,0               | 26      |
| 49664    | 2 x 0,25                              | 4,6             | 14,9                | 38,0                | 24      |
| 49665    | 3 x 0,25                              | 4,8             | 18,8                | 44,0                | 24      |
| 49666    | 4 x 0,25                              | 5,3             | 21,3                | 51,0                | 24      |
| 49667    | 5 x 0,25                              | 5,7             | 31,0                | 68,0                | 24      |
| 49668    | 7 x 0,25                              | 6,7             | 39,6                | 82,0                | 24      |
| 49669    | 10 x 0,25                             | 8,2             | 53,9                | 110,0               | 24      |

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 49670    | 12 x 0,25                             | 8,4             | 59,1                | 124,0               | 24      |
| 49671    | 14 x 0,25                             | 8,7             | 64,2                | 135,0               | 24      |
| 49672    | 18 x 0,25                             | 9,5             | 78,4                | 160,0               | 24      |
| 49673    | 24 x 0,25                             | 11,0            | 89,9                | 202,0               | 24      |
| 49674    | 25 x 0,25                             | 11,1            | 101,0               | 211,0               | 24      |
| 49675    | 2 x 0,34                              | 5,0             | 18,1                | 45,0                | 22      |
| 49676    | 3 x 0,34                              | 5,4             | 28,7                | 60,0                | 22      |
| 49677    | 4 x 0,34                              | 6,2             | 35,7                | 76,0                | 22      |
| 49678    | 5 x 0,34                              | 6,7             | 39,1                | 82,0                | 22      |
| 49679    | 7 x 0,34                              | 7,6             | 52,7                | 110,0               | 22      |
| 49680    | 10 x 0,34                             | 9,2             | 67,4                | 148,0               | 22      |
| 49681    | 12 x 0,34                             | 9,4             | 76,4                | 166,0               | 22      |
| 49682    | 14 x 0,34                             | 10,0            | 85,5                | 185,0               | 22      |
| 49683    | 18 x 0,34                             | 10,9            | 99,7                | 216,0               | 22      |
| 49684    | 24 x 0,34                             | 12,6            | 147,1               | 300,0               | 22      |
| 49685    | 25 x 0,34                             | 12,8            | 155,0               | 313,0               | 22      |

Dimensions and specifications may be changed without prior notice. (RC03)



# SUPERTRONIC® -330 PURÖ

cable for drag chains, halogen-free, meter marking



## Technical data

- Special PUR sheathed cable
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
core/core 1500 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Capacitance**  
core/core 60 nF/km
- **Minimum bending radius**  
flexing 5x cable Ø  
fixed installation 3x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire, acc. to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6
- Core insulation of PP
- Core identification to DIN 47100, coloured
- Cores stranded in layers with optimal lay length
- Wrapping over the outer layer
- Outer sheath of special **full-polyurethane** compound type TMPJU to DIN VDE 0282 part 10, Annex A and acc. to UL Std.1581 tab.50227
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- Low adhesion
- High flexibility at low temperatures
- High abrasion resistance
- Tear and cut-resistant
- Notch resistant
- **Resistant to**  
UV-radiation, Oxygen, Ozone, Hydrolysis, Oil
- **Partially resistant to**  
Microbial attack, Hydraulic fluids, Coolant emulsion, Alkalis

## Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

For installation in dry, moist and wet rooms and outdoors with free movement without tensile stress or forced movements, impressively proven in drag chain application. A highly flexible PUR control cable, suitable for frequent and quick lifting and bending stresses in machine engineering and construction, in robot technology and on permanently moving machine components. Long service life guarantees reliable function and high cost-efficiency. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see chapter "Technical Informations". Attractive for export-oriented mechanical engineering.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 49764    | 2 x 0,14                               | 26      | 3,9             | 2,8                 | 22,0                |
| 49765    | 3 x 0,14                               | 26      | 4,0             | 4,1                 | 24,0                |
| 49766    | 4 x 0,14                               | 26      | 4,3             | 5,6                 | 29,0                |
| 49767    | 5 x 0,14                               | 26      | 4,7             | 7,0                 | 33,0                |
| 49768    | 7 x 0,14                               | 26      | 5,3             | 9,8                 | 47,0                |
| 49769    | 10 x 0,14                              | 26      | 6,1             | 14,0                | 57,0                |
| 49770    | 12 x 0,14                              | 26      | 6,2             | 16,8                | 63,0                |
| 49771    | 14 x 0,14                              | 26      | 6,5             | 19,6                | 72,0                |
| 49772    | 18 x 0,14                              | 26      | 7,2             | 25,2                | 80,0                |
| 49773    | 24 x 0,14                              | 26      | 8,2             | 33,6                | 110,0               |
| 49774    | 25 x 0,14                              | 26      | 8,6             | 35,0                | 115,0               |
| 49775    | 2 x 0,25                               | 24      | 4,3             | 5,0                 | 26,0                |
| 49776    | 3 x 0,25                               | 24      | 4,5             | 7,5                 | 30,0                |
| 49777    | 4 x 0,25                               | 24      | 4,8             | 10,0                | 39,0                |
| 49778    | 5 x 0,25                               | 24      | 5,2             | 12,5                | 44,0                |
| 49779    | 7 x 0,25                               | 24      | 6,0             | 17,5                | 52,0                |
| 49780    | 10 x 0,25                              | 24      | 6,9             | 25,0                | 70,0                |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 49781    | 12 x 0,25                              | 24      | 7,1             | 30,1                | 84,0                |
| 49782    | 14 x 0,25                              | 24      | 7,4             | 35,0                | 97,0                |
| 49783    | 18 x 0,25                              | 24      | 8,2             | 45,0                | 114,0               |
| 49784    | 24 x 0,25                              | 24      | 9,6             | 60,0                | 157,0               |
| 49785    | 25 x 0,25                              | 24      | 10,1            | 62,5                | 160,0               |
| 49786    | 2 x 0,34                               | 22      | 4,6             | 6,8                 | 31,0                |
| 49787    | 3 x 0,34                               | 22      | 4,8             | 10,2                | 38,0                |
| 49788    | 4 x 0,34                               | 22      | 5,2             | 13,6                | 51,0                |
| 49789    | 5 x 0,34                               | 22      | 5,6             | 17,0                | 54,0                |
| 49790    | 7 x 0,34                               | 22      | 6,5             | 23,8                | 77,0                |
| 49791    | 10 x 0,34                              | 22      | 7,5             | 34,0                | 104,0               |
| 49792    | 12 x 0,34                              | 22      | 7,7             | 40,8                | 122,0               |
| 49793    | 14 x 0,34                              | 22      | 8,1             | 47,6                | 140,0               |
| 49794    | 18 x 0,34                              | 22      | 9,2             | 61,2                | 162,0               |
| 49795    | 24 x 0,34                              | 22      | 10,7            | 81,5                | 204,0               |
| 49796    | 25 x 0,34                              | 22      | 11,2            | 85,0                | 229,0               |

Dimensions and specifications may be changed without prior notice. (RN05)

# SUPERTRONIC® -330 C-PURÖ

cable for drag chains, halogen-free, EMC-preferred type, meter marking



## Technical data

- Special PUR sheathed cable, screened
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1000 V
- **Insulation resistance**  
min. 100 MΩm x km
- **Capacitance**  
core/core 60 nF/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Coupling resistance**  
max. 250 Ωm/km

## Cable structure

- Bare copper conductor, extra fine wire, acc. to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6
- Core insulation of PP
- Core identification to DIN 47100 coloured
- Cores stranded in layers with optimal lay length
- Wrapping over the outer layer
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of special **full polyurethane** compound type TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 and acc. to UL Std.1581 tab.50227
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- Low-adhesion
- High flexibility at low temperatures
- High abrasion resistance
- Tear and cut-resistant
- Notch resistant
- **Resistant to**  
UV-radiation, Oxygen, Ozone, Hydrolysis, Oil
- **Partially resistant to**  
Microbial attack, Hydraulic fluid, Coolant emulsion, Alkalis

## Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Especially suited for drag chain installation in dry, moist and wet environments and outdoors with flexible movement and without tensile stress or forced movements. A highly flexible PVC control cable suitable for frequent and fast lifting and bending stresses in machines and tool building, robot systems and on constantly moving machine components. Long service lives guarantee reliable function and good cost efficiency. The dense screening assures interference-free transmission of all signals and impulses. An ideal interference-free control cable for the above applications. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 49797    | 2 x 0,14                              | 26      | 4,4             | 11,2                | 32,0                |
| 49798    | 3 x 0,14                              | 26      | 4,5             | 14,1                | 35,0                |
| 49799    | 4 x 0,14                              | 26      | 4,8             | 15,5                | 40,0                |
| 49800    | 5 x 0,14                              | 26      | 5,0             | 18,3                | 45,0                |
| 49801    | 7 x 0,14                              | 26      | 5,8             | 27,8                | 66,0                |
| 49802    | 10 x 0,14                             | 26      | 6,7             | 39,3                | 86,0                |
| 49803    | 12 x 0,14                             | 26      | 6,8             | 42,1                | 94,0                |
| 49804    | 14 x 0,14                             | 26      | 7,1             | 45,3                | 102,0               |
| 49805    | 18 x 0,14                             | 26      | 7,8             | 54,1                | 118,0               |
| 49806    | 24 x 0,14                             | 26      | 8,8             | 66,3                | 149,0               |
| 49807    | 25 x 0,14                             | 26      | 9,2             | 68,4                | 156,0               |
| 49808    | 2 x 0,25                              | 24      | 4,8             | 14,9                | 38,0                |
| 49809    | 3 x 0,25                              | 24      | 5,0             | 18,8                | 44,0                |
| 49810    | 4 x 0,25                              | 24      | 5,3             | 21,3                | 51,0                |
| 49811    | 5 x 0,25                              | 24      | 5,7             | 31,0                | 68,0                |
| 49812    | 7 x 0,25                              | 24      | 6,6             | 39,6                | 82,0                |
| 49813    | 10 x 0,25                             | 24      | 7,5             | 53,9                | 110,0               |

| Part no. | No.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---------------------------------------|---------|-----------------|---------------------|---------------------|
| 49814    | 12 x 0,25                             | 24      | 7,7             | 59,1                | 124,0               |
| 49815    | 14 x 0,25                             | 24      | 8,0             | 64,2                | 135,0               |
| 49816    | 18 x 0,25                             | 24      | 8,8             | 78,4                | 150,0               |
| 49817    | 24 x 0,25                             | 24      | 10,2            | 89,9                | 194,0               |
| 49818    | 25 x 0,25                             | 24      | 10,7            | 101,0               | 204,0               |
| 49819    | 2 x 0,34                              | 22      | 5,1             | 18,1                | 45,0                |
| 49820    | 3 x 0,34                              | 22      | 5,3             | 28,7                | 60,0                |
| 49821    | 4 x 0,34                              | 22      | 5,7             | 35,7                | 76,0                |
| 49822    | 5 x 0,34                              | 22      | 6,1             | 39,1                | 82,0                |
| 49823    | 7 x 0,34                              | 22      | 7,1             | 52,7                | 110,0               |
| 49824    | 10 x 0,34                             | 22      | 8,1             | 67,4                | 148,0               |
| 49825    | 12 x 0,34                             | 22      | 8,3             | 76,4                | 166,0               |
| 49826    | 14 x 0,34                             | 22      | 8,7             | 85,5                | 185,0               |
| 49827    | 18 x 0,34                             | 22      | 9,8             | 99,7                | 216,0               |
| 49828    | 24 x 0,34                             | 22      | 11,3            | 147,1               | 291,0               |
| 49829    | 25 x 0,34                             | 22      | 11,8            | 155,0               | 305,0               |

Dimensions and specifications may be changed without prior notice. (RN05)

# SUPER-PAAR-TRONIC-C-PUR®

cable for drag chains, halogen-free, EMC-preferred type, meter marking



## Technical data

- Special drag chain cable, twisted in pairs, adapted to DIN VDE 0812
- **Temperature range**  
flexing -30°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
350 V
- **Test voltage**  
1500 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
approx. 135 nF/km
- **Minimum bending radius**  
flexing  
at 0,25 mm<sup>2</sup>: 7,5x cable Ø  
at 0,5 - 1 mm<sup>2</sup>: 10x cable Ø  
fixed installation  
at 0,25 mm<sup>2</sup>: 4x cable Ø  
at 0,5 - 1 mm<sup>2</sup>: 5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductors, extra fine wire acc. to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of PP
- Core identification to DIN 47100
- Cores twisted in pairs, the pairs torsion-free stranded in layers
- Special fleece over outer layer
- Tinned copper screened braiding, approx. 85% coverage
- Outer sheath of **full-polyurethane** compound type TPU to DIN VDE 0207-363-10-2 / DN EN 50363-10-2
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Very good oil resistant
- Resistant to weather, ozone, hydrolysis- and UV-radiation
- Chemical resistant to solvents, acids, lyes and hydraulic liquidity
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- High resistant to mechanical strain
- High property of alternating bending strength
- Long life durabilities through low friction-resistance by using the PP-core insulation where the core are stranded in layers
- High tensile strength-, abrasion- and impact resistant at low temperature
- Adhesion-low
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

These pair stranded and overall screened special cables for drag chains offer the operational possibilities where the outer electrical influences at high frequency cause interference of impulse transmission, are applied for permanent flexible operations in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift-operation as a transmission-cable. These highly flexible data cables are developed according to the newest state of technology improvement and with its sliding abilities by using the PP-core insulation and adhesion-low and cut-resistant PUR-outer sheath, guaranteed an optimum life durabilities and highly economic. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see chapter "Technical infromations".

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No.pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 19101    | 1 x 2 x 0,25                          | 4,9             | 14,0                | 28,0                | 24      |
| 19102    | 2 x 2 x 0,25                          | 6,8             | 32,0                | 61,0                | 24      |
| 19103    | 3 x 2 x 0,25                          | 7,2             | 38,4                | 73,0                | 24      |
| 19104    | 4 x 2 x 0,25                          | 7,7             | 43,2                | 90,0                | 24      |
| 19105    | 5 x 2 x 0,25                          | 8,6             | 51,5                | 105,0               | 24      |
| 19106    | 6 x 2 x 0,25                          | 9,2             | 71,8                | 133,0               | 24      |
| 19107    | 8 x 2 x 0,25                          | 10,6            | 74,4                | 156,0               | 24      |
| 19108    | 10 x 2 x 0,25                         | 11,7            | 90,0                | 188,0               | 24      |
| 19109    | 14 x 2 x 0,25                         | 12,7            | 111,2               | 220,0               | 24      |
| 19119    | 1 x 2 x 0,5                           | 5,7             | 22,0                | 47,0                | 20      |
| 19120    | 2 x 2 x 0,5                           | 8,2             | 50,0                | 100,0               | 20      |
| 19121    | 3 x 2 x 0,5                           | 8,8             | 71,8                | 131,0               | 20      |
| 19122    | 4 x 2 x 0,5                           | 9,6             | 74,4                | 149,0               | 20      |
| 19123    | 5 x 2 x 0,5                           | 10,6            | 84,5                | 169,0               | 20      |
| 19124    | 6 x 2 x 0,5                           | 11,5            | 99,6                | 196,0               | 20      |
| 19125    | 8 x 2 x 0,5                           | 13,4            | 144,3               | 285,0               | 20      |

| Part no. | No.pairs x cross-sec. mm <sup>2</sup> | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|----------|---------------------------------------|-----------------|---------------------|---------------------|---------|
| 19126    | 10 x 2 x 0,5                          | 14,9            | 176,0               | 344,0               | 20      |
| 19127    | 14 x 2 x 0,5                          | 16,5            | 215,4               | 401,0               | 20      |
| 19128    | 1 x 2 x 0,75                          | 6,5             | 34,0                | 61,0                | 19      |
| 19129    | 2 x 2 x 0,75                          | 9,3             | 60,0                | 113,0               | 19      |
| 19130    | 3 x 2 x 0,75                          | 9,8             | 85,7                | 158,0               | 19      |
| 19131    | 4 x 2 x 0,75                          | 10,6            | 93,6                | 173,0               | 19      |
| 19132    | 5 x 2 x 0,75                          | 11,7            | 113,0               | 203,0               | 19      |
| 19133    | 6 x 2 x 0,75                          | 12,7            | 130,4               | 231,0               | 19      |
| 19134    | 8 x 2 x 0,75                          | 14,9            | 192,2               | 343,0               | 19      |
| 19135    | 10 x 2 x 0,75                         | 16,6            | 258,0               | 467,0               | 19      |
| 19136    | 14 x 2 x 0,75                         | 18,2            | 316,6               | 546,0               | 19      |
| 19137    | 1 x 2 x 1                             | 6,9             | 42,0                | 71,0                | 18      |
| 19138    | 2 x 2 x 1                             | 9,9             | 73,0                | 130,0               | 18      |
| 19139    | 3 x 2 x 1                             | 10,5            | 93,6                | 170,0               | 18      |
| 19140    | 4 x 2 x 1                             | 11,6            | 117,8               | 204,0               | 18      |
| 19141    | 5 x 2 x 1                             | 12,8            | 139,0               | 238,0               | 18      |

Dimensions and specifications may be changed without prior notice. (RC03)

# SUPER-PAAR-TRONIC 340-C-PUR

cable for drag chains, halogen-free, EMC-preferred type, meter marking



## Technical data

- Special drag chain cable, stranded in pairs
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
core/core approx. 60 nF/km
- **Minimum bending radius**  
for permanent bending  
flexing  
at 0,25 mm<sup>2</sup>: 7,5x cable Ø  
at 0,5 - 1 mm<sup>2</sup>: 10x cable Ø  
fixed installation  
at 0,25 mm<sup>2</sup>: 4x cable Ø  
at 0,5 - 1 mm<sup>2</sup>: 5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire, acc. to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of PP
- Core identification to DIN 47100
- Cores stranded in pairs, pairs stranded torsion-free in layers with optimal lay length
- Wrapping over the outer layer
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of **full polyurethane** compound type TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 and acc. to UL Std. 1581 tab.50.227
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- Halogen-free
- Weather, ozone and UV resistant
- Chemical resistance to solvents, acids, alkalis and hydraulic fluids

## Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistance acc. to DIN VDE 0473-811-404/ DIN EN 60811-404

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Advantages

- Very high resistance to mechanical stresses
- Very good alternating bending strength
- High tear, abrasion and impact resistance, even at low temperatures

## Application

Stranded in pairs, these fully-screened special drag chain cables can also be used where external, high-frequency interference influences pulse transfer. They are used for permanently flexible stresses in machine and tool building, in robot technology, on constantly moving machine components and for extended use in multi-shift operations. Developed to state-of-the-art technology, these highly flexible data cable, with a cut resistant and low-adhesion PUR outer sheath guaranteeing optimal service life and extremely good cost efficiency. This two-approvals single-core cable is preferred for use in export-oriented mechanical engineering, in machine tools, production lines and systems engineering. Guaranteed extended use in multi-shift operations with extremely high bending stresses. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see chapter "Technical Informations".

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No.pairs x no.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 49830    | 1 x 2 x 0,25                                     | 24      | 4,8             | 14,0                | 26,0                |
| 49831    | 2 x 2 x 0,25                                     | 24      | 6,7             | 32,0                | 61,0                |
| 49832    | 3 x 2 x 0,25                                     | 24      | 7,1             | 38,4                | 70,0                |
| 49833    | 4 x 2 x 0,25                                     | 24      | 7,6             | 43,2                | 82,0                |
| 49834    | 5 x 2 x 0,25                                     | 24      | 8,3             | 51,5                | 99,0                |
| 49835    | 6 x 2 x 0,25                                     | 24      | 9,0             | 71,8                | 126,0               |
| 49836    | 8 x 2 x 0,25                                     | 24      | 10,5            | 74,4                | 147,0               |
| 49837    | 10 x 2 x 0,25                                    | 24      | 11,9            | 90,0                | 179,0               |
| 49838    | 14 x 2 x 0,25                                    | 24      | 12,7            | 111,2               | 210,0               |
| 49839    | 1 x 2 x 0,34                                     | 22      | 5,1             | 20,0                | 35,0                |
| 49840    | 2 x 2 x 0,34                                     | 22      | 7,2             | 41,0                | 80,0                |
| 49841    | 3 x 2 x 0,34                                     | 22      | 7,6             | 52,2                | 100,0               |
| 49842    | 4 x 2 x 0,34                                     | 22      | 8,3             | 59,1                | 118,0               |
| 49843    | 5 x 2 x 0,34                                     | 22      | 9,0             | 67,0                | 134,0               |
| 49844    | 6 x 2 x 0,34                                     | 22      | 9,9             | 86,4                | 162,0               |
| 49845    | 8 x 2 x 0,34                                     | 22      | 11,9            | 107,5               | 214,0               |
| 49846    | 10 x 2 x 0,34                                    | 22      | 13,9            | 131,0               | 270,0               |
| 49847    | 14 x 2 x 0,34                                    | 22      | 14,1            | 150,0               | 304,0               |
| 49848    | 1 x 2 x 0,5                                      | 20      | 5,8             | 22,5                | 47,0                |
| 49849    | 2 x 2 x 0,5                                      | 20      | 8,4             | 53,0                | 100,0               |
| 49850    | 3 x 2 x 0,5                                      | 20      | 9,0             | 72,8                | 131,0               |

| Part no. | No.pairs x no.cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 49851    | 4 x 2 x 0,5                                      | 20      | 10,0            | 75,6                | 149,0               |
| 49852    | 5 x 2 x 0,5                                      | 20      | 11,0            | 85,7                | 169,0               |
| 49853    | 6 x 2 x 0,5                                      | 20      | 11,8            | 103,0               | 181,0               |
| 49854    | 8 x 2 x 0,5                                      | 20      | 14,2            | 148,4               | 274,0               |
| 49855    | 10 x 2 x 0,5                                     | 20      | 16,5            | 180,0               | 332,0               |
| 49856    | 14 x 2 x 0,5                                     | 20      | 16,9            | 218,3               | 390,0               |
| 49857    | 1 x 2 x 0,75                                     | 19      | 6,2             | 35,2                | 56,0                |
| 49858    | 2 x 2 x 0,75                                     | 19      | 9,2             | 61,4                | 102,0               |
| 49859    | 3 x 2 x 0,75                                     | 19      | 9,8             | 87,1                | 144,0               |
| 49860    | 4 x 2 x 0,75                                     | 19      | 11,2            | 95,2                | 160,0               |
| 49861    | 5 x 2 x 0,75                                     | 19      | 12,2            | 115,0               | 193,0               |
| 49862    | 6 x 2 x 0,75                                     | 19      | 13,2            | 137,1               | 216,0               |
| 49863    | 8 x 2 x 0,75                                     | 19      | 15,6            | 184,4               | 327,0               |
| 49864    | 10 x 2 x 0,75                                    | 19      | 18,4            | 259,8               | 451,0               |
| 49865    | 14 x 2 x 0,75                                    | 19      | 18,9            | 318,4               | 521,0               |
| 49866    | 1 x 2 x 1  | 18      | 6,7             | 42,0                | 64,0                |
| 49867    | 2 x 2 x 1  | 18      | 10,0            | 73,0                | 120,0               |
| 49868    | 3 x 2 x 1  | 18      | 10,8            | 93,6                | 160,0               |
| 49869    | 4 x 2 x 1  | 18      | 11,7            | 117,8               | 184,0               |
| 49870    | 5 x 2 x 1  | 18      | 13,2            | 139,0               | 217,0               |

Dimensions and specifications may be changed without prior notice. (RN05)



TOPFLEX® 600 VFD

## MULTIFLEX 600-C

JZ 604 TC Tray Cable

TC TRAY Cables

## TRAYCONTROL 300-C TP

MULTIFLEX 600

TOPFLEX® 650 VFD

# ■ CONTROL CABLES UL LISTED

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## ■ UL 6141/UL 6142: NEW STANDARDS FAVOUR UL LISTED CABLES

Our TRAYCONTROL® cable series and extensive portfolio of UL Listed products ensure that your systems comply with safety standards regulating the North American market.

### **Why did North America introduce its own standards for wind turbines?**

The new Underwriters Laboratories (UL) standards aim to simplify the process of receiving final approval for wind turbines through local Authorities Having Jurisdiction (AHJ) inspectors. In the US, local AHJs need to certify that products are safe to use in accordance with general American installation regulations NEC, NESC and ANSI/IEEE C2, among others. It is not always clear whether components that comply with European CE standards also comply with American installation regulations. If there is any doubt, an AHJ inspector may shut down a construction project. UL 6141 and UL 6142 are the first American safety standards developed specifically for wind turbines. They provide a set of rules that help AHJ inspectors with the approval process, making it more transparent and predictable for everyone involved.

### **UL aims to harmonise with IEC 61400**

For many years there were no national safety standards specifically for wind turbines in North America. The only guidelines AHJs had for reference was IEC 61400, which is the international standard for wind turbines issued by the International Electrical Commission (IEC). However, the IEC standard has been criticised in North America ever since it was published. Critics claim that it did not include enough provisions regarding electrical safety of components, controls and protection devices.

Hence, UL developed national standards to supplement IEC 61400. These standards refer directly to IEC 61400-1 (Design Requirements) and IEC 61400-2 (Small Wind Turbines), and add technical requirements primarily regarding electrical safety, control, safety devices and fire protection within wind turbines. The UL standards thereby bridge the gap between IEC standards and requirements set by national installation regulations.

UL 6142 (Small Wind Turbine Systems) has been acknowledged as a national standard by the American National Standards Institute (ANSI) since 2012. UL 6142 applies to small wind turbines that have a nominal capacity up to 1,500 V AC and can not or should not be entered by operators or service technicians for operation or maintenance.

In May 2016, ANSI issued UL 6141 (Standard for Wind Turbines Permitting Entry of Personnel) as an American National Standard. UL 6141 applies to large wind turbines that can or may be entered by operators or service technicians for operation or maintenance. Both UL standards apply exclusively to on-shore wind turbines. The latest safety standards only effect new constructions or refurbishing of wind turbines with a capacity greater than 500 kW. Existing systems do not need to be refitted.

### **How does UL 6141 impact the use of cables?**

UL 6141 focuses primarily on electrical safety and introduces several restrictions on how cables may be used in the future. The bottom line is that appliance wiring material (AWM) – in other words, cabling material that is not UL Listed – may only be used minimally. Until now, AWM cables were frequently used in wind turbines.

**UL 6141 stipulates that all accessible cables need to be installed in cable ducts. If this is impractical or impossible, e.g. in the cable loop, only so-called tray cables – cables that are approved for exposed run – are allowed. Cables in the tower and nacelle are usually accessible and therefore have to be certified for exposed run as well.**

Tray cables that are designed to be used as exposed run cables, are oil and flame resistant and fulfil the increased safety requirements of UL 6141. In fact, cables need to be UL Listed in order to be classified as tray cable. Unlisted AWM cables may not be used for exposed run.



UL standards were already in place to regulate components in certain wind turbine subsystems such as generators. These standards will continue to apply. UL 6141 will apply to areas that were not regulated by a standard until now.

Local AHJ inspectors already favoured UL Listed components in the past because UL certification helps to standardise and accelerate approval processes. The recogni-



on of UL 6141 as the national safety standard for American markets will make using UL Listed components even more prevalent. While UL 6141 does not rule out the use of AWM cables completely, it does limit their use to such an extent that UL Listed cable products will be sought-after more and more.



# ■ NFPA 79 EDITION 2012

## Challenges and solutions

### FLEXIBLE CONTROL CABLES

#### TRAYCONTROL 500 & TRAYCONTROL 500-C

Flexible, extremely oil-resistant control cables for open installation (ER), UL: TC-ER, PLTC-ER, ITC-ER, MTW, DP-1, WTTCC 1000V, OIL RES I & II, CSA: CIC-TC FT4, AWM I/II A/B FT4

#### TRAYCONTROL 600 & TRAYCONTROL 600-C

Flexible, oil-resistant TRAY CABLE for open installation (ER) UL: TC-ER, PLTC-ER, ITC-ER, MTW, DP-1, WTTCC 1000V, OIL RES I, CSA: CIC-TC FT4, AWM I/II A/B FT4

#### JZ 604 TC & JZ 604-FCY/YCY TC

Flexible, oil-resistant TRAY CABLE for open installation (ER) UL: TC-ER

### HIGHLY FLEXIBLE CONTROL CABLES

#### MULTIFLEX 600 & MULTIFLEX 600-C

Highly-flexible, extremely oil-resistant cables for open installation (ER) UL: TC-ER, PLTC-ER, ITC-ER, MTW, DP-1, WTTCC 1000V, OIL RES I & II, CSA: CIC-TC FT4, AWM I/II A/B FT4

### DATA CABLES

#### TRAYCONTROL 300 & TRAYCONTROL 300-C

Flexible, extremely oil-resistant data and control cables for open installation (ER)\* UL: PLTC-ER, ITC-ER, CM, OIL RES I & II; CSA: CIC-TC FT4, CMG

#### TRAYCONTROL 300 TP & TRAYCONTROL 300-C TP

Flexible, extremely oil-resistant data and control cables for open installation (ER)\* UL: PLTC-ER, ITC-ER, CM, OIL RES I & II; CSA: CIC-TC FT4, CMG

### SINGLE CONDUCTORS

#### FIVENORM

The jumper wire that meets five different standards HAR: H05 V2-K/H07 V2-K; UL: MTW, AWM Style 10269; CSA: TEW bzw. AWM I/A/B

\* AWG 22 - AWG 16

#### THHN/THWM

Flexible jumper wire UL: MTW, THHN, THWN, GASOLINE, OIL RES II, AWM W-51554

### SERVO- AND MOTOR CABLES

#### TOPFLEX® 600 VFD

Flexible, extremely oil-resistant motor connection cables for open installation (ER) UL: TC-ER, PLTC-ER, ITC-ER, MTW, WTTCC 1000V, OIL RES I & II, CSA: CIC-TC FT4, AWM I/II A/B FT4

#### TOPFLEX® 650 VFD

Flexible, extremely oil-resistant motor connection cables with control pair for open installation (ER) UL: TC-ER, PLTC-ER, ITC-ER, MTW, WTTCC 1000V, OIL RES I & II, CSA: CIC-TC FT4, AWM I/II A/B FT4

#### TRAYCONTROL 610 OIL RES II, WTTCC (2277), FT4

Highly-flexible, extremely oil-resistant motor connection cables for open installation (ER) UL: TC-ER, PLTC-ER, ITC-ER, MTW, WTTCC 1000V, OIL RES I & II, CSA: CIC-TC FT4, AWM I/II A/B FT4

### BUS CABLES

PROFINet Typ A UL CMG or PLTC, CSA FT4  
PROFINet Typ B UL CMG or PLTC  
PROFINet Typ B SHIPLINE UL CMG or PLTC, CSA FT4  
PROFINet Typ C UL CMG  
Profibus L2 Torsion UL CMX  
Profibus L2 Festoon UL CMX, CSA FT4  
Profibus SK innen UL CMG, CSA FT4  
Profibus SK FRNC UL CM  
Profibus SK Schleppkette UL CMX  
DeviceNet™PVC dünn UL CMG FT4  
DeviceNet™PVC dick UL CMG FT4  
Siehe 222



# TRAYCONTROL® 300

flexible, oil resistant, NFPA 79



## Technical data

- Flexible PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Outer sheath of special PVC (AWG 22 -AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- Self-extinguishing and flame retardant acc. to CSA FT4
  - **UL (AWG 22 - AWG 16):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 25 17
  - **UL (AWG 24 - AWG 28):**  
CM, AWM 25 17, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
  - **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirements

## Application

HELUKABEL® TRAYCONTROL® 300 is a multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, control and instrumentation technology, production automation, cable ducts, renewable energies.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm² x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | Part no. | Cross-section mm² x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-----------------------------|-----------|-----------------|---------------------|---------------------|----------|-----------------------------|-----------|-----------------|---------------------|---------------------|
| 62625    | 0,093                       | 2 x 28    | 3,8             | 1,8                 | 12,0                | 62655    | 0,241                       | 15 x 24   | 7,7             | 35,0                | 69,0                |
| 62626    | 0,093                       | 3 x 28    | 3,9             | 3,0                 | 18,0                | 62656    | 0,241                       | 20 x 24   | 8,4             | 46,3                | 86,0                |
| 62627    | 0,093                       | 4 x 28    | 4,2             | 4,0                 | 21,0                | 62657    | 0,241                       | 25 x 24   | 9,1             | 58,0                | 103,0               |
| 62628    | 0,093                       | 6 x 28    | 4,7             | 5,0                 | 27,0                | 62658    | 0,241                       | 30 x 24   | 9,6             | 69,4                | 131,0               |
| 62629    | 0,093                       | 8 x 28    | 5,0             | 7,0                 | 30,0                | 62659    | 0,241                       | 40 x 24   | 11,2            | 92,6                | 173,0               |
| 62630    | 0,093                       | 10 x 28   | 5,6             | 9,0                 | 30,0                | 62660    | 0,241                       | 50 x 24   | 12,4            | 115,7               | 219,0               |
| 62631    | 0,093                       | 15 x 28   | 6,2             | 13,0                | 43,0                | 62661    | 0,382                       | 2 x 22    | 6,5             | 7,0                 | 22,0                |
| 62632    | 0,093                       | 20 x 28   | 6,8             | 18,0                | 54,0                | 62662    | 0,382                       | 3 x 22    | 6,7             | 11,0                | 28,0                |
| 62633    | 0,093                       | 25 x 28   | 7,6             | 22,0                | 63,0                | 62663    | 0,382                       | 4 x 22    | 7,2             | 14,7                | 32,0                |
| 62634    | 0,093                       | 30 x 28   | 8,0             | 27,0                | 73,0                | 62664    | 0,382                       | 6 x 22    | 8,3             | 22,0                | 46,0                |
| 62635    | 0,093                       | 40 x 28   | 8,8             | 36,0                | 89,0                | 62665    | 0,382                       | 8 x 22    | 8,8             | 29,4                | 54,0                |
| 62636    | 0,093                       | 50 x 28   | 9,8             | 45,0                | 109,0               | 62666    | 0,382                       | 10 x 22   | 10,1            | 37,0                | 66,0                |
| 62637    | 0,154                       | 2 x 26    | 4,0             | 3,0                 | 18,0                | 62667    | 0,382                       | 15 x 22   | 11,4            | 55,0                | 90,0                |
| 62638    | 0,154                       | 3 x 26    | 4,2             | 4,0                 | 21,0                | 62668    | 0,382                       | 20 x 22   | 12,5            | 73,0                | 115,0               |
| 62639    | 0,154                       | 4 x 26    | 4,4             | 6,0                 | 24,0                | 62669    | 0,382                       | 25 x 22   | 14,6            | 92,0                | 141,0               |
| 62640    | 0,154                       | 6 x 26    | 5,0             | 9,0                 | 30,0                | 62670    | 0,382                       | 30 x 22   | 15,4            | 110,0               | 176,0               |
| 62641    | 0,154                       | 8 x 26    | 5,3             | 12,0                | 34,0                | 62671    | 0,382                       | 40 x 22   | 17,0            | 147,0               | 234,0               |
| 62642    | 0,154                       | 10 x 26   | 6,0             | 15,0                | 42,0                | 62672    | 0,382                       | 50 x 22   | 19,0            | 183,0               | 293,0               |
| 62643    | 0,154                       | 15 x 26   | 6,7             | 22,0                | 52,0                | 62673    | 0,616                       | 2 x 20    | 6,9             | 11,9                | 57,0                |
| 62644    | 0,154                       | 20 x 26   | 7,5             | 30,0                | 67,0                | 62674    | 0,616                       | 3 x 20    | 7,2             | 17,8                | 60,0                |
| 62645    | 0,154                       | 25 x 26   | 8,2             | 37,0                | 80,0                | 62675    | 0,616                       | 4 x 20    | 7,8             | 23,7                | 73,0                |
| 62646    | 0,154                       | 30 x 26   | 8,6             | 44,0                | 92,0                | 62676    | 0,616                       | 6 x 20    | 9,0             | 36,0                | 97,0                |
| 62647    | 0,154                       | 40 x 26   | 9,5             | 59,0                | 116,0               | 62677    | 0,616                       | 8 x 20    | 9,6             | 47,4                | 133,0               |
| 62648    | 0,154                       | 50 x 26   | 11,1            | 74,0                | 145,0               | 62678    | 0,616                       | 10 x 20   | 11,0            | 59,0                | 143,0               |
| 62649    | 0,241                       | 2 x 24    | 4,3             | 5,0                 | 19,0                | 62679    | 0,616                       | 15 x 20   | 12,5            | 89,0                | 177,0               |
| 62650    | 0,241                       | 3 x 24    | 4,5             | 7,0                 | 22,0                | 62680    | 0,616                       | 20 x 20   | 14,6            | 118,0               | 261,0               |
| 62651    | 0,241                       | 4 x 24    | 4,8             | 9,0                 | 27,0                | 62681    | 0,616                       | 25 x 20   | 16,0            | 148,0               | 353,0               |
| 62652    | 0,241                       | 6 x 24    | 5,5             | 14,0                | 33,0                | 62682    | 0,616                       | 30 x 20   | 16,8            | 178,0               | 419,0               |
| 62653    | 0,241                       | 8 x 24    | 5,8             | 18,0                | 42,0                | 62683    | 0,616                       | 40 x 20   | 18,7            | 237,0               | 562,0               |
| 62654    | 0,241                       | 10 x 24   | 6,6             | 23,2                | 49,0                | 62684    | 0,616                       | 50 x 20   | 21,0            | 296,0               | 699,0               |

Continuation ▶

# TRAYCONTROL® 300

flexible, oil resistant, NFPA 79



| Part no. | Cross-section mm <sup>2</sup> x AWG-No. | No.cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---|----------|-----------------|---------------------|---------------------|
| 62685    | 0,963                                   | 2 x 18   | 7,4             | 18,5                | 61,0                |
| 62686    | 0,963                                   | 3 x 18   | 7,7             | 28,0                | 64,0                |
| 62687    | 0,963                                   | 4 x 18   | 8,3             | 37,0                | 77,0                |
| 62688    | 0,963                                   | 6 x 18   | 9,7             | 56,0                | 101,0               |
| 62689    | 0,963                                   | 8 x 18   | 10,4            | 74,0                | 142,0               |
| 62690    | 0,963                                   | 10 x 18  | 11,9            | 92,0                | 195,0               |
| 62691    | 0,963                                   | 15 x 18  | 13,5            | 139,0               | 247,0               |
| 62692    | 0,963                                   | 20 x 18  | 15,8            | 185,0               | 328,0               |
| 62693    | 0,963                                   | 25 x 18  | 17,4            | 231,0               | 407,0               |
| 62694    | 0,963                                   | 30 x 18  | 18,3            | 277,0               | 539,0               |
| 62695    | 0,963                                   | 40 x 18  | 20,4            | 370,0               | 717,0               |
| 62696    | 0,963                                   | 50 x 18  | 23,9            | 462,0               | 894,0               |

| Part no. | Cross-section mm <sup>2</sup> x AWG-No. | No.cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|---|----------|-----------------|---------------------|---------------------|
| 62697    | 1,31                                    | 2 x 16   | 7,9             | 25,0                | 83,0                |
| 62698    | 1,31                                    | 3 x 16   | 8,3             | 38,0                | 91,0                |
| 62699    | 1,31                                    | 4 x 16   | 8,9             | 50,0                | 109,0               |
| 62700    | 1,31                                    | 6 x 16   | 10,3            | 76,0                | 162,0               |
| 62702    | 1,31                                    | 8 x 16   | 11,2            | 101,0               | 243,0               |
| 62703    | 1,31                                    | 10 x 16  | 12,9            | 126,0               | 267,0               |
| 62704    | 1,31                                    | 15 x 16  | 15,4            | 189,0               | 364,0               |
| 62705    | 1,31                                    | 20 x 16  | 17,2            | 252,0               | 493,0               |
| 62706    | 1,31                                    | 25 x 16  | 18,8            | 314,0               | 608,0               |
| 62707    | 1,31                                    | 30 x 16  | 19,9            | 377,0               | 729,0               |
| 62708    | 1,31                                    | 40 x 16  | 23,3            | 503,0               | 967,0               |
| 62709    | 1,31                                    | 50 x 16  | 26,1            | 629,0               | 1214,0              |

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300-C

flexible, oil resistant, screened, EMC-preferred type, NFPA 79



## Technical data

- Flexible screened PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay length
- 1. Screen with special aluminium foil
- Drain wire
- 2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 16):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 28):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
- **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300-C is a screened, multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm² x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-----------------------------|-----------|-----------------|---------------------|---------------------|
| 62710    | 0,093                       | 2 x 28    | 4,2             | 6,0                 | 16,0                |
| 62711    | 0,093                       | 3 x 28    | 4,3             | 7,0                 | 22,0                |
| 62712    | 0,093                       | 4 x 28    | 4,6             | 9,0                 | 27,0                |
| 62713    | 0,093                       | 6 x 28    | 5,0             | 12,0                | 34,0                |
| 62714    | 0,093                       | 8 x 28    | 5,5             | 15,0                | 37,0                |
| 62715    | 0,093                       | 10 x 28   | 6,0             | 18,0                | 43,0                |
| 62716    | 0,093                       | 15 x 28   | 6,7             | 24,0                | 52,0                |
| 62717    | 0,093                       | 20 x 28   | 7,5             | 30,0                | 67,0                |
| 62718    | 0,093                       | 25 x 28   | 8,1             | 37,0                | 79,0                |
| 62719    | 0,093                       | 30 x 28   | 8,5             | 43,0                | 88,0                |
| 62720    | 0,093                       | 40 x 28   | 9,3             | 54,0                | 112,0               |
| 62721    | 0,093                       | 50 x 28   | 10,7            | 67,0                | 131,0               |
| 62722    | 0,154                       | 2 x 26    | 4,4             | 9,0                 | 24,0                |
| 62723    | 0,154                       | 3 x 26    | 4,5             | 10,0                | 27,0                |
| 62724    | 0,154                       | 4 x 26    | 4,8             | 12,0                | 31,0                |
| 62725    | 0,154                       | 6 x 26    | 5,5             | 16,0                | 39,0                |
| 62726    | 0,154                       | 8 x 26    | 5,8             | 19,0                | 43,0                |
| 62727    | 0,154                       | 10 x 26   | 6,5             | 24,0                | 51,0                |
| 62728    | 0,154                       | 15 x 26   | 7,4             | 31,0                | 66,0                |
| 62729    | 0,154                       | 20 x 26   | 8,0             | 40,0                | 79,0                |
| 62730    | 0,154                       | 25 x 26   | 8,7             | 49,0                | 92,0                |
| 62731    | 0,154                       | 30 x 26   | 9,1             | 57,0                | 110,0               |
| 62732    | 0,154                       | 40 x 26   | 10,5            | 72,0                | 136,0               |
| 62733    | 0,154                       | 50 x 26   | 11,6            | 88,0                | 165,0               |

| Part no. | Cross-section mm² x AWG-No. | No. cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-----------------------------|-----------|-----------------|---------------------|---------------------|
| 62734    | 0,241                       | 2 x 24    | 4,7             | 15,0                | 30,0                |
| 62735    | 0,241                       | 3 x 24    | 4,9             | 16,0                | 33,0                |
| 62736    | 0,241                       | 4 x 24    | 5,3             | 19,0                | 37,0                |
| 62737    | 0,241                       | 6 x 24    | 6,2             | 27,0                | 48,0                |
| 62738    | 0,241                       | 8 x 24    | 6,6             | 31,0                | 57,0                |
| 62739    | 0,241                       | 10 x 24   | 7,3             | 39,0                | 67,0                |
| 62740    | 0,241                       | 15 x 24   | 8,2             | 51,0                | 85,0                |
| 62741    | 0,241                       | 20 x 24   | 8,8             | 64,0                | 106,0               |
| 62742    | 0,241                       | 25 x 24   | 9,6             | 77,0                | 128,0               |
| 62743    | 0,241                       | 30 x 24   | 10,6            | 92,0                | 155,0               |
| 62744    | 0,241                       | 40 x 24   | 11,6            | 118,0               | 206,0               |
| 62745    | 0,241                       | 50 x 24   | 12,9            | 148,0               | 249,0               |
| 62746    | 0,382                       | 2 x 22    | 6,9             | 19,0                | 34,0                |
| 62747    | 0,382                       | 3 x 22    | 7,2             | 22,0                | 40,0                |
| 62748    | 0,382                       | 4 x 22    | 7,7             | 27,0                | 46,0                |
| 62749    | 0,382                       | 6 x 22    | 8,8             | 34,0                | 60,0                |
| 62750    | 0,382                       | 8 x 22    | 9,3             | 45,0                | 72,0                |
| 62751    | 0,382                       | 10 x 22   | 10,6            | 69,0                | 85,0                |
| 62752    | 0,382                       | 15 x 22   | 11,9            | 77,0                | 115,0               |
| 62753    | 0,382                       | 20 x 22   | 13,0            | 92,0                | 140,0               |
| 62754    | 0,382                       | 25 x 22   | 15,0            | 121,0               | 176,0               |
| 62755    | 0,382                       | 30 x 22   | 15,9            | 139,0               | 210,0               |
| 62756    | 0,382                       | 40 x 22   | 17,7            | 177,0               | 273,0               |
| 62757    | 0,382                       | 50 x 22   | 19,7            | 215,0               | 331,0               |

Continuation ▶



# TRAYCONTROL® 300-C

flexible, oil resistant, screened, EMC-preferred type, NFPA 79



| Part no. | Cross-section mm² x AWG-No. | No.cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-----------------------------|----------|-----------------|---------------------|---------------------|
| 62758    | 0,616                       | 2 x 20   | 7,4             | 28,0                | 73,0                |
| 62759    | 0,616                       | 3 x 20   | 7,7             | 34,0                | 77,0                |
| 62760    | 0,616                       | 4 x 20   | 8,3             | 40,0                | 91,0                |
| 62761    | 0,616                       | 6 x 20   | 9,4             | 54,0                | 118,0               |
| 62762    | 0,616                       | 8 x 20   | 10,1            | 70,0                | 158,0               |
| 62763    | 0,616                       | 10 x 20  | 11,5            | 83,0                | 173,0               |
| 62764    | 0,616                       | 15 x 20  | 13,0            | 119,0               | 218,0               |
| 62765    | 0,616                       | 20 x 20  | 15,1            | 130,0               | 298,0               |
| 62766    | 0,616                       | 25 x 20  | 16,5            | 186,0               | 401,0               |
| 62767    | 0,616                       | 30 x 20  | 17,5            | 224,0               | 477,0               |
| 62768    | 0,616                       | 40 x 20  | 19,0            | 288,0               | 623,0               |
| 62769    | 0,616                       | 50 x 20  | 22,6            | 337,0               | 752,0               |
| 62770    | 0,963                       | 2 x 18   | 7,8             | 37,0                | 80,0                |
| 62771    | 0,963                       | 3 x 18   | 8,2             | 49,0                | 86,0                |
| 62772    | 0,963                       | 4 x 18   | 8,8             | 58,0                | 101,0               |
| 62773    | 0,963                       | 6 x 18   | 10,1            | 82,0                | 130,0               |
| 62774    | 0,963                       | 8 x 18   | 10,8            | 100,0               | 168,0               |
| 62775    | 0,963                       | 10 x 18  | 12,4            | 124,0               | 226,0               |

| Part no. | Cross-section mm² x AWG-No. | No.cores | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-----------------------------|----------|-----------------|---------------------|---------------------|
| 62776    | 0,963                       | 15 x 18  | 14,9            | 180,0               | 295,0               |
| 62777    | 0,963                       | 20 x 18  | 16,3            | 234,0               | 386,0               |
| 62778    | 0,963                       | 25 x 18  | 18,0            | 277,0               | 462,0               |
| 62779    | 0,963                       | 30 x 18  | 18,9            | 323,0               | 590,0               |
| 62780    | 0,963                       | 40 x 18  | 21,2            | 416,0               | 773,0               |
| 62781    | 0,963                       | 50 x 18  | 24,7            | 508,0               | 958,0               |
| 62782    | 1,31                        | 2 x 16   | 8,4             | 51,0                | 110,0               |
| 62783    | 1,31                        | 3 x 16   | 8,7             | 63,0                | 116,0               |
| 62784    | 1,31                        | 4 x 16   | 9,4             | 76,0                | 139,0               |
| 62785    | 1,31                        | 6 x 16   | 10,9            | 104,0               | 195,0               |
| 62786    | 1,31                        | 8 x 16   | 11,7            | 134,0               | 283,0               |
| 62787    | 1,31                        | 10 x 16  | 13,4            | 168,0               | 316,0               |
| 62788    | 1,31                        | 15 x 16  | 16,0            | 234,0               | 410,0               |
| 62789    | 1,31                        | 20 x 16  | 17,8            | 301,0               | 551,0               |
| 62790    | 1,31                        | 25 x 16  | 19,5            | 367,0               | 675,0               |
| 62791    | 1,31                        | 30 x 16  | 20,6            | 428,0               | 794,0               |
| 62792    | 1,31                        | 40 x 16  | 24,0            | 550,0               | 1033,0              |
| 62793    | 1,31                        | 50 x 16  | 26,8            | 669,0               | 1274,0              |

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300 TP

twisted pair, flexible, oil resistant, NFPA 79



## Technical data

- Flexible PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire stranded, with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- Self-extinguishing and flame retardant acc. to CSA FT4
  - **UL (AWG 22 - AWG 18):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
  - **UL (AWG 24 - AWG 26):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
  - **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300 TP is a twisted pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 62794    | 0,154                         | 1 x 2 x 26                    | 4,0             | 3,0                 | 20,0                |
| 62795    | 0,154                         | 2 x 2 x 26                    | 5,2             | 5,0                 | 24,0                |
| 62796    | 0,154                         | 3 x 2 x 26                    | 5,5             | 8,0                 | 30,0                |
| 62797    | 0,154                         | 4 x 2 x 26                    | 5,9             | 11,0                | 38,0                |
| 62798    | 0,154                         | 5 x 2 x 26                    | 6,4             | 14,0                | 44,0                |
| 62799    | 0,154                         | 6 x 2 x 26                    | 6,9             | 16,0                | 51,0                |
| 62800    | 0,154                         | 7 x 2 x 26                    | 6,9             | 19,0                | 57,0                |
| 61928    | 0,154                         | 8 x 2 x 26                    | 7,6             | 22,0                | 64,0                |
| 61929    | 0,154                         | 10 x 2 x 26                   | 8,7             | 27,0                | 76,0                |
| 61930    | 0,154                         | 12 x 2 x 26                   | 9,0             | 33,0                | 93,0                |
| 61931    | 0,154                         | 14 x 2 x 26                   | 9,4             | 38,0                | 103,0               |
| 61932    | 0,154                         | 15 x 2 x 26                   | 10,4            | 41,0                | 109,0               |
| 61933    | 0,154                         | 16 x 2 x 26                   | 10,4            | 43,0                | 112,0               |
| 61934    | 0,154                         | 18 x 2 x 26                   | 11,0            | 49,0                | 119,0               |
| 61935    | 0,154                         | 20 x 2 x 26                   | 11,4            | 54,0                | 130,0               |
| 61936    | 0,154                         | 22 x 2 x 26                   | 11,9            | 59,0                | 150,0               |
| 61937    | 0,154                         | 24 x 2 x 26                   | 12,5            | 65,0                | 169,0               |
| 61938    | 0,154                         | 25 x 2 x 26                   | 12,5            | 67,0                | 178,0               |

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 61939    | 0,241                         | 1 x 2 x 24                    | 4,3             | 5,0                 | 32,0                |
| 61940    | 0,241                         | 2 x 2 x 24                    | 5,7             | 10,0                | 36,0                |
| 61941    | 0,241                         | 3 x 2 x 24                    | 6,0             | 15,0                | 48,0                |
| 61942    | 0,241                         | 4 x 2 x 24                    | 6,5             | 20,0                | 56,0                |
| 61943    | 0,241                         | 5 x 2 x 24                    | 7,0             | 25,0                | 71,0                |
| 61944    | 0,241                         | 6 x 2 x 24                    | 7,8             | 29,0                | 80,0                |
| 61945    | 0,241                         | 7 x 2 x 24                    | 7,8             | 34,0                | 89,0                |
| 61946    | 0,241                         | 8 x 2 x 24                    | 8,4             | 39,0                | 98,0                |
| 61947    | 0,241                         | 10 x 2 x 24                   | 9,7             | 49,0                | 111,0               |
| 61948    | 0,241                         | 12 x 2 x 24                   | 10,6            | 59,0                | 135,0               |
| 61949    | 0,241                         | 14 x 2 x 24                   | 11,0            | 69,0                | 160,0               |
| 61950    | 0,241                         | 15 x 2 x 24                   | 11,6            | 74,0                | 171,0               |
| 61951    | 0,241                         | 16 x 2 x 24                   | 11,6            | 79,0                | 185,0               |
| 61952    | 0,241                         | 18 x 2 x 24                   | 12,2            | 89,0                | 209,0               |
| 61953    | 0,241                         | 20 x 2 x 24                   | 12,8            | 98,0                | 230,0               |
| 61954    | 0,241                         | 22 x 2 x 24                   | 13,3            | 109,0               | 248,0               |
| 61955    | 0,241                         | 24 x 2 x 24                   | 14,0            | 118,0               | 279,0               |
| 61956    | 0,241                         | 25 x 2 x 24                   | 14,0            | 124,0               | 292,0               |

Continuation ▶

# TRAYCONTROL® 300 TP

twisted pair, flexible, oil resistant, NFPA 79



| Part no. | Cross-section mm <sup>2</sup> | No.pairs x Outer Ø<br>No.cores app. mm<br>x<br>AWG-no. | Cop. weight kg / km | Weight app. kg / km |       |
|----------|-------------------------------|--|---------------------|---------------------|-------|
| 61957    | 0,382                         | 1 x 2 x 22   | 6,5                 | 7,0                 | 38,0  |
| 61958    | 0,382                         | 2 x 2 x 22   | 8,8                 | 13,0                | 44,0  |
| 61959    | 0,382                         | 3 x 2 x 22   | 9,2                 | 20,0                | 60,0  |
| 61960    | 0,382                         | 4 x 2 x 22   | 10,0                | 29,0                | 79,0  |
| 61961    | 0,382                         | 5 x 2 x 22   | 10,9                | 33,0                | 92,0  |
| 61962    | 0,382                         | 6 x 2 x 22   | 11,8                | 39,0                | 119,0 |
| 61963    | 0,382                         | 7 x 2 x 22   | 11,8                | 46,0                | 128,0 |
| 61964    | 0,382                         | 8 x 2 x 22   | 12,7                | 52,0                | 139,0 |
| 61965    | 0,382                         | 10 x 2 x 22  | 15,6                | 65,0                | 171,0 |
| 61966    | 0,382                         | 12 x 2 x 22  | 16,1                | 78,0                | 194,0 |
| 61967    | 0,382                         | 14 x 2 x 22  | 16,9                | 92,0                | 222,0 |
| 61968    | 0,382                         | 15 x 2 x 22  | 17,8                | 98,0                | 231,0 |
| 61969    | 0,382                         | 16 x 2 x 22  | 17,8                | 105,0               | 240,0 |
| 61970    | 0,382                         | 18 x 2 x 22  | 18,6                | 118,0               | 264,0 |
| 61971    | 0,382                         | 20 x 2 x 22  | 19,6                | 131,0               | 291,0 |
| 61972    | 0,382                         | 22 x 2 x 22  | 20,5                | 144,0               | 300,0 |
| 61973    | 0,382                         | 24 x 2 x 22  | 22,7                | 157,0               | 359,0 |
| 61974    | 0,382                         | 25 x 2 x 22  | 22,7                | 163,0               | 381,0 |
| 61975    | 0,616                         | 1 x 2 x 20   | 6,9                 | 11,0                | 60,0  |
| 61976    | 0,616                         | 2 x 2 x 20   | 9,6                 | 22,0                | 80,0  |
| 61977    | 0,616                         | 3 x 2 x 20   | 10,1                | 32,0                | 94,0  |

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x Outer Ø<br>No.cores x<br>AWG-no. | Cop. weight kg / km | Weight app. kg / km |       |
|----------|-------------------------------|---|---------------------|---------------------|-------|
| 61978    | 0,616                         | 4 x 2 x 20                                  | 10,9                | 43,0                | 104,0 |
| 61979    | 0,616                         | 5 x 2 x 20                                  | 11,9                | 54,0                | 130,0 |
| 61980    | 0,616                         | 6 x 2 x 20                                  | 12,9                | 65,0                | 151,0 |
| 61981    | 0,616                         | 7 x 2 x 20                                  | 12,9                | 75,0                | 174,0 |
| 61982    | 0,616                         | 8 x 2 x 20                                  | 14,8                | 86,0                | 262,0 |
| 61983    | 0,616                         | 10 x 2 x 20                                 | 15,9                | 108,0               | 298,0 |
| 61984    | 0,616                         | 12 x 2 x 20                                 | 17,7                | 129,0               | 302,0 |
| 61985    | 0,616                         | 14 x 2 x 20                                 | 18,5                | 151,0               | 327,0 |
| 61986    | 0,616                         | 15 x 2 x 20                                 | 19,5                | 161,0               | 370,0 |
| 61987    | 0,616                         | 16 x 2 x 20                                 | 19,5                | 172,0               | 402,0 |
| 61988    | 0,616                         | 18 x 2 x 20                                 | 20,5                | 194,0               | 480,0 |
| 61989    | 0,616                         | 20 x 2 x 20                                 | 22,0                | 215,0               | 551,0 |
| 61990    | 0,616                         | 22 x 2 x 20                                 | 23,1                | 237,0               | 621,0 |
| 61991    | 0,616                         | 24 x 2 x 20                                 | 24,4                | 258,0               | 703,0 |
| 61992    | 0,616                         | 25 x 2 x 20                                 | 24,4                | 269,0               | 721,0 |
| 61993    | 0,963                         | 1 x 2 x 18                                  | 7,4                 | 18,0                | 61,0  |
| 61994    | 0,963                         | 2 x 2 x 18                                  | 10,3                | 36,0                | 77,0  |
| 61995    | 0,963                         | 3 x 2 x 18                                  | 10,8                | 54,0                | 103,0 |
| 61996    | 0,963                         | 6 x 2 x 18                                  | 14,9                | 107,0               | 216,0 |
| 61997    | 0,963                         | 9 x 2 x 18                                  | 17,2                | 162,0               | 328,0 |
| 61998    | 0,963                         | 15 x 2 x 18                                 | 21,3                | 271,0               | 542,0 |

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300-C TP

twisted pair, flexible, screened, oil resistant, EMC-preferred type, NFPA 79



## Technical data

- Flexible screened PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire stranded, with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- 1. Screening with special aluminium foil
- Drain wire
- 2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- Self-extinguishing and flame retardant acc. to CSA FT4
  - **UL (AWG 22 - AWG 18):**  
PLTC-ER, ITC-ER, CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
  - **UL (AWG 24 - AWG 26):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
  - **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300-C TP is a screened, twisted pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 61999    | 0,154                         | 1 x 2 x 26                    | 4,4             | 16,0                | 32,0                |
| 59760    | 0,154                         | 2 x 2 x 26                    | 5,6             | 20,0                | 39,0                |
| 59761    | 0,154                         | 3 x 2 x 26                    | 5,9             | 24,0                | 47,0                |
| 59762    | 0,154                         | 4 x 2 x 26                    | 6,3             | 27,0                | 55,0                |
| 59763    | 0,154                         | 5 x 2 x 26                    | 6,8             | 31,0                | 68,0                |
| 59764    | 0,154                         | 6 x 2 x 26                    | 7,5             | 50,0                | 86,0                |
| 59765    | 0,154                         | 7 x 2 x 26                    | 7,5             | 52,0                | 92,0                |
| 59766    | 0,154                         | 8 x 2 x 26                    | 8,0             | 54,0                | 97,0                |
| 59767    | 0,154                         | 10 x 2 x 26                   | 9,1             | 60,0                | 111,0               |
| 59768    | 0,154                         | 12 x 2 x 26                   | 9,4             | 67,0                | 141,0               |
| 59769    | 0,154                         | 14 x 2 x 26                   | 10,4            | 75,0                | 150,0               |
| 59770    | 0,154                         | 15 x 2 x 26                   | 10,8            | 77,0                | 154,0               |
| 59771    | 0,154                         | 16 x 2 x 26                   | 10,8            | 80,0                | 155,0               |
| 59772    | 0,154                         | 18 x 2 x 26                   | 11,3            | 84,0                | 170,0               |
| 59773    | 0,154                         | 20 x 2 x 26                   | 11,8            | 98,0                | 183,0               |
| 59774    | 0,154                         | 22 x 2 x 26                   | 12,3            | 104,0               | 207,0               |
| 59775    | 0,154                         | 24 x 2 x 26                   | 13,0            | 112,0               | 228,0               |
| 59776    | 0,154                         | 25 x 2 x 26                   | 13,0            | 114,0               | 239,0               |

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 59777    | 0,241                         | 1 x 2 x 24                    | 4,6             | 16,0                | 46,0                |
| 59778    | 0,241                         | 2 x 2 x 24                    | 6,2             | 27,0                | 53,0                |
| 59779    | 0,241                         | 3 x 2 x 24                    | 6,5             | 32,0                | 65,0                |
| 59780    | 0,241                         | 4 x 2 x 24                    | 7,2             | 37,0                | 79,0                |
| 59781    | 0,241                         | 5 x 2 x 24                    | 7,8             | 55,0                | 98,0                |
| 59782    | 0,241                         | 6 x 2 x 24                    | 8,3             | 66,0                | 114,0               |
| 59783    | 0,241                         | 7 x 2 x 24                    | 8,3             | 60,0                | 121,0               |
| 59784    | 0,241                         | 8 x 2 x 24                    | 8,9             | 74,0                | 129,0               |
| 59785    | 0,241                         | 10 x 2 x 24                   | 10,8            | 109,0               | 152,0               |
| 59786    | 0,241                         | 12 x 2 x 24                   | 11,0            | 116,0               | 189,0               |
| 59787    | 0,241                         | 14 x 2 x 24                   | 11,5            | 121,0               | 213,0               |
| 59788    | 0,241                         | 15 x 2 x 24                   | 12,1            | 132,0               | 225,0               |
| 59789    | 0,241                         | 16 x 2 x 24                   | 12,1            | 142,0               | 227,0               |
| 59790    | 0,241                         | 18 x 2 x 24                   | 12,6            | 147,0               | 238,0               |
| 59791    | 0,241                         | 20 x 2 x 24                   | 13,2            | 161,0               | 270,0               |
| 59792    | 0,241                         | 22 x 2 x 24                   | 13,8            | 171,0               | 300,0               |
| 59793    | 0,241                         | 24 x 2 x 24                   | 14,5            | 230,0               | 321,0               |
| 59794    | 0,241                         | 25 x 2 x 24                   | 14,5            | 231,0               | 340,0               |

Continuation ▶

# TRAYCONTROL® 300-C TP

twisted pair, flexible, screened, oil resistant, EMC-preferred type, NFPA 79



| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 59795    | 0,382                         | 1 x 2 x 22                    | 6,9             | 17,0                | 58,0                |
| 59796    | 0,382                         | 2 x 2 x 22                    | 9,3             | 37,0                | 65,0                |
| 59797    | 0,382                         | 3 x 2 x 22                    | 9,7             | 45,0                | 79,0                |
| 59798    | 0,382                         | 4 x 2 x 22                    | 10,5            | 54,0                | 88,0                |
| 59799    | 0,382                         | 5 x 2 x 22                    | 11,4            | 63,0                | 110,0               |
| 59800    | 0,382                         | 6 x 2 x 22                    | 12,3            | 73,0                | 126,0               |
| 59801    | 0,382                         | 7 x 2 x 22                    | 12,3            | 79,0                | 140,0               |
| 59802    | 0,382                         | 8 x 2 x 22                    | 13,2            | 88,0                | 148,0               |
| 59803    | 0,382                         | 10 x 2 x 22                   | 15,9            | 107,0               | 184,0               |
| 59804    | 0,382                         | 12 x 2 x 22                   | 16,6            | 122,0               | 210,0               |
| 59805    | 0,382                         | 14 x 2 x 22                   | 17,4            | 138,0               | 241,0               |
| 59806    | 0,382                         | 15 x 2 x 22                   | 18,2            | 154,0               | 245,0               |
| 59807    | 0,382                         | 16 x 2 x 22                   | 18,2            | 161,0               | 251,0               |
| 59808    | 0,382                         | 18 x 2 x 22                   | 19,1            | 198,0               | 275,0               |
| 59809    | 0,382                         | 20 x 2 x 22                   | 20,1            | 211,0               | 300,0               |
| 59810    | 0,382                         | 22 x 2 x 22                   | 21,0            | 218,0               | 320,0               |
| 59811    | 0,382                         | 24 x 2 x 22                   | 23,1            | 230,0               | 371,0               |
| 59812    | 0,382                         | 25 x 2 x 22                   | 23,1            | 239,0               | 402,0               |
| 59813    | 0,616                         | 1 x 2 x 20                    | 7,4             | 26,0                | 70,0                |
| 59814    | 0,616                         | 2 x 2 x 20                    | 10,0            | 56,0                | 89,0                |
| 59815    | 0,616                         | 3 x 2 x 20                    | 10,5            | 72,0                | 102,0               |

| Part no. | Cross-section mm <sup>2</sup> | No.pairs x No.cores x AWG-no. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|-------------------------------|-----------------|---------------------|---------------------|
| 59816    | 0,616                         | 4 x 2 x 20                    | 11,4            | 92,0                | 119,0               |
| 59817    | 0,616                         | 5 x 2 x 20                    | 12,4            | 107,0               | 140,0               |
| 59818    | 0,616                         | 6 x 2 x 20                    | 13,4            | 122,0               | 162,0               |
| 59819    | 0,616                         | 7 x 2 x 20                    | 13,4            | 132,0               | 198,0               |
| 59820    | 0,616                         | 8 x 2 x 20                    | 15,3            | 144,0               | 272,0               |
| 59821    | 0,616                         | 10 x 2 x 20                   | 16,4            | 180,0               | 307,0               |
| 59822    | 0,616                         | 12 x 2 x 20                   | 18,3            | 202,0               | 318,0               |
| 59823    | 0,616                         | 14 x 2 x 20                   | 19,2            | 221,0               | 342,0               |
| 59824    | 0,616                         | 15 x 2 x 20                   | 20,1            | 232,0               | 381,0               |
| 59825    | 0,616                         | 16 x 2 x 20                   | 20,1            | 257,0               | 417,0               |
| 59826    | 0,616                         | 18 x 2 x 20                   | 21,2            | 282,0               | 494,0               |
| 59827    | 0,616                         | 20 x 2 x 20                   | 22,7            | 307,0               | 570,0               |
| 59828    | 0,616                         | 22 x 2 x 20                   | 23,8            | 322,0               | 643,0               |
| 59829    | 0,616                         | 24 x 2 x 20                   | 25,0            | 342,0               | 724,0               |
| 59830    | 0,616                         | 25 x 2 x 20                   | 25,0            | 361,0               | 740,0               |
| 59831    | 0,963                         | 1 x 2 x 18                    | 7,8             | 28,0                | 104,0               |
| 59832    | 0,963                         | 2 x 2 x 18                    | 10,8            | 57,0                | 121,0               |
| 59833    | 0,963                         | 3 x 2 x 18                    | 11,3            | 75,0                | 150,0               |
| 59834    | 0,963                         | 6 x 2 x 18                    | 15,4            | 139,0               | 328,0               |
| 59835    | 0,963                         | 9 x 2 x 18                    | 17,9            | 212,0               | 490,0               |
| 59836    | 0,963                         | 15 x 2 x 18                   | 21,9            | 358,0               | 811,0               |

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 500

flexible, oil-resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



## Technical data

- PVC control cable acc. to UL Std. 1277 and UL Std. 2277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 4x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTTC 1000 V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Black or TPE outer sheath

## Application

HELUKABEL® TRAYCONTROL® 500 is a flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63079    | 0,507                         | 2 x 20              | 6,6             | 9,8                 | 58,0                |
| 63080    | 0,507                         | 3 x 20              | 7,0             | 14,6                | 61,0                |
| 63081    | 0,507                         | 4 x 20              | 7,5             | 19,5                | 76,0                |
| 63082    | 0,507                         | 5 x 20              | 8,1             | 24,4                | 89,0                |
| 63083    | 0,507                         | 7 x 20              | 8,7             | 34,1                | 120,0               |
| 63084    | 0,507                         | 9 x 20              | 9,8             | 43,8                | 201,0               |
| 63085    | 0,507                         | 12 x 20             | 10,1            | 58,4                | 250,0               |
| 63086    | 0,507                         | 18 x 20             | 12,9            | 87,6                | 295,0               |
| 63087    | 0,507                         | 25 x 20             | 15,7            | 121,7               | 362,0               |
| 63088    | 0,963                         | 2 x 18              | 7,3             | 18,5                | 68,0                |
| 63089    | 0,963                         | 3 x 18              | 7,6             | 27,8                | 88,0                |
| 63090    | 0,963                         | 4 x 18              | 8,2             | 37,0                | 98,0                |
| 63091    | 0,963                         | 5 x 18              | 8,9             | 46,3                | 116,0               |
| 63092    | 0,963                         | 7 x 18              | 9,6             | 64,8                | 149,0               |
| 63093    | 0,963                         | 9 x 18              | 11,0            | 83,2                | 186,0               |
| 63094    | 0,963                         | 10 x 18             | 11,6            | 92,5                | 199,0               |
| 63095    | 0,963                         | 12 x 18             | 12,2            | 111,0               | 245,0               |
| 63096    | 0,963                         | 15 x 18             | 13,5            | 138,7               | 292,0               |

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63097    | 0,963                         | 16 x 18             | 13,6            | 147,9               | 306,0               |
| 63098    | 0,963                         | 18 x 18             | 15,0            | 166,4               | 366,0               |
| 63099    | 0,963                         | 19 x 18             | 15,1            | 175,7               | 384,0               |
| 63100    | 0,963                         | 25 x 18             | 17,4            | 231,2               | 451,0               |
| 63101    | 0,963                         | 27 x 18             | 17,7            | 249,6               | 521,0               |
| 63102    | 0,963                         | 34 x 18             | 19,7            | 314,4               | 625,0               |
| 63103    | 0,963                         | 37 x 18             | 20,1            | 342,0               | 684,0               |
| 63104    | 0,963                         | 41 x 18             | 21,0            | 379,0               | 744,0               |
| 63105    | 0,963                         | 50 x 18             | 24,0            | 462,3               | 933,0               |
| 63106    | 0,963                         | 61 x 18             | 25,2            | 564,0               | 1095,0              |
| 63107    | 1,31                          | 2 x 16              | 7,8             | 25,2                | 80,0                |
| 63108    | 1,31                          | 3 x 16              | 8,2             | 37,8                | 86,0                |
| 63109    | 1,31                          | 4 x 16              | 8,8             | 50,3                | 115,0               |
| 63110    | 1,31                          | 5 x 16              | 9,6             | 62,9                | 126,0               |
| 63112    | 1,31                          | 6 x 16              | 10,2            | 75,5                | 164,0               |
| 63113    | 1,31                          | 7 x 16              | 10,5            | 88,0                | 171,0               |
| 63114    | 1,31                          | 8 x 16              | 11,1            | 100,7               | 201,0               |
| 63115    | 1,31                          | 9 x 16              | 12,0            | 113,2               | 237,0               |

Continuation ▶



# TRAYCONTROL® 500

flexible, oil-resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63116    | 1,31                          | 10 x 16             | 12,4            | 125,8               | 259,0               |
| 63117    | 1,31                          | 12 x 16             | 13,6            | 151,0               | 301,0               |
| 63118    | 1,31                          | 14 x 16             | 14,5            | 176,1               | 365,0               |
| 63119    | 1,31                          | 15 x 16             | 15,2            | 188,7               | 379,0               |
| 63120    | 1,31                          | 16 x 16             | 16,0            | 201,3               | 405,0               |
| 63121    | 1,31                          | 18 x 16             | 16,4            | 226,4               | 443,0               |
| 63122    | 1,31                          | 19 x 16             | 16,6            | 239,0               | 458,0               |
| 63123    | 1,31                          | 20 x 16             | 17,2            | 251,6               | 491,0               |
| 63124    | 1,31                          | 25 x 16             | 18,9            | 314,5               | 564,0               |
| 63125    | 1,31                          | 27 x 16             | 19,3            | 339,6               | 629,0               |
| 63126    | 1,31                          | 30 x 16             | 20,0            | 377,3               | 701,0               |
| 63127    | 1,31                          | 34 x 16             | 22,5            | 427,6               | 775,0               |
| 63128    | 1,31                          | 40 x 16             | 23,5            | 503,1               | 946,0               |
| 63129    | 1,31                          | 41 x 16             | 24,0            | 515,7               | 967,0               |
| 63130    | 1,31                          | 50 x 16             | 26,1            | 628,8               | 1137,0              |
| 63131    | 1,31                          | 61 x 16             | 27,5            | 767,2               | 1345,0              |
| 63132    | 2,08                          | 2 x 14              | 8,9             | 40,0                | 100,0               |
| 63133    | 2,08                          | 3 x 14              | 9,2             | 60,0                | 112,0               |
| 63111    | 2,08                          | 4 x 14              | 10,1            | 80,0                | 141,0               |
| 63164    | 2,08                          | 5 x 14              | 10,9            | 100,0               | 152,0               |
| 63165    | 2,08                          | 6 x 14              | 11,5            | 120,0               | 205,0               |
| 63166    | 2,08                          | 7 x 14              | 12,0            | 140,0               | 216,0               |
| 63167    | 2,08                          | 9 x 14              | 14,7            | 180,0               | 312,0               |
| 63168    | 2,08                          | 10 x 14             | 15,8            | 200,0               | 378,0               |
| 63169    | 2,08                          | 12 x 14             | 16,4            | 240,0               | 434,0               |
| 63170    | 2,08                          | 16 x 14             | 18,0            | 320,0               | 550,0               |
| 63171    | 2,08                          | 18 x 14             | 18,9            | 359,0               | 616,0               |
| 63172    | 2,08                          | 19 x 14             | 19,0            | 380,0               | 634,0               |
| 63173    | 2,08                          | 25 x 14             | 23,0            | 500,0               | 817,0               |
| 63174    | 3,31                          | 2 x 12              | 9,7             | 63,0                | 132,0               |
| 63175    | 3,31                          | 3 x 12              | 10,2            | 95,0                | 177,0               |
| 63176    | 3,31                          | 4 x 12              | 11,2            | 127,0               | 201,0               |
| 63177    | 3,31                          | 5 x 12              | 12,3            | 159,0               | 274,0               |

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63178    | 3,31                          | 6 x 12              | 13,6            | 191,0               | 315,0               |
| 63179    | 3,31                          | 7 x 12              | 13,9            | 222,0               | 353,0               |
| 63180    | 3,31                          | 9 x 12              | 16,4            | 286,0               | 476,0               |
| 63181    | 3,31                          | 12 x 12             | 18,3            | 381,0               | 613,0               |
| 63182    | 3,31                          | 16 x 12             | 19,8            | 508,0               | 783,0               |
| 63183    | 3,31                          | 19 x 12             | 22,3            | 604,0               | 918,0               |
| 63184    | 3,31                          | 20 x 12             | 23,1            | 636,0               | 961,0               |
| 63185    | 3,31                          | 25 x 12             | 25,8            | 794,0               | 1236,0              |
| 63186    | 5,26                          | 2 x 10              | 12,2            | 101,0               | 213,0               |
| 63187    | 5,26                          | 3 x 10              | 12,9            | 151,5               | 283,0               |
| 63188    | 5,26                          | 4 x 10              | 15,0            | 202,0               | 387,0               |
| 63189    | 5,26                          | 5 x 10              | 16,3            | 252,5               | 473,0               |
| 63190    | 5,26                          | 7 x 10              | 17,7            | 353,5               | 607,0               |
| 63191    | 5,26                          | 9 x 10              | 20,6            | 454,5               | 771,0               |
| 63192    | 5,26                          | 12 x 10             | 24,1            | 606,0               | 1061,0              |
| 63193    | 5,26                          | 19 x 10             | 27,2            | 959,5               | 1528,0              |
| 63194    | 8,37                          | 3 x 8               | 17,0            | 241,1               | 420,0               |
| 63195    | 8,37                          | 4 x 8               | 19,2            | 321,4               | 662,0               |
| 63196    | 8,37                          | 5 x 8               | 21,0            | 401,8               | 784,0               |
| 63197    | 13,3                          | 3 x 6               | 19,5            | 383,1               | 701,0               |
| 63198    | 13,3                          | 4 x 6               | 22,4            | 510,7               | 908,0               |
| 63199    | 13,3                          | 5 x 6               | 24,5            | 638,4               | 1149,0              |
| 62802    | 21,2                          | 3 x 4               | 24,4            | 610,6               | 1061,0              |
| 62803    | 21,2                          | 4 x 4               | 27,0            | 814,1               | 1366,0              |
| 62804    | 21,2                          | 5 x 4               | 29,9            | 1017,6              | 1631,0              |
| 62805    | 33,6                          | 3 x 2               | 28,2            | 967,7               | 1480,0              |
| 62806    | 33,6                          | 4 x 2               | 31,4            | 1290,3              | 1922,0              |
| 62807    | 33,6                          | 5 x 2               | 34,6            | 1612,8              | 2363,0              |
| 62808    | 42,3                          | 4 x 1               | 35,6            | 1624,0              | 2397,0              |
| 62809    | 52,9                          | 4 x 1/0             | 38,7            | 2031,0              | 2938,0              |
| 62810    | 67,3                          | 4 x 2/0             | 42,1            | 2584,0              | 3559,0              |
| 62811    | 84,4                          | 4 x 3/0             | 49,4            | 3256,0              | 4181,0              |
| 62812    | 106,7                         | 4 x 4/0             | 52,0            | 4097,0              | 5747,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# TRAYCONTROL® 500-C

flexible, oil-resistant, screened, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79, EMC-preferred type



## Technical data

- PVC control cable acc. to UL Std. 1277 and UL Std. 2277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 6x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
  - **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTC 1000 V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
  - **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Black or TPE outer sheath

## Application

HELUKABEL® TRAYCONTROL® 500-C is a flexible, screened and oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km | Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62813    | 0,507                         | 2 x 20              | 7,0             | 35,0                | 95,0                | 62828    | 0,963                         | 19 x 18             | 15,7            | 280,0               | 443,0               |
| 62814    | 0,507                         | 3 x 20              | 7,6             | 42,0                | 115,0               | 62829    | 0,963                         | 25 x 18             | 17,7            | 349,0               | 571,0               |
| 62815    | 0,507                         | 7 x 20              | 9,4             | 69,0                | 164,0               | 62830    | 1,31                          | 3 x 16              | 8,9             | 74,0                | 144,0               |
| 62816    | 0,507                         | 12 x 20             | 11,0            | 108,0               | 266,0               | 62831    | 1,31                          | 4 x 16              | 9,6             | 90,0                | 172,0               |
| 62817    | 0,507                         | 25 x 20             | 16,1            | 240,0               | 435,0               | 62832    | 1,31                          | 5 x 16              | 10,3            | 104,0               | 188,0               |
| 62818    | 0,963                         | 2 x 18              | 8,1             | 50,0                | 110,0               | 62833    | 1,31                          | 6 x 16              | 10,5            | 120,0               | 203,0               |
| 62819    | 0,963                         | 3 x 18              | 8,2             | 60,0                | 118,0               | 62834    | 1,31                          | 7 x 16              | 11,3            | 134,0               | 244,0               |
| 62820    | 0,963                         | 4 x 18              | 8,8             | 71,0                | 136,0               | 62835    | 1,31                          | 9 x 16              | 12,6            | 165,0               | 308,0               |
| 62821    | 0,963                         | 5 x 18              | 9,4             | 88,0                | 148,0               | 62836    | 1,31                          | 10 x 16             | 12,9            | 180,0               | 346,0               |
| 62822    | 0,963                         | 7 x 18              | 10,1            | 111,0               | 192,0               | 62837    | 1,31                          | 12 x 16             | 15,1            | 244,0               | 423,0               |
| 62823    | 0,963                         | 9 x 18              | 11,4            | 140,0               | 244,0               | 62838    | 1,31                          | 15 x 16             | 16,4            | 270,0               | 441,0               |
| 62824    | 0,963                         | 10 x 18             | 12,0            | 150,0               | 283,0               | 62839    | 1,31                          | 18 x 16             | 17,3            | 319,0               | 512,0               |
| 62825    | 0,963                         | 12 x 18             | 12,9            | 184,0               | 329,0               | 62840    | 1,31                          | 19 x 16             | 17,6            | 327,0               | 503,0               |
| 62826    | 0,963                         | 15 x 18             | 14,8            | 207,0               | 377,0               | 62841    | 1,31                          | 20 x 16             | 17,5            | 340,0               | 524,0               |
| 62827    | 0,963                         | 18 x 18             | 15,7            | 260,0               | 435,0               | 62842    | 1,31                          | 25 x 16             | 19,6            | 434,0               | 704,0               |

Continuation ▶

# TRAYCONTROL® 500-C

flexible, oil-resistant, screened, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79, EMC-preferred type



| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62843    | 2,08                          | 3 x 14              | 9,8             | 112,0               | 179,0               |
| 62844    | 2,08                          | 4 x 14              | 10,7            | 121,0               | 222,0               |
| 62845    | 2,08                          | 5 x 14              | 11,6            | 150,0               | 266,0               |
| 62846    | 2,08                          | 7 x 14              | 12,5            | 200,0               | 326,0               |
| 62847    | 2,08                          | 9 x 14              | 15,0            | 240,0               | 435,0               |
| 62848    | 2,08                          | 10 x 14             | 16,3            | 264,0               | 427,0               |
| 62849    | 2,08                          | 12 x 14             | 16,9            | 350,0               | 592,0               |
| 62850    | 2,08                          | 15 x 14             | 18,3            | 409,0               | 635,0               |
| 62851    | 2,08                          | 18 x 14             | 19,5            | 471,0               | 780,0               |
| 62852    | 2,08                          | 19 x 14             | 19,7            | 505,0               | 799,0               |
| 62853    | 2,08                          | 25 x 14             | 23,3            | 652,0               | 1042,0              |
| 62854    | 3,31                          | 3 x 12              | 11,4            | 137,0               | 237,0               |
| 62855    | 3,31                          | 4 x 12              | 12,2            | 169,0               | 314,0               |
| 62856    | 3,31                          | 5 x 12              | 13,4            | 201,0               | 386,0               |
| 62857    | 3,31                          | 6 x 12              | 14,6            | 236,0               | 425,0               |
| 62858    | 3,31                          | 7 x 12              | 15,5            | 262,0               | 496,0               |
| 62859    | 3,31                          | 9 x 12              | 17,7            | 334,0               | 740,0               |

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62860    | 3,31                          | 12 x 12             | 19,7            | 434,0               | 887,0               |
| 62861    | 3,31                          | 15 x 12             | 21,0            | 531,0               | 903,0               |
| 62862    | 3,31                          | 19 x 12             | 23,1            | 720,0               | 1123,0              |
| 62863    | 3,31                          | 20 x 12             | 25,0            | 764,0               | 1490,0              |
| 62864    | 3,31                          | 25 x 12             | 27,1            | 914,0               | 1865,0              |
| 62865    | 5,26                          | 3 x 10              | 14,1            | 240,0               | 389,0               |
| 62866    | 5,26                          | 4 x 10              | 15,5            | 305,0               | 549,0               |
| 62867    | 5,26                          | 5 x 10              | 16,8            | 399,0               | 610,0               |
| 62868    | 5,26                          | 7 x 10              | 18,2            | 505,0               | 851,0               |
| 62869    | 5,26                          | 9 x 10              | 20,9            | 704,0               | 1132,0              |
| 62870    | 5,26                          | 12 x 10             | 24,4            | 940,0               | 1523,0              |
| 62871    | 5,26                          | 19 x 10             | 27,5            | 1210,0              | 1952,0              |
| 62872    | 8,37                          | 4 x 8               | 19,9            | 535,0               | 852,0               |
| 62873    | 13,3                          | 4 x 6               | 23,3            | 740,0               | 1202,0              |
| 62874    | 21,2                          | 4 x 4               | 28,6            | 1140,0              | 1971,0              |
| 62875    | 33,6                          | 4 x 2               | 33,2            | 1576,0              | 2887,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-604 TC TRAY CABLE

PVC power cable, open installation TC-ER, NFPA 79, 90°C, 600 V, meter marking



## Technical data

- PVC power cable to UL Std. 1 277 TRAY CABLE
- **Multinorm**  
also conforms to the following standards: AWM-Style 2587 to UL Std. 758 and CSA C22.2 No 210 I/II A/B 90C 600 V
- **Temperature range**  
dry environment  
flexing -5°C to +90°C  
fixed installation -25°C to +90°C  
wet environment  
flexing -5°C to +75°C  
fixed installation -25°C to +75°C
- **Nominal voltage**  
UL 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Minimum bending radius**  
7,5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC class 12 B acc. to tab. 50.155 UL Std. 1581, type TFF acc. to UL Std. 62 (AWG 20 - AWG 16)  
type THHW acc. to UL Std. 83 (≥ AWG 14)
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC acc. to UL Std. 1277 tab. 11.2
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- UL OIL RES I
- Class 1 Div. 2 per NEC Art. 336, 392, 501

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-604-FCY TC TRAY CABLE**  
**JZ-604-YCY TC TRAY CABLE**

## Application

USA NFPA 79 conformant flexible power cables up to 600 V, for all machinery in tool and plant construction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 69661    | 2 x 1                                  | 18      | 8,0             | 19,2                | 96,0                |
| 69662    | 3 G 1                                  | 18      | 8,4             | 29,0                | 112,0               |
| 69663    | 4 G 1                                  | 18      | 9,2             | 39,0                | 134,0               |
| 69664    | 5 G 1                                  | 18      | 10,0            | 48,0                | 162,0               |
| 69665    | 7 G 1                                  | 18      | 11,7            | 67,0                | 212,0               |
| 69666    | 9 G 1                                  | 18      | 12,6            | 84,0                | 260,0               |
| 69667    | 10 G 1                                 | 18      | 14,3            | 96,0                | 297,0               |
| 69668    | 12 G 1                                 | 18      | 14,7            | 115,0               | 374,0               |
| 69669    | 18 G 1                                 | 18      | 17,1            | 173,0               | 501,0               |
| 69670    | 25 G 1                                 | 18      | 20,3            | 240,0               | 677,0               |
| 69671    | 34 G 1                                 | 18      | 23,7            | 326,0               | 976,0               |
| 69672    | 50 G 1                                 | 18      | 27,8            | 480,0               | 1268,0              |
| 69673    | 2 x 1,5                                | 16      | 8,4             | 29,0                | 112,0               |
| 69674    | 3 G 1,5                                | 16      | 8,8             | 43,0                | 129,0               |
| 69675    | 4 G 1,5                                | 16      | 9,6             | 58,0                | 155,0               |
| 69676    | 5 G 1,5                                | 16      | 10,5            | 72,0                | 189,0               |
| 69677    | 7 G 1,5                                | 16      | 12,3            | 101,0               | 246,0               |
| 69678    | 8 G 1,5                                | 16      | 13,3            | 115,0               | 265,0               |
| 69679    | 9 G 1,5                                | 16      | 13,3            | 130,0               | 317,0               |
| 69680    | 10 G 1,5                               | 16      | 15,1            | 144,0               | 332,0               |
| 69681    | 12 G 1,5                               | 16      | 15,6            | 173,0               | 384,0               |
| 69682    | 16 G 1,5                               | 16      | 17,2            | 230,0               | 540,0               |
| 69683    | 18 G 1,5                               | 16      | 18,2            | 259,0               | 604,0               |
| 69684    | 25 G 1,5                               | 16      | 22,7            | 360,0               | 885,0               |
| 69685    | 34 G 1,5                               | 16      | 25,3            | 489,0               | 1099,0              |
| 69686    | 41 G 1,5                               | 16      | 27,0            | 590,0               | 1315,0              |
| 69687    | 50 G 1,5                               | 16      | 27,3            | 720,0               | 1524,0              |
| 69688    | 61 G 1,5                               | 16      | 29,4            | 878,0               | 1927,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 69689    | 2 x 2,5                                | 14      | 9,4             | 48,0                | 148,0               |
| 69690    | 3 G 2,5                                | 14      | 9,9             | 72,0                | 174,0               |
| 69691    | 4 G 2,5                                | 14      | 10,8            | 96,0                | 218,0               |
| 69692    | 5 G 2,5                                | 14      | 11,8            | 120,0               | 257,0               |
| 69693    | 7 G 2,5                                | 14      | 14,7            | 168,0               | 383,0               |
| 69694    | 8 G 2,5                                | 14      | 16,0            | 192,0               | 441,0               |
| 69695    | 9 G 2,5                                | 14      | 16,0            | 216,0               | 468,0               |
| 69696    | 10 G 2,5                               | 14      | 17,1            | 240,0               | 507,0               |
| 69697    | 12 G 2,5                               | 14      | 17,7            | 288,0               | 571,0               |
| 69698    | 18 G 2,5                               | 14      | 20,8            | 432,0               | 857,0               |
| 69699    | 25 G 2,5                               | 14      | 25,8            | 600,0               | 1267,0              |
| 69700    | 3 G 4                                  | 12      | 11,0            | 115,0               | 236,0               |
| 69701    | 4 G 4                                  | 12      | 12,0            | 154,0               | 289,0               |
| 69702    | 5 G 4                                  | 12      | 13,2            | 192,0               | 345,0               |
| 69703    | 7 G 4                                  | 12      | 16,5            | 269,0               | 521,0               |
| 69704    | 9 G 4                                  | 12      | 17,8            | 346,0               | 710,0               |
| 69705    | 12 G 4                                 | 12      | 19,9            | 461,0               | 803,0               |
| 69706    | 18 G 4                                 | 12      | 24,2            | 691,0               | 1220,0              |
| 69707    | 3 G 6                                  | 10      | 12,5            | 173,0               | 311,0               |
| 69708    | 4 G 6                                  | 10      | 14,5            | 230,0               | 413,0               |
| 69709    | 5 G 6                                  | 10      | 15,8            | 288,0               | 482,0               |
| 69710    | 7 G 6                                  | 10      | 17,3            | 403,0               | 677,0               |
| 69711    | 3 G 10                                 | 8       | 17,2            | 288,0               | 582,0               |
| 69712    | 4 G 10                                 | 8       | 18,9            | 384,0               | 738,0               |
| 69713    | 5 G 10                                 | 8       | 20,8            | 480,0               | 919,0               |
| 69714    | 7 G 10                                 | 8       | 23,7            | 672,0               | 1202,0              |

Continuation ▶

# JZ-604 TC TRAY CABLE

PVC power cable, open installation TC-ER, NFPA 79, 90°C, 600 V, meter marking



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 69715    | 3 G 16                                 | 6       | 21,0            | 461,0               | 937,0               |
| 69716    | 4 G 16                                 | 6       | 23,9            | 614,0               | 1225,0              |
| 69717    | 5 G 16                                 | 6       | 26,3            | 768,0               | 1508,0              |
| 69718    | 7 G 16                                 | 6       | 28,8            | 1075,0              | 1755,0              |
| 69719    | 3 G 25                                 | 4       | 24,9            | 720,0               | 1388,0              |
| 69720    | 4 G 25                                 | 4       | 27,4            | 960,0               | 1706,0              |
| 69721    | 5 G 25                                 | 4       | 30,3            | 1200,0              | 2036,0              |
| 69722    | 7 G 25                                 | 4       | 33,1            | 1680,0              | 2650,0              |
| 69723    | 3 G 35                                 | 2       | 27,1            | 1008,0              | 1760,0              |
| 69724    | 4 G 35                                 | 2       | 29,8            | 1344,0              | 2174,0              |
| 69725    | 5 G 35                                 | 2       | 33,0            | 1680,0              | 2716,0              |
| 69726    | 3 G 50                                 | 1       | 33,2            | 1440,0              | 2570,0              |
| 69727    | 4 G 50                                 | 1       | 36,7            | 1920,0              | 3236,0              |
| 69728    | 5 G 50                                 | 1       | 41,5            | 2400,0              | 3969,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 69729    | 3 G 70                                 | 2/0       | 37,6            | 2016,0              | 3304,0              |
| 69730    | 4 G 70                                 | 2/0       | 42,0            | 2688,0              | 4154,0              |
| 69731    | 5 G 70                                 | 2/0       | 48,4            | 3360,0              | 5427,0              |
| 69732    | 3 G 95                                 | 3/0       | 41,8            | 2736,0              | 4230,0              |
| 69733    | 4 G 95                                 | 3/0       | 47,0            | 3648,0              | 5562,0              |
| 69734    | 5 G 95                                 | 3/0       | 52,5            | 4560,0              | 6945,0              |
| 69735    | 3 G 120                                | 4/0       | 46,0            | 3456,0              | 5490,0              |
| 69736    | 4 G 120                                | 4/0       | 51,5            | 4608,0              | 7032,0              |
| 69737    | 5 G 120                                | 4/0       | 56,5            | 5760,0              | 8488,0              |
| 59378    | 4 G 150                                | 300 kcmil | 58,0            | 5760,0              | 8000,0              |
| 59379    | 4 G 185                                | 350 kcmil | 60,0            | 7104,0              | 9000,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-604-YCY TC TRAY CABLE

PVC power cable, screened, open installation TC-ER, NFPA 79, 90°C, 600 V, EMC-preferred type, meter marking



## Technical data

- PVC power cable, screened to UL Std. 1277 TRAY CABLE
- **Multinorm**  
also conforms to the following standards: AWM-Style 2587 to UL Std. 758 and CSA C22.2 No 210 I/II A/B 90°C 600 V
- **Temperature range**  
dry environment  
flexing -5°C to +90°C  
fixed installation -25°C to +90°C  
wet environment  
flexing -5°C to +75°C  
fixed installation -25°C to +75°C
- **Nominal voltage**  
UL 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Minimum bending radius**  
10x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC class 12 B to tab.50.155 acc. to UL Std.1581 type THHW acc. to UL Std.83
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC-inner sheath acc. to UL Std.1277 tab.11.2
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of special PVC acc. to UL Std.1277 tab.11.2,
- Sheath colour: black (RAL 9005)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- UL OIL RES I
- Class 1 Div. 2 per NEC Art. 336, 392, 501

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**JZ 604 TC TRAY CABLE**

## Application

USA NFPA 79 conformant flexible power cables up to 600 V, for all machinery in tool and plant construction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 69804    | 3 G 16                                 | 6       | 25,2            | 653,0               | 1060,0              |
| 69805    | 4 G 16                                 | 6       | 27,8            | 807,0               | 1572,0              |
| 69806    | 5 G 16                                 | 6       | 31,2            | 940,0               | 2002,0              |
| 69807    | 7 G 16                                 | 6       | 34,5            | 1345,0              | 2604,0              |
| 69808    | 3 G 25                                 | 4       | 29,0            | 920,0               | 1955,0              |
| 69809    | 4 G 25                                 | 4       | 32,4            | 1169,0              | 2218,0              |
| 69810    | 5 G 25                                 | 4       | 36,4            | 1420,0              | 2757,0              |
| 69811    | 7 G 25                                 | 4       | 40,3            | 1921,0              | 3523,0              |
| 69812    | 3 G 35                                 | 2       | 32,4            | 1250,0              | 2289,0              |
| 69813    | 4 G 35                                 | 2       | 36,2            | 1680,0              | 2926,0              |
| 69814    | 5 G 35                                 | 2       | 40,5            | 2020,0              | 3545,0              |
| 69815    | 3 G 50                                 | 1       | 40,4            | 1887,0              | 3379,0              |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 69816    | 4 G 50                                 | 1       | 45,5            | 2370,0              | 4439,0              |
| 69817    | 5 G 50                                 | 1       | 50,0            | 2880,0              | 5312,0              |
| 69818    | 3 G 70                                 | 2/0     | 46,7            | 2516,0              | 4557,0              |
| 69819    | 4 G 70                                 | 2/0     | 51,1            | 3257,0              | 5632,0              |
| 69820    | 5 G 70                                 | 2/0     | 56,0            | 4032,0              | 6681,0              |
| 69821    | 3 G 95                                 | 3/0     | 50,1            | 3086,0              | 5612,0              |
| 69822    | 4 G 95                                 | 3/0     | 55,0            | 4060,0              | 6820,0              |
| 69823    | 5 G 95                                 | 3/0     | 60,5            | 5244,0              | 8172,0              |
| 69824    | 3 G 120                                | 4/0     | 54,0            | 4176,0              | 6711,0              |
| 69825    | 4 G 120                                | 4/0     | 59,5            | 5231,0              | 8256,0              |
| 69826    | 5 G 120                                | 4/0     | 64,5            | 6624,0              | 10233,0             |

Dimensions and specifications may be changed without prior notice. (RN01)



# TRAYCONTROL® 600

flexible, oil resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



## Technical data

- PVC power cable acc. to UL Std. 1277 and UL Std. 2277
- **Temperature range**  
UL/CSA TC -40°C to +90°C  
UL/AWM -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
5x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), UL Type WTTTC, UL Type MTW, NFPA 79, Oil Res I (Oil Res II also available), 90° C dry / 75° C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- TC-ER, Tray Cable Exposed Run
- Simple installation
- Outstanding flexibility

## Application

NFPA 79 conformant flexible power cable up to 600 V (WTTTC 1000 V), for all machinery in plant construction. Suitable for installation in dry, humid and damp environments, outdoors and pipes. For underground installation and for open, unprotected installation from the cable rack to machines in industrial plants.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62020    | 0,507                         | 2 x 20              | 6,6             | 9,8                 | 60,0                |
| 62021    | 0,507                         | 3 x 20              | 7,0             | 14,6                | 64,0                |
| 62022    | 0,507                         | 4 x 20              | 7,5             | 19,5                | 79,0                |
| 62023    | 0,507                         | 5 x 20              | 8,1             | 24,4                | 92,0                |
| 62024    | 0,507                         | 7 x 20              | 8,7             | 34,1                | 124,0               |
| 62025    | 0,507                         | 9 x 20              | 9,8             | 43,8                | 210,0               |
| 62026    | 0,507                         | 12 x 20             | 10,1            | 58,4                | 263,0               |
| 62027    | 0,507                         | 18 x 20             | 12,9            | 87,6                | 305,0               |
| 62028    | 0,507                         | 25 x 20             | 15,7            | 121,7               | 371,0               |
| 62902    | 0,963                         | 2 x 18              | 7,3             | 18,5                | 68,0                |
| 62903    | 0,963                         | 3 x 18              | 7,6             | 27,8                | 68,0                |
| 62904    | 0,963                         | 4 x 18              | 8,2             | 37,0                | 97,0                |
| 62905    | 0,963                         | 5 x 18              | 8,9             | 46,3                | 116,0               |
| 62906    | 0,963                         | 7 x 18              | 9,6             | 64,8                | 147,0               |
| 62907    | 0,963                         | 9 x 18              | 11,0            | 83,2                | 186,0               |
| 62908    | 0,963                         | 10 x 18             | 11,6            | 92,5                | 199,0               |
| 62909    | 0,963                         | 12 x 18             | 12,2            | 111,0               | 250,0               |
| 62910    | 0,963                         | 15 x 18             | 13,5            | 138,7               | 292,0               |
| 62911    | 0,963                         | 16 x 18             | 13,6            | 147,9               | 306,0               |
| 62912    | 0,963                         | 18 x 18             | 15,0            | 166,4               | 365,0               |
| 62913    | 0,963                         | 19 x 18             | 15,1            | 175,7               | 384,0               |
| 62914    | 0,963                         | 25 x 18             | 17,4            | 231,2               | 480,0               |
| 62915    | 0,963                         | 27 x 18             | 17,7            | 249,6               | 521,0               |
| 62916    | 0,963                         | 34 x 18             | 19,7            | 314,4               | 625,0               |
| 62917    | 0,963                         | 37 x 18             | 20,1            | 342,0               | 684,0               |
| 62918    | 0,963                         | 41 x 18             | 21,0            | 379,0               | 744,0               |
| 62919    | 0,963                         | 50 x 18             | 24,0            | 462,3               | 933,0               |
| 62920    | 0,963                         | 61 x 18             | 25,2            | 564,0               | 1095,0              |
| 62921    | 1,31                          | 2 x 16              | 7,8             | 25,2                | 80,0                |
| 62922    | 1,31                          | 3 x 16              | 8,2             | 37,8                | 86,0                |

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62923    | 1,31                          | 4 x 16              | 8,8             | 50,3                | 120,0               |
| 62924    | 1,31                          | 5 x 16              | 9,6             | 62,9                | 130,0               |
| 62925    | 1,31                          | 6 x 16              | 10,2            | 75,5                | 164,0               |
| 62926    | 1,31                          | 7 x 16              | 10,5            | 88,0                | 188,0               |
| 62927    | 1,31                          | 8 x 16              | 11,1            | 100,7               | 201,0               |
| 62928    | 1,31                          | 9 x 16              | 12,0            | 113,2               | 238,0               |
| 62929    | 1,31                          | 10 x 16             | 12,4            | 125,8               | 259,0               |
| 62930    | 1,31                          | 12 x 16             | 13,6            | 151,0               | 301,0               |
| 62931    | 1,31                          | 14 x 16             | 14,5            | 176,1               | 356,0               |
| 62932    | 1,31                          | 15 x 16             | 15,2            | 188,7               | 379,0               |
| 62933    | 1,31                          | 16 x 16             | 16,0            | 201,3               | 405,0               |
| 62934    | 1,31                          | 18 x 16             | 16,4            | 226,4               | 430,0               |
| 62935    | 1,31                          | 19 x 16             | 16,6            | 239,0               | 450,0               |
| 62936    | 1,31                          | 20 x 16             | 17,2            | 251,6               | 481,0               |
| 62937    | 1,31                          | 25 x 16             | 18,9            | 314,5               | 564,0               |
| 62938    | 1,31                          | 27 x 16             | 19,3            | 339,6               | 629,0               |
| 62939    | 1,31                          | 30 x 16             | 20,0            | 377,3               | 701,0               |
| 62940    | 1,31                          | 34 x 16             | 22,5            | 427,6               | 775,0               |
| 62941    | 1,31                          | 40 x 16             | 23,5            | 503,1               | 946,0               |
| 62942    | 1,31                          | 41 x 16             | 24,0            | 515,7               | 967,0               |
| 62943    | 1,31                          | 50 x 16             | 26,1            | 628,8               | 1137,0              |
| 62944    | 1,31                          | 61 x 16             | 27,5            | 767,2               | 1345,0              |
| 62945    | 2,08                          | 2 x 14              | 8,9             | 40,0                | 100,0               |
| 62946    | 2,08                          | 3 x 14              | 9,2             | 60,0                | 117,0               |
| 62947    | 2,08                          | 4 x 14              | 10,1            | 80,0                | 141,0               |
| 62948    | 2,08                          | 5 x 14              | 10,9            | 100,0               | 152,0               |
| 62949    | 2,08                          | 6 x 14              | 11,5            | 120,0               | 216,0               |
| 62950    | 2,08                          | 7 x 14              | 12,0            | 140,0               | 255,0               |
| 62951    | 2,08                          | 9 x 14              | 14,7            | 180,0               | 312,0               |
| 62952    | 2,08                          | 10 x 14             | 15,8            | 200,0               | 378,0               |

Continuation ▶

# TRAYCONTROL® 600

flexible, oil resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62953    | 2,08                          | 12 x 14             | 16,4            | 240,0               | 434,0               |
| 62954    | 2,08                          | 16 x 14             | 18,0            | 320,0               | 550,0               |
| 62955    | 2,08                          | 18 x 14             | 18,9            | 359,0               | 616,0               |
| 62956    | 2,08                          | 19 x 14             | 19,0            | 380,0               | 634,0               |
| 62957    | 2,08                          | 25 x 14             | 23,0            | 500,0               | 817,0               |
| 62958    | 3,31                          | 2 x 12              | 9,7             | 63,0                | 132,0               |
| 62959    | 3,31                          | 3 x 12              | 10,2            | 95,0                | 177,0               |
| 62960    | 3,31                          | 4 x 12              | 11,2            | 127,0               | 201,0               |
| 62961    | 3,31                          | 5 x 12              | 12,3            | 159,0               | 274,0               |
| 62962    | 3,31                          | 6 x 12              | 13,6            | 191,0               | 315,0               |
| 62963    | 3,31                          | 7 x 12              | 13,9            | 222,0               | 353,0               |
| 62964    | 3,31                          | 9 x 12              | 16,4            | 286,0               | 476,0               |
| 62965    | 3,31                          | 12 x 12             | 18,3            | 381,0               | 613,0               |
| 62966    | 3,31                          | 16 x 12             | 19,8            | 508,0               | 783,0               |
| 62967    | 3,31                          | 19 x 12             | 22,3            | 604,0               | 918,0               |
| 62968    | 3,31                          | 20 x 12             | 23,1            | 636,0               | 916,0               |
| 62969    | 3,31                          | 25 x 12             | 25,8            | 794,0               | 1286,0              |
| 62970    | 5,26                          | 2 x 10              | 12,2            | 101,0               | 213,0               |
| 62971    | 5,26                          | 3 x 10              | 12,9            | 151,5               | 283,0               |
| 62972    | 5,26                          | 4 x 10              | 15,0            | 202,0               | 387,0               |
| 62973    | 5,26                          | 5 x 10              | 16,3            | 252,5               | 473,0               |
| 62974    | 5,26                          | 7 x 10              | 17,7            | 353,5               | 607,0               |

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 62975    | 5,26                          | 9 x 10              | 20,6            | 454,5               | 771,0               |
| 62976    | 5,26                          | 12 x 10             | 24,1            | 606,0               | 1061,0              |
| 62977    | 5,26                          | 19 x 10             | 27,2            | 959,5               | 1528,0              |
| 62978    | 8,37                          | 4 x 8               | 19,2            | 321,4               | 615,0               |
| 62979    | 8,37                          | 5 x 8               | 21,0            | 401,8               | 768,0               |
| 62980    | 13,3                          | 3 x 6               | 19,5            | 383,1               | 700,0               |
| 62981    | 13,3                          | 4 x 6               | 22,4            | 510,7               | 907,0               |
| 62982    | 13,3                          | 5 x 6               | 24,5            | 638,4               | 1100,0              |
| 62983    | 21,2                          | 3 x 4               | 24,4            | 610,6               | 1061,0              |
| 62984    | 21,2                          | 4 x 4               | 27,0            | 814,1               | 1366,0              |
| 62985    | 21,2                          | 5 x 4               | 29,9            | 1017,6              | 1631,0              |
| 62986    | 33,6                          | 3 x 2               | 28,2            | 967,7               | 1480,0              |
| 62987    | 33,6                          | 4 x 2               | 31,4            | 1290,3              | 1922,0              |
| 62988    | 33,6                          | 5 x 2               | 34,6            | 1612,8              | 2360,0              |
| 62989    | 42,3                          | 4 x 1               | 35,6            | 1624,0              | 2397,0              |
| 62990    | 52,9                          | 4 x 1/0             | 38,7            | 2031,0              | 2938,0              |
| 62991    | 67,3                          | 4 x 2/0             | 42,1            | 2584,0              | 3569,0              |
| 62992    | 84,4                          | 4 x 3/0             | 49,4            | 3256,0              | 4181,0              |
| 62993    | 106,7                         | 4 x 4/0             | 52,0            | 4097,0              | 5747,0              |
| 62994    | 128,4                         | 4 x 250 kcmil       | 55,8            | 4931,0              | 7591,0              |
| 62995    | 181,9                         | 4 x 350 kcmil       | 64,3            | 6985,0              | 8299,0              |
| 62996    | 257,6                         | 4 x 500 kcmil       | 74,1            | 9892,0              | 11549,0             |

Dimensions and specifications may be changed without prior notice. (RN01)

# TRAYCONTROL® 600-C

flexible, oil resistant, screened, open installation (TC-ER), NFPA 79,  
EMC-preferred type



## Technical data

- PVC power cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
UL/CSA TC -40°C to +90°C  
AWM -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
6x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), UL Type WTTTC, UL Type MTW  
NFPA 79, Oil Res I (Oil Res II also available), 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- TC-ER, Tray Cable Exposed Run
- Simple installation
- Outstanding flexibility

## Application

USA NFPA 79 compliant, screened, flexible power cable to 600 V (WTTTC 1000 V), for all tool and plant construction machinery, suitable for installation in dry, damp and wet environments, outdoors and in pipes. For underground installation and for open, unprotected installation from the cable tray to the machine and industrial plants.

EMC = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63049    | 0,963                         | 3 x 18              | 8,2             | 31,0                | 118,0               |
| 63050    | 0,963                         | 4 x 18              | 8,8             | 52,0                | 136,0               |
| 63051    | 0,963                         | 5 x 18              | 9,4             | 62,0                | 149,0               |
| 63052    | 0,963                         | 7 x 18              | 10,1            | 83,0                | 193,0               |
| 63053    | 0,963                         | 12 x 18             | 12,9            | 143,0               | 328,0               |
| 63054    | 0,963                         | 18 x 18             | 15,7            | 207,0               | 431,0               |
| 63055    | 0,963                         | 25 x 18             | 17,7            | 284,0               | 569,0               |
| 62997    | 1,31                          | 3 x 16              | 8,9             | 57,0                | 144,0               |
| 63056    | 1,31                          | 4 x 16              | 9,6             | 72,0                | 172,0               |
| 63057    | 1,31                          | 5 x 16              | 10,3            | 84,0                | 186,0               |
| 63058    | 1,31                          | 7 x 16              | 11,3            | 124,0               | 243,0               |
| 63059    | 1,31                          | 12 x 16             | 15,1            | 199,0               | 421,0               |
| 63060    | 1,31                          | 18 x 16             | 17,3            | 290,0               | 510,0               |
| 63061    | 1,31                          | 25 x 16             | 19,6            | 384,0               | 704,0               |
| 63062    | 2,08                          | 3 x 14              | 9,8             | 85,0                | 178,0               |
| 63063    | 2,08                          | 4 x 14              | 10,7            | 115,0               | 220,0               |

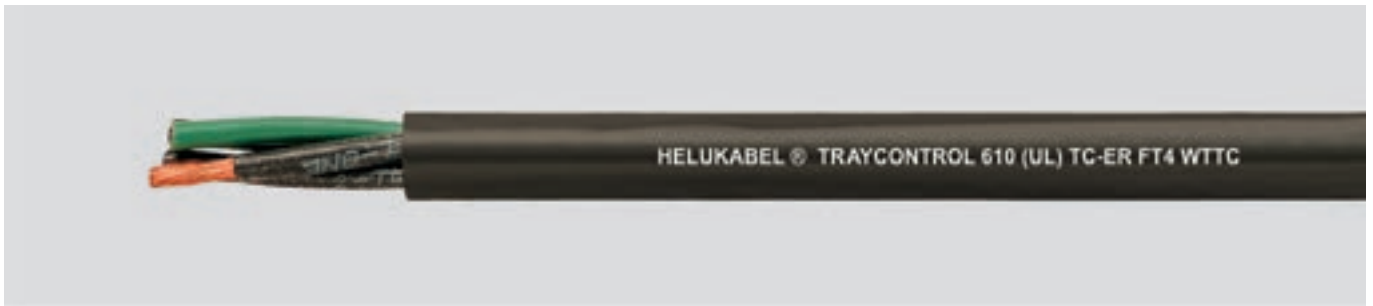
| Part no. | Cross-section mm <sup>2</sup> | No. cores x AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|-------------------------------|---------------------|-----------------|---------------------|---------------------|
| 63064    | 2,08                          | 5 x 14              | 11,6            | 139,0               | 264,0               |
| 63065    | 2,08                          | 7 x 14              | 12,5            | 185,0               | 325,0               |
| 63066    | 2,08                          | 12 x 14             | 16,9            | 309,0               | 591,0               |
| 63067    | 2,08                          | 18 x 14             | 19,5            | 448,0               | 780,0               |
| 63068    | 2,08                          | 25 x 14             | 23,3            | 632,0               | 1041,0              |
| 63069    | 3,31                          | 4 x 12              | 12,2            | 179,0               | 313,0               |
| 63070    | 3,31                          | 5 x 12              | 13,4            | 223,0               | 384,0               |
| 63071    | 3,31                          | 7 x 12              | 15,5            | 298,0               | 492,0               |
| 63072    | 5,26                          | 4 x 10              | 15,5            | 256,0               | 547,0               |
| 63073    | 5,26                          | 5 x 10              | 16,8            | 312,0               | 608,0               |
| 63074    | 5,26                          | 7 x 10              | 18,2            | 430,0               | 850,0               |
| 63075    | 8,37                          | 4 x 8               | 19,9            | 426,0               | 851,0               |
| 63076    | 13,3                          | 4 x 6               | 23,3            | 657,0               | 1197,0              |
| 63077    | 21,2                          | 4 x 4               | 28,6            | 1026,0              | 1970,0              |
| 63078    | 33,6                          | 4 x 2               | 33,2            | 1412,0              | 2874,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# TRAYCONTROL 610 OIL RES II

WTTC (2277) UL 1277 FT4

TRAY CABLE for open installation (TC-ER), NFPA 79



## Technical data

- Special power cable acc. to UL 1277; WTTC (2277)
- **Temperature range**  
UL/CSA TC -40°C to +90°C  
UL/AWM -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
5x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductors, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5 with AWG dimensions
- Core insulation of special PVC with transparent Nylon skin
- Core identification black with numbers + gnye (JZ)  
G = with GN-YE conductor (JZ)  
X = without ground (OZ)
- Multiconductor conductors stranded
- Separator
- Special compound blend outer sheath
- Sheath colour: black
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
Oil Res I/II, Class 1,  
Div. 2 per NEC Art. 336, 392, 501  
UL Type 2277 (WTTC), TC-ER,  
PLTC-ER (AWG 18 - AWG 12),  
ITC-ER (AWG 18 - AWG 12), UL 1277 (TC),  
UL Type MTW or Type AWM, NFPA 79,  
90° C dry / 75° C wet

## CSA:

c(UL) Type TC & CIC FT4,  
CSA AWM I/II A/B FT4

## Note

### Advantages:

- TC-ER rated
- Meets TC (UL 1277) & WTTC (UL 2277)

### Requirements:

- Simple installation
  - Outstanding flexibility
  - Exceptional abrasion resistance
  - Oil Res I/II approved
  - Torsion resistant for Wind Power application
- For more information, especially on custom cables, please contact us:  
wind@helukabel.de

## Application

USA NFPA 79 compliant flexible power cables to 600 V (WTTC 1000 V) for all wind energy, tool and plant construction machinery applications. Suitable for installation in dry, damp and wet environments, outdoors and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ▶

# TRAYCONTROL 610 OIL RES II

WTTT (2277) UL 1277 FT4

TRAY CABLE for open installation (TC-ER), NFPA 79



| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 706194   | 2 G 1                                  | 18      | 7,0             | 19,0                | 68,0                |
| 706195   | 3 G 1                                  | 18      | 7,3             | 29,0                | 88,0                |
| 706196   | 4 G 1                                  | 18      | 8,0             | 39,0                | 98,0                |
| 706197   | 5 G 1                                  | 18      | 8,6             | 48,0                | 116,0               |
| 706198   | 7 G 1                                  | 18      | 10,0            | 67,0                | 149,0               |
| 706199   | 9 G 1                                  | 18      | 10,7            | 86,0                | 186,0               |
| 706200   | 10 G 1                                 | 18      | 11,6            | 96,0                | 199,0               |
| 706201   | 12 G 1                                 | 18      | 11,8            | 115,0               | 245,0               |
| 706202   | 15 G 1                                 | 18      | 13,2            | 144,0               | 292,0               |
| 706203   | 16 G 1                                 | 18      | 13,3            | 154,0               | 306,0               |
| 706204   | 18 G 1                                 | 18      | 13,9            | 173,0               | 366,0               |
| 706205   | 19 G 1                                 | 18      | 14,7            | 182,0               | 384,0               |
| 706206   | 25 G 1                                 | 18      | 17,0            | 240,0               | 451,0               |
| 706207   | 27 G 1                                 | 18      | 17,4            | 259,0               | 521,0               |
| 706208   | 34 G 1                                 | 18      | 19,3            | 326,0               | 625,0               |
| 706209   | 37 G 1                                 | 18      | 19,8            | 355,0               | 684,0               |
| 706210   | 41 G 1                                 | 18      | 20,7            | 384,0               | 744,0               |
| 706211   | 50 G 1                                 | 18      | 23,5            | 480,0               | 933,0               |
| 706212   | 61 G 1                                 | 18      | 24,9            | 586,0               | 1095,0              |
| 706213   | 2 G 1,32                               | 16      | 7,5             | 25,0                | 80,0                |
| 706214   | 3 G 1,32                               | 16      | 8,0             | 38,0                | 86,0                |
| 706215   | 4 G 1,32                               | 16      | 8,9             | 51,0                | 115,0               |
| 706216   | 5 G 1,32                               | 16      | 9,7             | 63,0                | 126,0               |
| 706217   | 6 G 1,32                               | 16      | 10,0            | 76,0                | 164,0               |
| 706218   | 7 G 1,32                               | 16      | 12,0            | 89,0                | 171,0               |
| 706219   | 8 G 1,32                               | 16      | 10,9            | 101,0               | 201,0               |
| 706220   | 9 G 1,32                               | 16      | 11,7            | 114,0               | 237,0               |
| 706221   | 10 G 1,32                              | 16      | 12,4            | 127,0               | 259,0               |
| 706222   | 12 G 1,32                              | 16      | 14,3            | 152,0               | 301,0               |
| 706223   | 14 G 1,32                              | 16      | 14,5            | 177,0               | 365,0               |
| 706224   | 15 G 1,32                              | 16      | 15,0            | 190,0               | 379,0               |
| 706225   | 16 G 1,32                              | 16      | 15,2            | 203,0               | 405,0               |
| 706226   | 18 G 1,32                              | 16      | 16,8            | 228,0               | 443,0               |
| 706227   | 19 G 1,32                              | 16      | 16,0            | 241,0               | 458,0               |
| 706228   | 20 G 1,32                              | 16      | 16,5            | 253,0               | 491,0               |
| 706229   | 25 G 1,32                              | 16      | 18,6            | 317,0               | 564,0               |
| 706230   | 27 G 1,32                              | 16      | 19,0            | 342,0               | 629,0               |
| 706231   | 30 G 1,32                              | 16      | 19,6            | 380,0               | 701,0               |
| 706232   | 34 G 1,32                              | 16      | 20,5            | 420,0               | 775,0               |
| 706233   | 40 G 1,32                              | 16      | 22,9            | 482,0               | 946,0               |
| 706234   | 41 G 1,32                              | 16      | 23,4            | 513,0               | 967,0               |
| 706235   | 50 G 1,32                              | 16      | 25,1            | 626,0               | 1137,0              |
| 706236   | 61 G 1,32                              | 16      | 27,2            | 762,0               | 1345,0              |
| 706237   | 2 G 2,08                               | 14      | 8,6             | 40,0                | 100,0               |
| 706238   | 3 G 2,08                               | 14      | 10,0            | 60,0                | 112,0               |
| 706239   | 4 G 2,08                               | 14      | 10,5            | 80,0                | 141,0               |
| 706240   | 5 G 2,08                               | 14      | 10,9            | 100,0               | 152,0               |
| 706241   | 6 G 2,08                               | 14      | 11,6            | 120,0               | 205,0               |
| 706242   | 9 G 2,08                               | 14      | 13,5            | 180,0               | 312,0               |
| 706243   | 10 G 2,08                              | 14      | 15,5            | 200,0               | 378,0               |
| 706244   | 12 G 2,08                              | 14      | 15,9            | 240,0               | 434,0               |
| 706245   | 16 G 2,08                              | 14      | 17,6            | 319,0               | 550,0               |
| 706246   | 18 G 2,08                              | 14      | 18,3            | 359,0               | 616,0               |
| 706247   | 19 G 2,08                              | 14      | 18,5            | 380,0               | 634,0               |
| 706248   | 25 G 2,08                              | 14      | 21,6            | 500,0               | 817,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No.   | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|-----------|-----------------|---------------------|---------------------|
| 706249   | 2 G 3,31                               | 12        | 9,5             | 63,0                | 132,0               |
| 706250   | 3 G 3,31                               | 12        | 10,8            | 95,0                | 177,0               |
| 706251   | 4 G 3,31                               | 12        | 12,0            | 127,0               | 201,0               |
| 706252   | 5 G 3,31                               | 12        | 13,6            | 159,0               | 274,0               |
| 706253   | 6 G 3,31                               | 12        | 13,0            | 191,0               | 315,0               |
| 706254   | 7 G 3,31                               | 12        | 15,9            | 222,0               | 353,0               |
| 706255   | 9 G 3,31                               | 12        | 15,9            | 286,0               | 476,0               |
| 706256   | 12 G 3,31                              | 12        | 17,8            | 381,0               | 613,0               |
| 706257   | 16 G 3,31                              | 12        | 19,8            | 508,0               | 783,0               |
| 706258   | 19 G 3,31                              | 12        | 20,8            | 604,0               | 918,0               |
| 706259   | 20 G 3,31                              | 12        | 21,9            | 636,0               | 961,0               |
| 706260   | 25 G 3,31                              | 12        | 25,3            | 794,0               | 1236,0              |
| 706261   | 2 G 6                                  | 10        | 11,9            | 115,0               | 213,0               |
| 706262   | 3 G 6                                  | 10        | 13,1            | 173,0               | 283,0               |
| 706263   | 4 G 6                                  | 10        | 14,7            | 230,0               | 387,0               |
| 706264   | 5 G 6                                  | 10        | 16,3            | 288,0               | 473,0               |
| 706265   | 7 G 6                                  | 10        | 19,6            | 403,0               | 607,0               |
| 706266   | 9 G 6                                  | 10        | 20,4            | 518,0               | 771,0               |
| 706267   | 12 G 6                                 | 10        | 23,9            | 691,0               | 1061,0              |
| 706268   | 19 G 6                                 | 10        | 27,9            | 1094,0              | 1528,0              |
| 706269   | 4 G 10                                 | 8         | 17,4            | 384,0               | 662,0               |
| 706270   | 5 G 10                                 | 8         | 20,1            | 480,0               | 784,0               |
| 706271   | 3 G 16                                 | 6         | 18,5            | 461,0               | 701,0               |
| 706272   | 4 G 16                                 | 6         | 20,7            | 614,0               | 908,0               |
| 706273   | 5 G 16                                 | 6         | 25,8            | 768,0               | 1149,0              |
| 706274   | 3 G 25                                 | 4         | 24,3            | 720,0               | 1060,0              |
| 706275   | 4 G 25                                 | 4         | 26,5            | 960,0               | 1366,0              |
| 706276   | 5 G 25                                 | 4         | 28,2            | 1200,0              | 1631,0              |
| 706277   | 3 G 35                                 | 2         | 27,9            | 1008,0              | 1480,0              |
| 706278   | 4 G 35                                 | 2         | 31,4            | 1344,0              | 1922,0              |
| 706279   | 5 G 35                                 | 2         | 35,4            | 1680,0              | 2363,0              |
| 706280   | 4 G 42,3                               | 1         | 34,1            | 360,0               | 2397,0              |
| 706281   | 4 G 52,9                               | 1/0       | 37,9            | 441,0               | 2938,0              |
| 706282   | 4 G 67,3                               | 2/0       | 41,3            | 584,0               | 3559,0              |
| 706283   | 4 G 84,8                               | 3/0       | 48,6            | 741,0               | 4181,0              |
| 706284   | 4 G 106,7                              | 4/0       | 51,2            | 932,0               | 5747,0              |
| 706285   | 4 G 128,4                              | 250 kcmil | 55,0            | 4931,0              | 7591,0              |
| 706286   | 4 G 181,9                              | 350 kcmil | 63,5            | 6985,0              | 8299,0              |
| 706287   | 4 G 257,6                              | 500 kcmil | 73,7            | 9892,0              | 10549,0             |

Dimensions and specifications may be changed without prior notice.

# MULTIFLEX 600

highly flexible, oil resistant, open installation TC-ER, PLTC-ER, NFPA 79



## Technical data

- Highly flexible PVC control cable acc. to UL Std.1277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 7,5x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire stranded, with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, simple installation

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Grey or TPE outer sheath

## Application

HELUKABEL® MULTIFLEX 600 is a highly flexible, oil resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. Please observe applicable installation regulations for use in energy supply chains.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 62502    | 2 x 0,5                                | 20      | 6,9             | 10,0                | 53,0                |
| 62503    | 3 G 0,5                                | 20      | 7,3             | 14,0                | 61,0                |
| 62504    | 4 G 0,5                                | 20      | 8,0             | 19,0                | 72,0                |
| 62505    | 5 G 0,5                                | 20      | 8,6             | 24,0                | 85,0                |
| 62506    | 7 G 0,5                                | 20      | 9,9             | 34,0                | 110,0               |
| 62507    | 12 G 0,5                               | 20      | 11,4            | 58,0                | 158,0               |
| 62508    | 18 G 0,5                               | 20      | 14,2            | 86,0                | 241,0               |
| 62509    | 25 G 0,5                               | 20      | 17,0            | 120,0               | 316,0               |
| 62510    | 34 G 0,5                               | 20      | 18,9            | 163,0               | 439,0               |
| 62511    | 3 G 0,75                               | 18      | 7,8             | 22,0                | 75,0                |
| 62512    | 4 G 0,75                               | 18      | 8,6             | 29,0                | 91,0                |
| 62513    | 5 G 0,75                               | 18      | 9,3             | 36,0                | 103,0               |
| 62514    | 7 G 0,75                               | 18      | 10,8            | 50,0                | 136,0               |
| 62515    | 12 G 0,75                              | 18      | 12,4            | 86,0                | 228,0               |
| 62516    | 15 G 0,75                              | 18      | 13,8            | 108,0               | 273,0               |
| 62517    | 18 G 0,75                              | 18      | 15,4            | 130,0               | 311,0               |
| 62518    | 25 G 0,75                              | 18      | 18,5            | 180,0               | 498,0               |
| 62519    | 34 G 0,75                              | 18      | 20,5            | 245,0               | 550,0               |
| 62520    | 36 G 0,75                              | 18      | 20,6            | 259,0               | 570,0               |
| 62521    | 42 G 0,75                              | 18      | 22,3            | 302,0               | 600,0               |
| 62522    | 3 G 1,5                                | 16      | 8,6             | 43,0                | 100,0               |
| 62523    | 4 G 1,5                                | 16      | 9,5             | 58,0                | 122,0               |
| 62524    | 5 G 1,5                                | 16      | 10,3            | 72,0                | 148,0               |
| 62525    | 7 G 1,5                                | 16      | 12,0            | 101,0               | 197,0               |
| 62526    | 9 G 1,5                                | 16      | 14,2            | 130,0               | 244,0               |
| 62527    | 12 G 1,5                               | 16      | 14,7            | 173,0               | 328,0               |
| 62528    | 18 G 1,5                               | 16      | 17,2            | 259,0               | 459,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 62529    | 25 G 1,5                               | 16      | 20,8            | 360,0               | 665,0               |
| 62530    | 34 G 1,5                               | 16      | 23,0            | 490,0               | 1084,0              |
| 62531    | 41 G 1,5                               | 16      | 25,1            | 590,0               | 1260,0              |
| 62532    | 50 G 1,5                               | 16      | 27,7            | 720,0               | 1521,0              |
| 62533    | 60 G 1,5                               | 16      | 29,5            | 864,0               | 1885,0              |
| 62534    | 3 G 2,5                                | 14      | 9,8             | 72,0                | 160,0               |
| 63136    | 4 G 2,5                                | 14      | 10,6            | 96,0                | 173,0               |
| 62535    | 5 G 2,5                                | 14      | 11,9            | 120,0               | 268,0               |
| 62536    | 7 G 2,5                                | 14      | 13,6            | 168,0               | 307,0               |
| 62537    | 9 G 2,5                                | 14      | 16,1            | 216,0               | 437,0               |
| 62538    | 12 G 2,5                               | 14      | 16,9            | 288,0               | 572,0               |
| 62539    | 18 G 2,5                               | 14      | 20,1            | 432,0               | 800,0               |
| 62540    | 25 G 2,5                               | 14      | 25,1            | 600,0               | 1100,0              |
| 62541    | 3 G 4                                  | 12      | 11,3            | 115,0               | 221,0               |
| 62542    | 4 G 4                                  | 12      | 12,4            | 154,0               | 247,0               |
| 62543    | 5 G 4                                  | 12      | 13,8            | 192,0               | 318,0               |
| 62544    | 7 G 4                                  | 12      | 16,9            | 269,0               | 438,0               |
| 62545    | 4 G 6                                  | 10      | 15,3            | 230,0               | 383,0               |
| 62546    | 5 G 6                                  | 10      | 16,6            | 288,0               | 481,0               |
| 62547    | 7 G 6                                  | 10      | 18,2            | 403,0               | 800,0               |
| 62548    | 4 G 10                                 | 8       | 19,7            | 384,0               | 671,0               |
| 62549    | 5 G 10                                 | 8       | 22,0            | 480,0               | 990,0               |
| 62550    | 4 G 16                                 | 6       | 23,7            | 614,0               | 951,0               |
| 62551    | 5 G 16                                 | 6       | 26,1            | 768,0               | 1500,0              |
| 62552    | 4 G 25                                 | 4       | 34,0            | 960,0               | 1700,0              |
| 62554    | 4 G 35                                 | 2       | 37,0            | 1344,0              | 2300,0              |

Dimensions and specifications may be changed without prior notice. (RN01)



# MULTIFLEX 600-C

highly flexible, oil resistant, screened, EMC-preferred type,  
open installation TC-ER, PLTC-ER, NFPA 79



## Technical data

- Highly flexible PVC control cable acc. to UL Std. 1277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire stranded, with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, simple installation

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Grey or TPE outer sheath

## Application

HELUKABEL® MULTIFLEX 600-C is a highly flexible, oil resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: Production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. For the use in energy drag chains please note the installation guidelines.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 62556    | 2 x 0,5                                | 20      | 7,7             | 30,0                | 80,0                |
| 62557    | 3 G 0,5                                | 20      | 8,0             | 37,0                | 85,0                |
| 62558    | 4 G 0,5                                | 20      | 8,7             | 46,0                | 100,0               |
| 62559    | 5 G 0,5                                | 20      | 9,3             | 54,0                | 113,0               |
| 62560    | 7 G 0,5                                | 20      | 10,7            | 70,0                | 152,0               |
| 62561    | 12 G 0,5                               | 20      | 12,3            | 112,0               | 210,0               |
| 62562    | 18 G 0,5                               | 20      | 15,1            | 153,0               | 304,0               |
| 62563    | 25 G 0,5                               | 20      | 18,1            | 225,0               | 408,0               |
| 62564    | 34 G 0,5                               | 20      | 19,8            | 267,0               | 530,0               |
| 62565    | 3 G 0,75                               | 18      | 8,5             | 55,0                | 101,0               |
| 62566    | 4 G 0,75                               | 18      | 9,3             | 69,0                | 127,0               |
| 62567    | 5 G 0,75                               | 18      | 10,0            | 82,0                | 148,0               |
| 62568    | 7 G 0,75                               | 18      | 11,6            | 119,0               | 186,0               |
| 62569    | 12 G 0,75                              | 18      | 14,1            | 178,0               | 286,0               |
| 62570    | 15 G 0,75                              | 18      | 15,2            | 175,0               | 455,0               |
| 62571    | 18 G 0,75                              | 18      | 16,3            | 252,0               | 383,0               |
| 62572    | 25 G 0,75                              | 18      | 19,6            | 362,0               | 514,0               |
| 62573    | 34 G 0,75                              | 18      | 21,9            | 473,0               | 685,0               |
| 62574    | 3 G 1,5                                | 16      | 9,3             | 75,0                | 131,0               |
| 62575    | 4 G 1,5                                | 16      | 10,2            | 93,0                | 165,0               |
| 62576    | 5 G 1,5                                | 16      | 11,0            | 113,0               | 195,0               |
| 62577    | 7 G 1,5                                | 16      | 12,9            | 162,0               | 250,0               |
| 62578    | 9 G 1,5                                | 16      | 15,2            | 193,0               | 340,0               |
| 62579    | 12 G 1,5                               | 16      | 15,6            | 249,0               | 393,0               |

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 62580    | 18 G 1,5                               | 16      | 18,4            | 376,0               | 559,0               |
| 62581    | 25 G 1,5                               | 16      | 23,1            | 510,0               | 788,0               |
| 62582    | 34 G 1,5                               | 16      | 25,8            | 674,0               | 1203,0              |
| 62583    | 3 G 2,5                                | 14      | 10,3            | 141,0               | 218,0               |
| 62584    | 4 G 2,5                                | 14      | 11,5            | 149,0               | 222,0               |
| 62585    | 5 G 2,5                                | 14      | 12,4            | 195,0               | 350,0               |
| 62586    | 7 G 2,5                                | 14      | 15,4            | 243,0               | 373,0               |
| 62587    | 9 G 2,5                                | 14      | 16,8            | 312,0               | 479,0               |
| 62588    | 12 G 2,5                               | 14      | 18,5            | 368,0               | 730,0               |
| 62589    | 18 G 2,5                               | 14      | 22,4            | 639,0               | 1140,0              |
| 62590    | 25 G 2,5                               | 14      | 25,5            | 796,0               | 1530,0              |
| 62591    | 3 G 4                                  | 12      | 11,7            | 180,0               | 296,0               |
| 62592    | 4 G 4                                  | 12      | 13,3            | 221,0               | 305,0               |
| 62593    | 5 G 4                                  | 12      | 14,7            | 330,0               | 450,0               |
| 62594    | 7 G 4                                  | 12      | 17,8            | 363,0               | 536,0               |
| 62595    | 4 G 6                                  | 10      | 16,1            | 314,0               | 469,0               |
| 62596    | 5 G 6                                  | 10      | 17,5            | 441,0               | 772,0               |
| 62597    | 7 G 6                                  | 10      | 20,6            | 505,0               | 1028,0              |
| 62598    | 4 G 10                                 | 8       | 21,9            | 526,0               | 790,0               |
| 62599    | 5 G 10                                 | 8       | 24,1            | 610,0               | 1096,0              |
| 62600    | 4 G 16                                 | 6       | 24,8            | 730,0               | 1621,0              |
| 62602    | 5 G 16                                 | 6       | 27,2            | 1050,0              | 1759,0              |
| 62603    | 4 G 25                                 | 4       | 33,1            | 1450,0              | 2100,0              |
| 62605    | 4 G 35                                 | 2       | 37,8            | 1840,0              | 2550,0              |

Dimensions and specifications may be changed without prior notice. (RN01)

# TOPFLEX® 600 VFD

EMC-preferred type, flexible motor power supply cable,  
oil resistant, NFPA 79



## Technical data

- PVC motor supply cable acc. to UL Std. 1277 and UL Std. 2277
- **Temperature range**  
-25°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage**  
4000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Special PVC core insulation with transparent nylon skin
- Black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay length
- Fleece
- 1. Screening with special aluminium foil
- 2. Screening with braid of tinned copper wires, optimal coverage approx. 85%
- Separator
- Special PVC outer sheath
- Sheath colour: black (RAL 9005) or orange (RAL 2003)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, WTTC 1000 V, MTW, NFPA 79, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, -40°C Cold Bend Test, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4, AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Flexible, extremely oil resistant motor supply cable for modern servomotors; the double screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. NFPA 79 approved for open, unprotected installation on cable trays and from cable trays to the machine. The special PVC sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the ground.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

☞☞ = Product conforms with Low-Voltage Directive 2014/35/EU.

### Sheath colour black

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 63139    | 4 x 0,963                              | 18      | 9,9             | 52,0                | 164,0               |
| 63140    | 4 x 1,31                               | 16      | 11,4            | 72,0                | 183,0               |
| 63137    | 4 x 2,08                               | 14      | 12,5            | 118,0               | 197,0               |
| 63141    | 4 x 3,31                               | 12      | 14,0            | 182,0               | 267,0               |
| 63142    | 4 x 5,26                               | 10      | 17,1            | 256,0               | 402,0               |
| 63143    | 4 x 8,37                               | 8       | 22,3            | 417,0               | 668,0               |
| 63144    | 4 x 13,31                              | 6       | 25,4            | 651,0               | 918,0               |
| 63145    | 4 x 21,21                              | 4       | 30,1            | 910,0               | 1363,0              |
| 63146    | 4 x 33,6                               | 2       | 35,3            | 1411,0              | 1994,0              |

### Sheath colour orange

| Part no. | No. cores x cross-sec. mm <sup>2</sup> | AWG-No. | Outer Ø app. mm | Cop. weight kg / km | Weight app. kg / km |
|----------|--|---------|-----------------|---------------------|---------------------|
| 63147    | 4 x 0,963                              | 18      | 9,9             | 52,0                | 164,0               |
| 63148    | 4 x 1,31                               | 16      | 11,4            | 72,0                | 183,0               |
| 63149    | 4 x 2,08                               | 14      | 12,5            | 118,0               | 197,0               |
| 63150    | 4 x 3,31                               | 12      | 14,0            | 182,0               | 267,0               |
| 63151    | 4 x 5,26                               | 10      | 17,1            | 182,0               | 267,0               |
| 63152    | 4 x 8,37                               | 8       | 22,3            | 417,0               | 668,0               |
| 63153    | 4 x 13,31                              | 6       | 25,4            | 651,0               | 918,0               |
| 63154    | 4 x 21,21                              | 4       | 30,1            | 910,0               | 1363,0              |
| 63155    | 4 x 33,6                               | 2       | 35,3            | 1411,0              | 1994,0              |

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPFLEX® 650 VFD

EMC-preferred type, flexible motor power supply cable with control cores, oil resistant, NFPA 79



## Technical data

- TPE motor supply cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
flexing -25°C to +105°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage**  
power supply cores 4000 V  
control cores 2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Special PVC core insulation with transparent nylon skin
- Black supply cores with continuous white numbering
- 2 black control cores numbered 5+6
- GN-YE conductor in the outer layer
- Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- Control cores stranded in pairs and laid up in layers with optimal lay length with the power supply cores
- 1. Screening with plastic-coated aluminium foil
- 2. Screening from tinned copper braid, optimal coverage approx. 85%
- Separator
- Special TPE outer sheath
- Sheath colour: black (RAL 9005) or orange (RAL 2003)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, WTTC 1000 V, MTW, NFPA 79, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, -40°C Cold Bend Test, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4, AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Flexible, extremely oil resistant motor supply cable for modern servomotors; the double screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. NFPA 79 approved for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the ground.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

= Product conforms with Low-Voltage Directive 2014/35/EU.

### Sheath colour: black

| Part no. | No. cores<br>x AWG-No. | Cross-section mm <sup>2</sup> | Outer Ø<br>app. mm | Cop. weight<br>kg / km | Weight<br>app. kg / km |
|----------|------------------------|-------------------------------|--------------------|------------------------|------------------------|
| 63156    | 4x AWG 16 +2x AWG 18   | 1,31/ 0,963                   | 13,0               | 88,0                   | 259,0                  |
| 63157    | 4x AWG 14 +2x AWG 18   | 2,08/ 0,963                   | 14,0               | 133,0                  | 370,0                  |
| 63138    | 4x AWG 14 +2x AWG 14   | 2,08/ 2,08                    | 14,0               | 159,0                  | 399,0                  |
| 63158    | 4x AWG 12 +2x AWG 18   | 3,31/ 0,963                   | 15,3               | 197,0                  | 435,0                  |
| 63159    | 4x AWG 12 +2x AWG 14   | 3,31/ 2,08                    | 15,7               | 224,0                  | 466,0                  |
| 63160    | 4x AWG 10 +2x AWG 14   | 5,26/ 2,08                    | 18,2               | 301,0                  | 703,0                  |
| 63161    | 4x AWG 8 +2x AWG 14    | 8,37/ 2,08                    | 24,1               | 457,0                  | 901,0                  |
| 63162    | 4x AWG 6 +2x AWG 14    | 13,31/ 2,08                   | 27,4               | 615,0                  | 1275,0                 |
| 63163    | 4x AWG 4 +2x AWG 14    | 21,21/ 2,08                   | 33,4               | 1450,0                 | 1861,0                 |

### Sheath colour: orange

| Part no. | No. cores<br>x AWG-No. | Cross-section mm <sup>2</sup> | Outer Ø<br>app. mm | Cop. weight<br>kg / km | Weight<br>app. kg / km |
|----------|------------------------|-------------------------------|--------------------|------------------------|------------------------|
| 62876    | 4x AWG 16 +2x AWG 18   | 1,31/ 0,963                   | 13,0               | 88,0                   | 259,0                  |
| 62877    | 4x AWG 14 +2x AWG 18   | 2,08/ 0,963                   | 14,0               | 133,0                  | 370,0                  |
| 62878    | 4x AWG 14 +2x AWG 14   | 2,08/ 2,08                    | 14,0               | 159,0                  | 399,0                  |
| 62879    | 4x AWG 12 +2x AWG 18   | 3,31/ 0,963                   | 15,3               | 197,0                  | 435,0                  |
| 62880    | 4x AWG 12 +2x AWG 14   | 3,31/ 2,08                    | 15,7               | 224,0                  | 466,0                  |
| 62881    | 4x AWG 10 +2x AWG 14   | 5,26/ 2,08                    | 18,2               | 301,0                  | 703,0                  |
| 62882    | 4x AWG 8 +2x AWG 14    | 8,37/ 2,08                    | 24,1               | 457,0                  | 901,0                  |
| 62883    | 4x AWG 6 +2x AWG 14    | 13,31/ 2,08                   | 27,4               | 615,0                  | 1275,0                 |
| 62884    | 4x AWG 4 +2x AWG 14    | 21,21/ 2,08                   | 33,4               | 1450,0                 | 1861,0                 |

Dimensions and specifications may be changed without prior notice. (RN07)





Machine outlet IP67

# LWL- outdoor cable

BUS cables

Industrial Ethernet

## LWL-Breakout cable robust, flexible

Accessories

Connection equipment



# ■ COMMUNICATION CABLES FOR WIND TURBINES

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# ■ FIBRE OPTIC COMMUNICATION IN WIND TURBINES



## Fast Bus

- HCS 200/230  $\mu\text{m}$
- G50/125  $\mu\text{m}$
- G62,5/125  $\mu\text{m}$

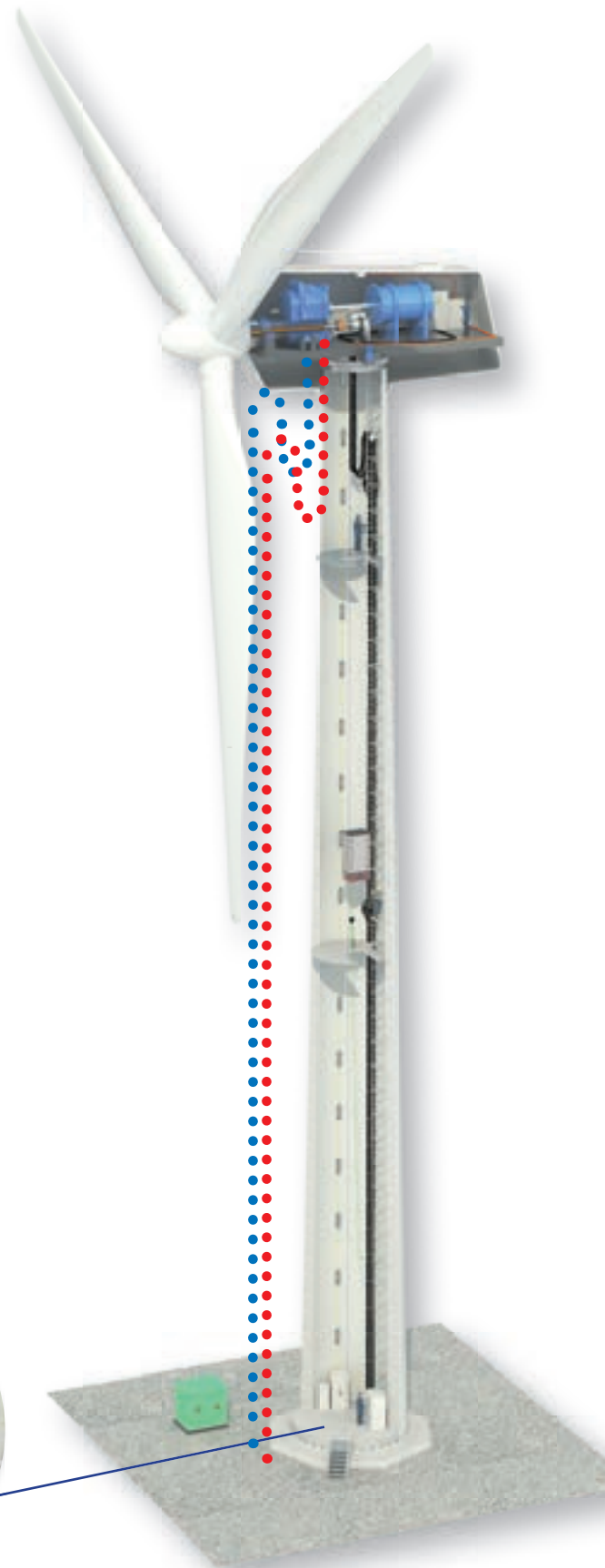
Control and adjustment of a wind turbine's performance by positioning the rotor blades; real-time rotor blade adjustment according to the environmental conditions and the requirements of the local energy supplier.



## Condition Monitoring System (CMS)

- G50/125  $\mu\text{m}$
- G62,5/125  $\mu\text{m}$

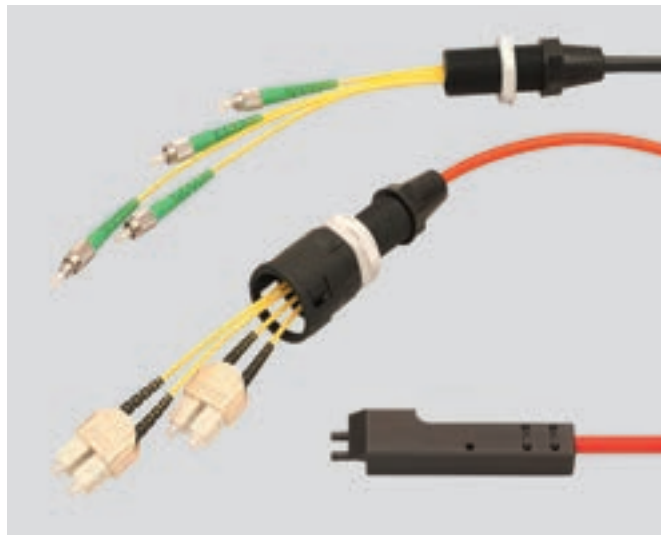
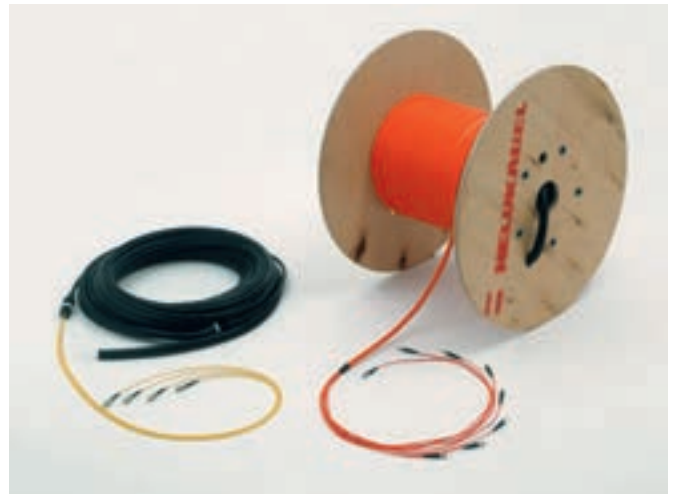
The Condition Monitoring System allows to measure and analyze a wind turbine's operating data. By means of on- and offline monitoring, the CMS evaluates data gained from swing-and-push-impulse-sensors, the lubrication system and thermal indicators. The CM System allows to detect deviations from a turbine's regular parameters early and helps to prevent any damages or down-time. Hence, service and maintenance work can be scheduled to be more efficient and save time and money.



## ■ FIBRE OPTIC AND COPPER COMMUNICATION

### Fibre optic cabling made easy – pre-assembled fibre optic cable systems

No special knowledge or tools are needed to install HELUCOM® pre-assembled fibre optic cables. The cable comes pre-assembled and can be connected immediately after it has been laid. As a result, the installation process of complete sections of fibre optic connections actually involves nothing more than laying the cable itself. The pulling aid is connected to the pull cable. As a result, it is possible to lay the cable together with the pre-assembled distributor just as you would lay a standard cable. The advantage of a pre-assembled cable is in the considerable time savings in installing the fibre optic cable.



### Fibre Optic and Copper Technology Connection

In addition to the corresponding cables, passive connection components for copper and fibre-optic technology are needed for the network infrastructure. The components can be divided into two groups, independently of the transmission medium. On the one hand, there are jumpering and distribution devices and on the other hand there are patch cables or terminal cables. This includes system-conformant bus connecting cables, patch panels, outlet boxes, connector systems and patch cables.

- Fibre optic jumper cable ST /ST, 50/125, clx
- Modular Patch Panel (DIN rail)
- 19" Fibre optic splice box
- POF jumper cable (duplex)
- RJ 45 jumper cable PUR / IP20
- PROFIBUS jumper cable M12 / PUR

Our brands for Data, Network & Bus Technology:

**HELUKAT**  
DATEN- UND NETZWERKTECHNIK

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CONNECTING SYSTEMS INDUSTRY

**HELUCOM**  
CONNECTING SYSTEMS INDUSTRY

The entire range can be found in our Data, Network & Bus Technology catalogue.



## ■ PRE-ASSEMBLED FIBRE OPTIC CABLES

No special knowledge or tools are needed to install HELUCOM® pre-assembled fibre optic cables. The cable is pre-assembled and can be connected immediately after it has been laid. As a result, the installation process actually comprises nothing more than laying the cable itself. In the distributor bodies, the fibres from the loose-tube cable are conducted through the individual simplex cables without splicing. The simplex cables are terminated using pre-assembled plugs. Included in delivery is a plug

shield that protects the plugs, simplex cables and distributor body while the cable is being laid. The pulling aid is connected to the pull cable. As a result, it is possible to lay the cable together with the pre-assembled distributor just as you would lay a standard cable. The benefits of pre-assembled are easy to see: The fibre optic cables are cut to the desired length, and the fibres are glued to different plug models in a clean and dust-free environment.

### Features:

#### Applications:

1. Outdoor wiring
2. Indoor wiring

#### Cable types:

- Zipcords with halogen-free outer jacket
- Breakout cables with halogen-free outer jacket
- Mini breakout cables with halogen-free outer jacket
- Fibre optic cables with central / s stranded loose-tube cable
- Plastic fibre cables (POF)

#### Fibre types:

- E9/125 µm
- G50/125 µm
- G62,5/125 µm
- 200/230 µm
- 980/1000 µm

#### Plug systems:

- ST, SC, SCdx, LC, MTRJ, E-2000, DIN, FDDI, FC-PC and F-SMA

#### Additional pre-assembled kits:

- Pulling aid
- Pulling tube
- Core coding

### Pre-assembled fibre optic cables



**01** The pre-assembled loose-tube cable together with distributor body and pulling protection as it appears just before shipment. Depending on the length of the cable, the cable can be shipped as a ring or on a disposable shipping reel.



**02** Detailed view of the cable and with pulling aid.



**03** Detailed view of the robust cast distributor body. The distributor body is equipped with a compatible plastic gland for installation in splice boxes. In addition, the system can be reused in a new installation.



**04** Mini loose-tube cables designed to allow easy insertion into prepared splice boxes. In addition, the mini loose-tube cables are number-coded.



**05** Glass fiber splice box used as cable end enclosure for multi-core fiber optic cables in 19" cabinets. The splice box is particularly suitable as a connecting unit for our pre-fabricated fiber-optic grooved cables.

# PRE-ASSEMBLED FIBRE OPTIC CABLES

## Matrix Distributor bodies

| Designation       | Figure | Top view      |             |
|-------------------|--------|---------------|-------------|
|                   |        | compact fib e | empty fib e |
| <b>WKOM-01</b>    |        |               |             |
| <b>WKOM-02</b>    |        |               |             |
| <b>WKOM-03</b>    |        |               |             |
| <b>WKOM-04</b>    |        |               |             |
| <b>WKOM-05</b>    |        |               |             |
| Designation       | Figure | Top view      |             |
| <b>WKOM-100</b>   |        |               |             |
| <b>WKOM-101</b>   |        |               |             |
| <b>WKOM-102-4</b> |        |               |             |
| <b>WKOM-102-5</b> |        |               |             |

## Cable allocation

| Designation     | Figure | Top view |
|-----------------|--------|----------|
| <b>WKOM-105</b> |        |          |
| <b>WKOM-106</b> |        |          |
| <b>WKOM-107</b> |        |          |

| Compact fibre<br>max. number | Empty fibre<br>max. number        | Thread<br>type    | Fibre optic cable<br>max $\varnothing$ [mm] | Allocation table |        |            |            |  |
|------------------------------|-----------------------------------|-------------------|---|------------------|--------|------------|------------|--|
|                              |                                   |                   |   | length [mm]      | D [mm] | $d_A$ [mm] | $d_i$ [mm] |  |
| 24                           | -                                 | PG21              | 12  | 80               | 39     | 34         | 28         |  |
| 12                           | -                                 | PG16              | 12  | 80               | 34     | 28         | 23         |  |
| 4                            | 12                                | PG11              | 10  | 66               | 29     | 26         | 18,5       |  |
| 4                            | 12                                | -                 | 10  | 35               | 17     | -          | -          |  |
| 4                            | 4                                 | -                 | 5   | 29               | 12     | -          | -          |  |
| Thread<br>type               | Cable A<br>max $\varnothing$ [mm] | Cable B<br>number | Cable B<br>$\varnothing$ [mm]               | Allocation table |        |            |            |  |
|                              |                                   |                   |   | Length [mm]      | D [mm] | $d_A$ [mm] | $d_i$ [mm] |  |
| PG16                         | 12                                | 2                 | 6   | 80               | 34     | 28         | 23         |  |
| PG16                         | 12                                | 3                 | 6   | 80               | 34     | 28         | 23         |  |
| PG21                         | 12                                | 4                 | 8   | 80               | 39     | 34         | 28         |  |
| PG21                         | 12                                | 5                 | 6   | 80               | 39     | 34         | 28         |  |

| Thread<br>type | Cable A<br>max $\varnothing$ [mm] | Cable B<br>number | Cable B<br>$\varnothing$ [mm] | Allocation table |        |            |            |  |
|----------------|-----------------------------------|-------------------|-------------------------------|------------------|--------|------------|------------|--|
|                |                                   |                   |                               | Length [mm]      | D [mm] | $d_A$ [mm] | $d_i$ [mm] |  |
| -              | 14                                | 2                 | 12                            | 110              | -      | 18         | 14         |  |
| -              | 10                                | 2                 | 8                             | 100              | -      | 14         | 10         |  |
| -              | 8                                 | 2                 | 6                             | 100              | -      | 12         | 8          |  |



# ■ FIBRE OPTIC PLUG & ADAPTER OVERVIEW

## ST plug



- Ceramic ferrule
- Available for single mode or multi-mode

## ST adapter



- Ceramic ferrule
- Available for single mode or multi-mode

## SC/SCdx plug



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

## SC/SCdx adapter



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

## LC plug



- Ceramic ferrule
- Available for single mode or multi-mode

## LC adapter



- Ceramic ferrule
- Available for single mode or multi-mode

## E-2000 plug



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

## E-2000 adapter



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

### DIN plug



- Ceramic ferrule
- Available for single mode or multi-mode

### DIN adapter



- Ceramic ferrule
- Available for single mode or multi-mode

### MTRJ Plug



- Ceramic ferrule
- Available for single mode or multi-mode

### MTRJ adapter



- Ceramic ferrule
- Available for single mode or multi-mode

### FC PC plug



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

### FC PC adapter



- Ceramic ferrule
- Normal cross section or 8° diagonal cross section (single mode only)
- Available for single mode or multi-mode

### F-SMA plug



- Ceramic ferrule
- Available for single mode or multi-mode

### F-SMA adapter



- Ceramic ferrule
- Available for single mode or multi-mode

# Machine outlet IP67

INDUSTRIAL ETHERNET



SC MM, IP67



## Type

**Industrial Ethernet, SCdx multimode outlets IP67**

## Configuration

Housing material:  
Colour:  
Outlet direction:  
Type of fastening:  
Dust protection:  
Protection classification (IP):

Aluminium die-cast  
Grey  
Straight  
Screw  
Hinged cover  
67

## Equipment

Type:  
Number of couplings:  
Suitable for fibre type:

Coupler  
SC  
2  
Multi-mode

## Dimension

175 x 110 x 45mm

## Area of application

Industrial environment

## Part no.

**801354**

Dimensions and specifications may be changed without prior notice.

## Packing unit

**5**

## Norms and standards

HELUCOM CONNECTING SYSTEMS® INDUSTRY component suitable for multimode fibre applications (G50/125µm and G62.5/125µm). Moreover it satisfies the MICE specifications (class 3), EMC requirements in accordance with DIN EN 6100, and the requirements of the IP 67 housing protection class.

## Application

Robust data connection socket (shielded) for the extreme implementation. Robust aluminum die-cast housing; meets all mechanical requirements like vibration, shock, and transverse forces. The socket is used either on the machine distributor (MD) or wall mounted directly on the machine (MC) as connection unit.

# Machine outlet IP65

INDUSTRIAL ETHERNET



SC MM, IP65



## Type

**Industrial Ethernet outlet plastic IP 65, SCdx POF/HCS/MM**

## Configuration

Housing material:  
Colour:  
Outlet direction:  
Type of fastening:  
Dust protection:  
Protection classification (IP):

Aluminium die-cast  
Grey similar to RAL 7032  
Straight  
Screw  
Hinged cover  
65

## Equipment

Type:  
Number of couplings:  
Suitable for fibre type:

Coupler  
SC  
2  
POF/HCS/MM

## Dimension

125 x 80 x 57mm

## Area of application

Industrial environment

## Part no.

**801421**

Dimensions and specifications may be changed without prior notice.

## Packing unit

**5**

## Norms and standards

HELUCOM CONNECTING SYSTEMS® INDUSTRY component suitable for POF, HCS and multimode fibre applications (980/1000µm, 200/230µm, 50/125µm and 62.5/125µm). More they satisfy the MICE specifications, EMC requirements in accordance with DIN EN 61000, and the IP65 housing protection class requirements. The socket can be used in a temperature range of 0°C to +70°C.

## Application

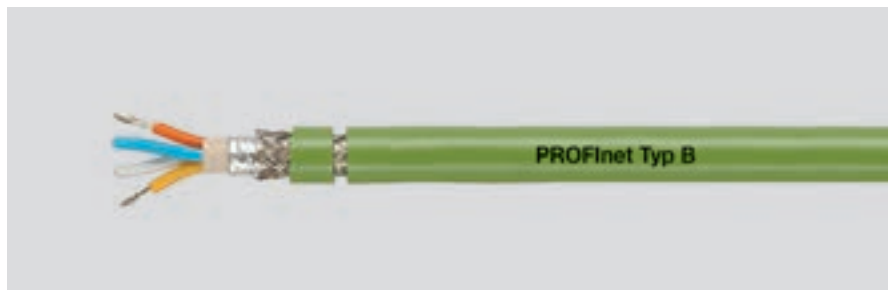
Robust data connection socket (shielded) for extreme implementation. Robust plastic housing, and satisfies all mechanical requirements like vibration, shock, and transverse forces. The socket is used either on the machine distributor (MD) or wall mounted directly on the machine (MC) as connection unit.

# Industrial Ethernet

## PROFINet Type B flexible

**HELUKAT**

PVC



### Type

#### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Mobile use

#### 2x2x0,75 mm (stranded)

Copper, tinned (AWG 22/ 7)  
PE  
wh, ye, bu, og  
Star quad  
Polyester foil over stranded bundle  
PVC  
Cu braid, tinned  
PVC  
app. 6,5 mm ± 0,2 mm  
Green similar to RAL 6018

### Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
Conductor resistance, max.: 60 Ohm/km  
Insulation resistance, min.: 0,5 GOhm x km  
Loop resistance: 120 Ohm/km max.  
Mutual capacitance: 52 nF/km nom.  
Test voltage: 2 kV

### Typical values

|                       |      |      |      |      |
|-----------------------|------|------|------|------|
| Frequency (MHz)       | 10   | 16   | 62,5 | 100  |
| Attenuation (dB/100m) | 6,3  | 8,0  | 16,5 | 21,3 |
| Next (db)             | 70,0 | 65,0 | 55,0 | 50,0 |
| ACR (db)              | 64,0 | 57,4 | 39,0 | 29,0 |

### Technical data

Weight: app. 67 kg/km  
bending radius, repeated: 100 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +75°C  
Caloric load, approx. value: 0,32 MJ/m  
Copper weight: 32,00 kg/km

### Norms

Applicable standards: PROFINet Guideline + IEC 61158-2  
Acc. to ISO/IEC 11801  
Acc. to EN 50173  
Category 5e  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 75°C PLTC FT4  
CSA standard: CSA FT 4

### Application

HELUKAT® PROFINet Type B (flexible) Cat.5e for use on moving parts. The cables listed here correspond to the PROFINet classifications Type B for moving cables and are designed to withstand mechanical loads. The version PVC is the standard cable; the FRNC version is used for halogen free requirements.

### Part no.

**800654**, PROFINet type B (SK)

Dimensions and specifications may be changed without prior notice.

# Industrial Ethernet

## PROFINet Type C Torsion

**HELUKAT**

PUR



### Type

#### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Torsional applications

#### 2x2x0,75 mm (stranded)

Copper, tinned (AWG 22/19)  
Foam-skin-PE  
wh, ye, bu, og  
Star quad  
Polyester foil over stranded bundle  
Cu braid, tinned  
PUR  
app. 6,5 mm ± 0,2 mm  
Green similar to RAL 6018

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
60 Ohm/km  
0,5 GOhm x km  
120 Ohm/km max.  
52 nF/km nom.  
0,7 kV

### Typical values

|                       |      |      |      |      |
|-----------------------|------|------|------|------|
| Frequency (MHz)       | 10   | 16   | 62,5 | 100  |
| Attenuation (db/100m) | 7,6  | 10,0 | 26,5 | 41,0 |
| ELFEXT (db)           | 43,8 | 39,7 | 24,0 | 20,0 |

### Technical data

Weight: app. 54 kg/km  
bending radius, repeated: 70 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 0,45 MJ/m  
Copper weight: 32,00 kg/km

### Norms

Applicable standards: PROFINet Guideline + IEC 61158-2  
Category 5e  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: AWM Style 21161 80°C

### Application

HELUKAT® PROFINet Type C Category 5e TORSION offers excellent transmission characteristics and is designed for applications with torsion loads, e.g. in robots. The cable listed here corresponds to the PROFINet Type C classification for continuous movement.

### Part no.

**802186**, PROFINet type C (SK)

Dimensions and specifications may be changed without prior notice.



# Industrial Ethernet

WK Industrial 105°C

**HELUKAT®** 100IND

SF/UTP, Category 5e



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Windenergy

### SF/UTP 2x2x0,75 mm (stranded)

Copper, tinned (AWG 22/ 7)  
XLPE ray cross-linking  
wh, ye, bu, og  
Star quad  
Polyester foil over stranded bundle  
Cu braid, tinned  
X-FRNC  
app. 6,5 mm ± 0,2 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
Conductor resistance, max.: 60 Ohm/km  
Insulation resistance, min.: 0,5 GOhm x km  
Loop resistance: 120 Ohm/km max.  
Mutual capacitance: 57 nF/km nom.  
Test voltage: 2 kV  
Relative propagation velocity: 69 %

## Typical values

|                       |      |      |      |      |
|-----------------------|------|------|------|------|
| Frequency (MHz)       | 10   | 16   | 62,5 | 100  |
| Attenuation (dB/100m) | 6,3  | 8,0  | 16,5 | 21,3 |
| Next (db)             | 70,0 | 65,0 | 55,0 | 50,0 |
| ACR (db)              | 63,7 | 57,0 | 38,5 | 28,7 |

## Technical data

Weight: app. 64 kg/km  
bending radius, repeated: 52 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +105°C \*  
Caloric load, approx. value: 0,89 MJ/m  
Copper weight: 34,00 kg/km

## Norms

Acc. to ISO/IEC 11801 , Acc. to EN 50173, Category 5, Flame-retardant acc. to IEC 60332-3, Halogen-free acc. to 60754-1  
, Corrosiveness acc. to EN50267-2-3  
, UL-Styl 21281 80°C/300V

## Application

HELUKAT® 100IND Category 5e WK Industrial 105°C is designed specially for demanding temperature requirements such as those encountered in wind turbines. Radiation cross-linking provides improved thermal stability as well as good oil resistance.

## Part no.

**802293**, INDUSTRIAL ETHERNET CAT.5

Dimensions and specifications may be changed without prior notice.

# Industrial Ethernet

TORDIERFLEX

**HELUKAT®** 100T

SF/UTP, Category 5



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsion Patch Cables

### SF/UTP 4x2xAWG 26/ 19 (stranded) PUR

Copper, bare (AWG 26/ 19)  
PP  
wh/bu, wh/og, wh/gn, wh/bn  
Double core  
Polyester foil over stranded bundle  
Polyester foil copper, bare  
Cu braid  
PUR  
app. 7,5 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance: 100 Ohm  $\pm$  15 Ohm at 1 to 100 MHz  
Loop resistance: 260 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Relative propagation velocity: 68 %

## Typical values

|             |          |      |      |      |      |
|-------------|----------|------|------|------|------|
| Frequency   | (MHz)    | 10   | 16   | 62,5 | 100  |
| Attenuation | (dB/10m) | 0,9  | 1,2  | 2,4  | 3,1  |
| Next        | (db)     | 56,0 | 53,0 | 43,0 | 40,0 |
| ACR         | (db)     | 55,1 | 51,8 | 40,6 | 36,9 |

## Technical data

Weight: app. 74 kg/km  
bending radius, repeated: 56 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 1,234 MJ/m  
Copper weight: 29,50 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1-2, Halogen-free acc. to 60754-1, Oil-resistant, AWEM Style 20236 80°C/30V

## Application

HELUKAT® 100T Category 5 Torsionflex is designed for applications with torsion loads, e.g. in robots, and characterized by high reserve capacity and outstanding performance, even after exposure to extreme conditions. Thanks to the clever structure, it is also possible to achieve a long service life mechanically.

## Part no.

**800067**, SF/UTP 4x2xAWG 26/19 PUR (S-FTP)

Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed 105°C

**HELUKABEL**

PVC



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Industrial Area

### 2x2xAWG 24/ 19 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/ 19)  
XLPE ray cross-linking  
wh/bn, gn/ye  
Double core  
Polyester foil over stranded bundle  
Cu braid, tinned  
PUR  
app. 8,4 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 87,2 Ohm/km  
Insulation resistance, min.: 1 GOhm x km  
Loop resistance: 174 Ohm/km max.  
Mutual capacitance: 42 nF/km nom.  
Nominal voltage: 600 V  
Test voltage: 2,5 kV

## Technical data

Weight: app. 80 kg/km  
bending radius, repeated: 126 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +105°C \*  
Caloric load, approx. value: 1,31 MJ/m  
Copper weight: 40,00 kg/km

## Norms

Applicable standards: CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: UL/CSA 21223 80°C, 600V

## Application

HELUKABEL® CAN Bus for fixed installation up to 105°C in difficult industrial environments with demanding temperature requirements thanks to cross-linking of the conductor insulation. Thanks to use a PUR sheath, this version is also halogen-free. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**801982**, CAN BUS

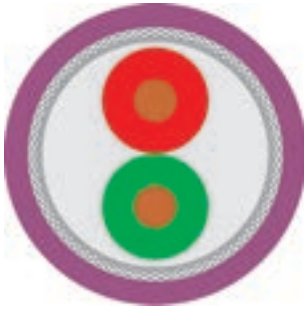
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK fixed installed Indoor + Outdoor



PVC + PE



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/ 1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Fixed installation, outdoor 1x2x0.64 mm

Copper, bare (AWG 22/ 1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Cu braid, tinned  
PE  
app. 8,0 mm ± 0,4 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance: 150 Ohm ± 10 %  
Conductor resistance, max.: 55 Ohm/km  
Insulation resistance, min.: 1 GOhm x km  
Loop resistance: 110 Ohm/km max.  
Mutual capacitance: 35 nF/km nom.  
Test voltage: 1,5 kV  
Attenuation: 9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4,0 MHz < 22,0 dB/km  
16,0 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight: app. 79 kg/km  
bending radius, repeated: 120 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 1,068 MJ/m  
Copper weight: 24,00 kg/km

app. 65 kg/km  
120 mm  
-20°C  
+70°C  
1,451 MJ/m  
24,00 kg/km

## Norms

Applicable standards: Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 75°C or CL3 or AWM 21694 600V  
CSA standard: CSA FT 4

## Application

HELUKABEL® Profibus SK Indoor + Outdoor have a special structure for processing with the Fast Connect Stripping Tool from Siemens. The indoor version is used for normal requirements in fixed installation applications in equipment; the Outdoor version is used in open-air applications, i.e. can withstand wind, weather and sun (not for burial directly in the ground).

## Part no.

**81903**, Profibus SK

**81904**, Profibus SK

Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus L2 Torsion + Festoon

**HELUKABEL**

PUR + PVC



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsional applications

### 1x2x0.80 mm (stranded)

Copper, bare (AWG 22/ 19)  
Foam-skin-PE  
rd, gn  
2 cores + filler  
Polyester foil over stranded bundle  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Mobile use

### 1x2x0.65 mm (stranded)

Copper, bare (AWG 23/ 19)  
Cell PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,3 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:  
Attenuation:

150 Ohm ± 10 %  
49 Ohm/km  
1,6 GOhm x km  
98 Ohm/km max.  
29 nF/km nom.  
3,6 kV  
-  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 3,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
66,5 Ohm/km  
1,6 GOhm x km  
133 Ohm/km max.  
28 nF/km nom.  
2 kV  
81 %  
9,6 kHz ≤ 3,0 dB/km  
38,4 kHz ≤ 4,0 dB/km  
4 MHz ≤ 25,0 dB/km  
16 MHz ≤ 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 66 kg/km  
100 mm  
-25°C  
+75°C  
0,89 MJ/m  
32,00 kg/km

app. 64 kg/km  
70 mm  
-40°C  
+60°C  
1,09 MJ/m  
23,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
-

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to EN 50265-2-1

UL Style:

CSA standard:

CMG 75°C or CL2 or AWM 20201 600V  
CSA FT 4

## Application

HELUKABEL® Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

## Part no.

**800109**, Profibus L2

**800649**, Profibus L2

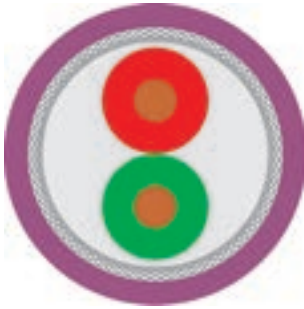
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK fixed installed FRNC + Robust



FRNC + PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/ 1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Cu braid, tinned  
FRNC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Industrial Area 1x2x0.64 mm

Copper, bare (AWG 22/ 1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 73 kg/km  
160 mm  
-25°C  
+70°C  
1,203 MJ/m  
24,00 kg/km

app. 71 kg/km  
120 mm  
-40°C  
+70°C  
1,574 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to EN 50265-2-1  
CM 750C (shielded)

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM Style 20236 AWM I/II A/B 80°C 30V  
FT1  
CSA FT1

UL Style:

CSA standard:

## Application

HELUKABEL® Profibus SK FRNC + Robust has a special structure for processing with the Fast Connect Stripping Tool from Siemens. The FRNC version is used to satisfy halogen-free and flame-retardent requirements in buildings. The Robust version is used in harsh industrial environments and offers excellent resistance to mineral oils, greases and cooling lubricants.

## Part no.

**81501**, Profibus SK

**81905**, Profibus SK

Dimensions and specifications may be changed without prior notice.



# Fibre Optic Cable flexible

WK robust PUR + PVC (UL/CSA)

HELUCOM® WK

AT-V(ZN)H(ZN)11Y, AT-V(ZN)Y(ZN)Y



## Cable structure

Core type: Composite buffered  
Strain relief elements: Aramide  
Outer sheath colour: Black

## Temperature range

Laying, min.: -10°C  
Laying, max.: +50°C  
Operating, min.: -40°C  
Operating, max.: +90°C

## Other data

Max. tensile force: 4800 N  
Max. transverse pressure: 200 N / cm  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant  
Resistant to hammer impact acc. to IEC 60794-1-2-E4  
Bending cycles acc. to IEC 60794-1-2-E6: 9.000  
Oil-resistant

| Designation      | Number of fibres | Fibre type         | Fibre category | Outer Ø app. mm | Outer sheath material | Inner sheath material | Min. stat. bending radius mm | Flame proof | halogen-free | UL  | Weight kg / km | Part no.      |
|------------------|------------------|--------------------|----------------|-----------------|-----------------------|-----------------------|------------------------------|-------------|--------------|-----|----------------|---------------|
| AT-V(ZN)H(ZN)11Y | 4                | Multimode G50/125  | OM2            | 8,5             | PUR                   | ULSZH                 | 100                          | yes         | yes          | no  | 125            | <b>803346</b> |
| AT-V(ZN)Y(ZN)Y   | 4                | Multimode G50/125  | OM2            | 8,5             | PVC                   | PVC                   | 130                          | yes         | no           | yes | 125            | <b>803348</b> |
| AT-V(ZN)H(ZN)11Y | 12               | Multimode G50/125  | OM2            | 12,4            | PUR                   | ULSZH                 | 190                          | yes         | yes          | no  | 320            | <b>803347</b> |
| AT-V(ZN)H(ZN)11Y | 12               | Single-mode E9/125 | ITU-T G.652    | 12,4            | PUR                   | ULSZH                 | 190                          | yes         | yes          | no  | 320            | <b>804700</b> |
| AT-V(ZN)Y(ZN)Y   | 12               | Multimode G50/125  | OM2            | 12,4            | PVC                   | PVC                   | 190                          | yes         | no           | yes | 320            | <b>803349</b> |

Dimensions and specifications may be changed without prior notice.

## Application

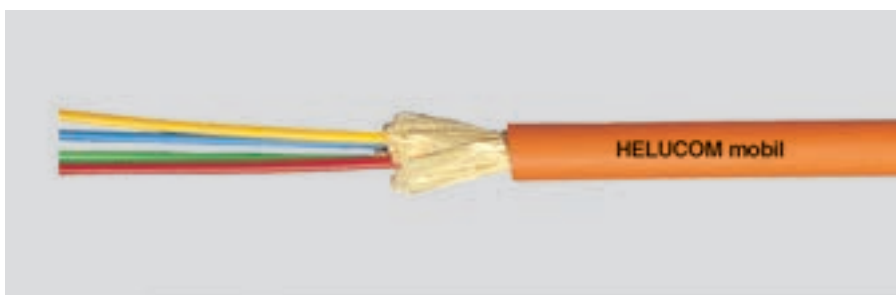
The HELUCOM® WK range is set apart by its extreme rugged yet highly-flexible design. It is used wherever demanding environmental conditions and extreme movements occur. The tight buffer structure enables the cable to be pre-assembled on site with ease. Applications are for example Windturbines, TV transmissions, mobile field applications, etc.

# Fibre Optic Cable flexible

WK - mobile

HELUCOM®

A-V(ZN)11Y



## Cable structure

Core type: Tight buffer  
Strain relief elements: Aramide  
Outer sheath colour: Orange

## Temperature range

Laying, min.: +5°C  
Laying, max.: +50°C  
Operating, min.: -30°C  
Operating, max.: +70°C

## Other data

Max. tensile force: 650 N  
Max. transverse pressure: 40 N / cm  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant  
Resistant to hammer impact acc. to IEC 60794-1-2-E4  
Bending cycles acc. to IEC 60794-1-2-E6: 500.000  
Oil-resistant

| Designation       | Number of fibres | Fibre type          | Fibre category | Outer Ø app. mm | Outer sheath material | Min. stat. bending radius mm | Flame proof | halogen-free | UL | Weight kg / km | Part no.      |
|-------------------|------------------|---------------------|----------------|-----------------|-----------------------|------------------------------|-------------|--------------|----|----------------|---------------|
| Fibre-optic cable | 2                | Multimode G50/125   | OM2            | 5,0             | PUR                   | 75                           | yes         | yes          | no | 20             | <b>80382</b>  |
| Fibre-optic cable | 2                | Multimode G62.5/125 | OM1            | 5,0             | PUR                   | 75                           | yes         | yes          | no | 20             | <b>80363</b>  |
| Fibre-optic cable | 4                | Multimode G50/125   | OM2            | 5,8             | PUR                   | 90                           | yes         | yes          | no | 31             | <b>80534</b>  |
| Fibre-optic cable | 4                | Multimode G62.5/125 | OM1            | 5,8             | PUR                   | 90                           | yes         | yes          | no | 31             | <b>81036</b>  |
| Fibre-optic cable | 4                | Single-mode E9/125  | ITU-T G.652    | 5,8             | PUR                   | 90                           | yes         | yes          | no | 31             | <b>801727</b> |
| Fibre-optic cable | 8                | Multimode G50/125   | OM2            | 7,0             | PUR                   | 105                          | yes         | yes          | no | 47             | <b>81037</b>  |
| Fibre-optic cable | 8                | Multimode G62.5/125 | OM1            | 7,0             | PUR                   | 105                          | yes         | yes          | no | 47             | <b>81038</b>  |

Dimensions and specifications may be changed without prior notice.

## Application

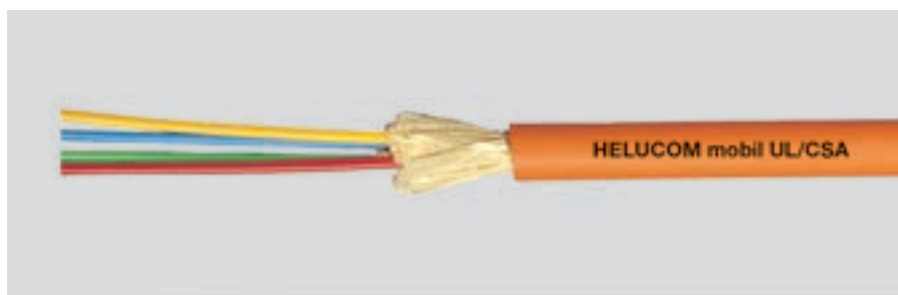
These HELUCOM® cables were designed as mobile field cables. They are easily wound up on a drum and are very tension-proof. As the outer sheath is tightly anchored on the aramid braiding, it is especially suitable for mobile use. The advantage of these cables is evident especially where mobile fibre-optic lines are to be installed, such as for drag chains, TV transmission, supervision of protected areas, etc.

# Fibre Optic Cable flexible

WK - UL/CSA

HELUCOM® WK

A-V(ZN)YY



## Cable structure

Core type: Tight buffer  
Strain relief elements: Aramide  
Outer sheath colour: Orange

## Temperature range

Laying, min.: 0°C  
Laying, max.: +50°C  
Operating, min.: -30°C  
Operating, max.: +80°C

## Other data

Max. tensile force: 1200 N  
Max. transverse pressure: 44 N / cm  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
Applicable UL standards: OFNG UL 1685  
Applicable CSA standards: FT4  
UV-resistant  
Bending cycles acc. to IEC 60794-1-2-E6: 9.000  
Oil-resistant

| Designation       | Number of fibres | Fibre type          | Fibre category | Outer Ø app. mm | Outer sheath material | Inner sheath material | Min. stat. bending radius mm | Flame proof | halogen-free | UL  | Weight kg / km | Part no.      |
|-------------------|------------------|---------------------|----------------|-----------------|-----------------------|-----------------------|------------------------------|-------------|--------------|-----|----------------|---------------|
| Fibre-optic cable | 4                | Multimode G50/125   | OM2            | 7,0             | PVC                   | PVC                   | 75                           | yes         | no           | yes | 50             | <b>802792</b> |
| Fibre-optic cable | 4                | Multimode G62.5/125 | OM1            | 7,0             | PVC                   | PVC                   | 75                           | yes         | no           | yes | 50             | <b>803934</b> |
| Fibre-optic cable | 4                | Single-mode E9/125  | ITU-T G.652    | 7,0             | PVC                   | PVC                   | 75                           | yes         | no           | yes | 50             | <b>803935</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM® cables were designed as mobile field cables. They are easily wound up on a drum and are very tension-proof. As the outer sheath is tightly anchored on the aramid braiding, it is especially suitable for mobile use. The advantage of these cables is obvious especially where mobile fibre-optic lines have to be installed, such as windturbine projects, TV transmission, supervision of protected areas, etc. This series with PVC jacket is certified according to the **UL/CSA standard OFNG/ FT4**.

# Fibre Optic Breakout Cable robust, flexible

HCS UL/CSA

**HELUCOM®**

I-V(ZN)YY



## Cable structure

Core type: Composite buffered  
Strain relief elements: Aramide  
Outer sheath material: PVC  
Outer sheath colour: Black

## Temperature range

Laying, min.: -20°C  
Laying, max.: +75°C  
Operating, min.: -30°C  
Operating, max.: +85°C

## Other data

Flame-resistance acc. to IEC 60332-1 and IEC 60332-3  
Applicable UL standards: OFNG UL 1685  
Applicable CSA standards: FT4  
UV-resistant  
Oil-resistant

| Designation | Number of fibres | Fibre type  | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Max. transverse pressure N / cm | Caloric load app. MJ / m | Weight kg / km | Part no.      |
|-------------|------------------|-------------|----------------|---------------------------|-----------------|----------------------|------------------------------|---------------------------------|--------------------------|----------------|---------------|
| I-V(ZN)YY   | 2                | HCS 200/230 | Other          | 1                         | 7,5             | 800                  | 100,0                        | 300                             | 1,40                     | 68,0           | <b>801733</b> |

Dimensions and specifications may be changed without prior notice.

## Application

This HELUCOM® HCS fibre cable is suitable for fixed and normal flexible installations. Possible applications are normal and heavy-duty mechanical requirements for example in industrial environments. Because of a special PVC jacket this construction is certified by UL (FT1 and FT4). With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

# Fibre Optic Breakout Cable robust, flexible

HCS

HELUCOM®

I-V(ZN)Y11Y



## Cable structure

Core type: Composite buffered  
Strain relief elements: Aramide  
Outer sheath material: PUR  
Outer sheath colour: Red

## Temperature range

Laying, min.: -5°C  
Laying, max.: +50°C  
Operating, min.: -20°C  
Operating, max.: +70°C

## Other data

Oil-resistant

| Designation | Number of fibres | Fibre type  | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Max. transverse pressure N / cm | Caloric load app. MJ / m | Weight kg / km | Part no.      |
|-------------|------------------|-------------|----------------|---------------------------|-----------------|----------------------|------------------------------|---------------------------------|--------------------------|----------------|---------------|
| I-V(ZN)Y11Y | 2                | HCS 200/230 | Other          | 1                         | 7,0             | 800                  | 50,0                         | 150                             | 1,014                    | 43,0           | <b>800980</b> |

Dimensions and specifications may be changed without prior notice.

## Application

This HELUCOM® HCS fibre cable is suitable for fixed installation. Possible applications are normal and heavy-duty mechanical requirements for example in industrial environments. With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

# Plastic Fibre Cable PROFinet

POF/PA

HELUCOM®

I-V4Y(ZN)Y (type B), I-V4Y(ZN)11Y (type C)



## Cable structure

Fibre type: POF 980/1000  
Fibre cladding: PA

## Optical characteristic

Refractive index core: 1,492  
Refractive index cladding: 1,419  
Numerical aperture: 0,5  
Attenuation see table

## Temperature range

Laying, min.: -10°C  
Laying, max.: +50°C  
Operating, min.: -30°C  
Operating, max.: +70°C

| Designation                                 | Outer sheath material | Sheath colour | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Fibre attenuation | Oil-resistant | Acc. to DESINA® | Weight kg / km | Part no.      |
|---|-----------------------|---------------|-----------------|----------------------|------------------------------|-------------------|---------------|-----------------|----------------|---------------|
| I-V4Y(ZN)Y 2P980/1000µm, fixed installation | PVC                   | Green         | 7,8             | 100                  | 100,0                        | 160A1             | yes           | no              | 59,0           | <b>805686</b> |
| I-V4Y(ZN)11Y 2P980/1000 green, drag chain   | PUR                   | Green         | 8,0             | 200                  | 120,0                        | 230A1             | yes           | no              | 60,0           | <b>805838</b> |

Dimensions and specifications may be changed without prior notice.

## Application

Signal lines as plastic optical fibre. The use of these transmission systems significantly reduces the number of different cables in a planned bus installation in machine tools operations. Furthermore, possible EMC problems are prevented by the metal-free construction. The main fields of these cables are in machine construction and automobile industry. Installations for example in fixed installed rough areas (type B) or in drag chains (type C) are possible. The types on this page are especially constructed for communication within PROFinet systems.



# Plastic Fibre Cable PROFIBUS

POF/PA

HELUCOM<sup>®</sup>

I-V4Y(ZN)Y



## Cable structure

Fibre type: POF 980/1000  
Fibre cladding: PA

## Optical characteristic

Refractive index core: 1,492  
Refractive index cladding: 1,419  
Numerical aperture: 0,5  
Attenuation see table

## Temperature range

Laying, min.: -10°C  
Laying, max.: +50°C  
Operating, min.: -30°C  
Operating, max.: +70°C

| Designation                                 | Outer sheath material | Sheath colour | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Fibre attenuation | Oil-resistant | Acc. to DESINA <sup>®</sup> | Weight kg / km | Part no.      |
|---|-----------------------|---------------|-----------------|----------------------|------------------------------|-------------------|---------------|-----------------------------|----------------|---------------|
| I-V4Y(ZN)Y 2P980/1000µm, fixed installation | PVC                   | Violet        | 7,8             | 100                  | 100,0                        | 160A1             | yes           | yes                         | 59,0           | <b>801280</b> |

Dimensions and specifications may be changed without prior notice.

## Application

Signal lines as plastic optical fibre. The use of these transmission systems significantly reduces the number of different cables in a planned bus installation in machine tools operations. Furthermore, possible EMC problems are prevented by the metal-free construction. The main application of these cables are in machine construction and automobile industry. The type on this page is especially constructed for communication within PROFIBUS systems.

# Plastic Fibre cable industry

POF/PE

HELUCOM®

I-V2Y, I-V2Y(ZN)11Y



## Cable structure

Fibre type: POF 980/1000  
Fibre cladding: PE

## Optical characteristic

Refractive index core: 1,492  
Refractive index cladding: 1,419  
Numerical aperture: 0,5  
Attenuation see table

## Temperature range

Laying, min.: -20°C  
Laying, max.: +80°C  
Operating, min.: -20°C  
Operating, max.: +80°C

| Designation  | Outer sheath material | Sheath colour | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Fibre attenuation | Oil-resistant | Acc. to DESINA® | Weight kg / km | Part no.     |
|--|-----------------------|---------------|-----------------|----------------------|------------------------------|-------------------|---------------|-----------------|----------------|--------------|
| I-V2Y 1P 980/1000                                  | PE                    | Black         | 2,2             | 70                   | 25,0                         | 160A1             | no            | no              | 4,0            | <b>80532</b> |
| I-V2Y 2P 980/1000                                  | PE                    | Black         | 2,2 x 4,4       | 140                  | 25,0                         | 160A1             | no            | no              | 8,0            | <b>80388</b> |
| I-V2Y(ZN)11Y 1P 980/1000, high flexible            | PUR                   | Violet        | 5,8             | 400                  | 30,0                         | 230A1             | yes           | yes             | 30,0           | <b>81611</b> |
| I-V2Y(ZN)11Y 2P 980/1000, high flexible            | PUR                   | Violet        | 6,0             | 400                  | 31,0                         | 230A1             | yes           | yes             | 36,0           | <b>80629</b> |
| I-V2Y(ZN)11Y 2P 980/1000, fixed installation       | PUR                   | Violet        | 6,0             | 400                  | 31,0                         | 230A1             | yes           | yes             | 36,0           | <b>81882</b> |
| I-V2Y(ZN)11Y 4P 980/1000, high flexible            | PUR                   | Violet        | 7,1             | 400                  | 45,0                         | 230A1             | yes           | yes             | 65,0           | <b>80630</b> |
| I-V2Y(ZN)11Y 2P 980/1000 + 2x1mm <sup>2</sup> Cu   | PUR                   | Red           | 7,8             | 200                  | 70,0                         | 230A1             | yes           | no              | 60,0           | <b>82032</b> |
| I-V2Y(ZN)11Y 2P 980/1000 + 3x1,5mm <sup>2</sup> Cu | PUR                   | Red           | 11,0            | 200                  | 70,0                         | 230A1             | yes           | no              | 132,0          | <b>82033</b> |

Dimensions and specifications may be changed without prior notice.

## Application

HELUCOM® plastic-fibre cables are used in mechanical engineering, both in mobile and fixed applications. With different constructions, such as PUR outer sheaths, special strain relief components, hybrid construction with copper cores for power supply or only raw fibre cables, any possible fields of application are covered. Due to their solidity and their simple adjustability on site, the plastic-fibres (PMMA) are particularly suitable for applications where trouble-free data transmission is necessary under heavy-duty conditions.

# Fibre Optic Indoor/Outdoor Cable

acc. DIN VDE 0888

**HELUCOM**

A/I-DQ(ZN)BH, central



## Cable structure

Core type: Loose tube  
Strain relief elements: Glass yarns  
Type of armouring: Glass yarns  
Outer sheath material: FRNC  
Outer sheath colour: Black

## Temperature range

Laying, min.: -5°C  
Laying, max.: +50°C  
Operating, min.: -20°C  
Operating, max.: +60°C

## Other data

Corrosiveness acc. to EN50267-2-3  
Halogen-free acc. to 60754-2  
Flame-resistance acc. to IEC 60332-1-2  
Smoke density acc. to IEC 61034  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant

| Designation  | No. of fibres | Fibre type          | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Caloric load app. MJ / m | Max. transverse pressure N / cm | Weight kg / km | Part no.     |
|--------------|---------------|---------------------|----------------|---------------------------|-----------------|----------------------|------------------------------|--------------------------|---------------------------------|----------------|--------------|
| A/I-DQ(ZN)BH | 4             | Multimode G50/125   | OM2            | 4                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80270</b> |
| A/I-DQ(ZN)BH | 4             | Multimode G62.5/125 | OM1            | 4                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80276</b> |
| A/I-DQ(ZN)BH | 4             | Single-mode E9/125  | ITU-T G.652    | 4                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80264</b> |
| A/I-DQ(ZN)BH | 6             | Multimode G50/125   | OM2            | 6                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80271</b> |
| A/I-DQ(ZN)BH | 6             | Multimode G62.5/125 | OM1            | 6                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80265</b> |
| A/I-DQ(ZN)BH | 6             | Single-mode E9/125  | ITU-T G.652    | 6                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80272</b> |
| A/I-DQ(ZN)BH | 8             | Multimode G50/125   | OM2            | 8                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80273</b> |
| A/I-DQ(ZN)BH | 8             | Multimode G62.5/125 | OM1            | 8                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80274</b> |
| A/I-DQ(ZN)BH | 8             | Single-mode E9/125  | ITU-T G.652    | 8                         | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80275</b> |
| A/I-DQ(ZN)BH | 12            | Multimode G50/125   | OM2            | 12                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80681</b> |
| A/I-DQ(ZN)BH | 12            | Multimode G62.5/125 | OM1            | 12                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80278</b> |
| A/I-DQ(ZN)BH | 12            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 75,0           | <b>80279</b> |
| A/I-DQ(ZN)BH | 16            | Multimode G50/125   | OM2            | 16                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 85,0           | <b>80280</b> |
| A/I-DQ(ZN)BH | 16            | Multimode G62.5/125 | OM1            | 16                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 85,0           | <b>80281</b> |
| A/I-DQ(ZN)BH | 16            | Single-mode E9/125  | ITU-T G.652    | 16                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 85,0           | <b>80851</b> |
| A/I-DQ(ZN)BH | 24            | Multimode G50/125   | OM2            | 24                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 85,0           | <b>80725</b> |
| A/I-DQ(ZN)BH | 24            | Multimode G62.5/125 | OM1            | 24                        | 10,0            | 2500                 | 150,0                        | 1,50                     | 300                             | 85,0           | <b>82431</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM® fibre-optic cables are available either as central bundle core cable or as stranded versions. They are suitable for indoor and outdoor cabling of buildings and facilities. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

# Fibre Optic Outdoor Cable

acc. DIN VDE 0888

**HELUCOM<sup>®</sup> pact**

A-DQ(ZN)B2Y, central



## Cable structure

Core type: Loose tube  
Strain relief elements: Glass yarns  
Type of armouring: Glass yarns  
Outer sheath material: PE  
Outer sheath colour: Black

## Temperature range

Laying, min.: -5°C  
Laying, max.: +50°C  
Operating, min.: -20°C  
Operating, max.: +60°C

## Other data

Corrosiveness acc. to EN50267-2-3  
Halogen-free acc. to 60754-2  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant

| Designation | No. of fibres | Fibre type          | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Caloric load app. MJ / m | Max. transverse pressure N / cm | Weight kg / km | Part no.      |
|-------------|---------------|---------------------|----------------|---------------------------|-----------------|----------------------|------------------------------|--------------------------|---------------------------------|----------------|---------------|
| A-DQ(ZN)B2Y | 2             | Multimode G50/125   | OM2            | 2                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>800754</b> |
| A-DQ(ZN)B2Y | 2             | Multimode G62.5/125 | OM1            | 2                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802131</b> |
| A-DQ(ZN)B2Y | 2             | Single-mode E9/125  | ITU-T G.652    | 2                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802137</b> |
| A-DQ(ZN)B2Y | 4             | Multimode G50/125   | OM2            | 4                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>800755</b> |
| A-DQ(ZN)B2Y | 4             | Multimode G62.5/125 | OM1            | 4                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802132</b> |
| A-DQ(ZN)B2Y | 4             | Single-mode E9/125  | ITU-T G.652    | 4                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802138</b> |
| A-DQ(ZN)B2Y | 6             | Multimode G50/125   | OM2            | 6                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>800756</b> |
| A-DQ(ZN)B2Y | 6             | Multimode G62.5/125 | OM1            | 6                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802133</b> |
| A-DQ(ZN)B2Y | 6             | Single-mode E9/125  | ITU-T G.652    | 6                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802139</b> |
| A-DQ(ZN)B2Y | 8             | Multimode G50/125   | OM2            | 8                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>800757</b> |
| A-DQ(ZN)B2Y | 8             | Multimode G62.5/125 | OM1            | 8                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802134</b> |
| A-DQ(ZN)B2Y | 8             | Single-mode E9/125  | ITU-T G.652    | 8                         | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802140</b> |
| A-DQ(ZN)B2Y | 12            | Multimode G50/125   | OM2            | 12                        | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>800759</b> |
| A-DQ(ZN)B2Y | 12            | Multimode G62.5/125 | OM1            | 12                        | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802135</b> |
| A-DQ(ZN)B2Y | 12            | Single-mode E9/125  | ITU-T G.652    | 12                        | 7,5             | 1500                 | 150,0                        | 1,60                     | 300                             | 40,0           | <b>802141</b> |
| A-DQ(ZN)B2Y | 24            | Multimode G50/125   | OM2            | 24                        | 8,5             | 1500                 | 170,0                        | 1,90                     | 300                             | 60,0           | <b>800762</b> |
| A-DQ(ZN)B2Y | 24            | Multimode G62.5/125 | OM1            | 24                        | 8,5             | 1500                 | 170,0                        | 1,90                     | 300                             | 60,0           | <b>802136</b> |
| A-DQ(ZN)B2Y | 24            | Single-mode E9/125  | ITU-T G.652    | 24                        | 8,5             | 1500                 | 170,0                        | 1,90                     | 300                             | 60,0           | <b>802142</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM<sup>®</sup> pact fibre-optic cables are characterized by a design that is particularly easy to mount and is rodent-protected. Around a central grooved cable, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where normal tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

# Fibre Optic Outdoor Cable

acc. DIN VDE 0888

**HELUCOM**

A-DQ(ZN)B2Y, central



## Cable structure

Core type: Loose tube  
Strain relief elements: Glass yarns  
Type of armouring: Glass yarns  
Outer sheath material: PE  
Outer sheath colour: Black

## Temperature range

Laying, min.: -5°C  
Laying, max.: +50°C  
Operating, min.: -20°C  
Operating, max.: +60°C

## Other data

Corrosiveness acc. to EN50267-2-3  
Halogen-free acc. to 60754-2  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant

| Designation | No. of fibres | Fibre type          | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Caloric load app. MJ / m | Max. transverse pressure N / cm | Weight kg / km | Part no.     |
|-------------|---------------|---------------------|----------------|---------------------------|-----------------|----------------------|------------------------------|--------------------------|---------------------------------|----------------|--------------|
| A-DQ(ZN)B2Y | 2             | Multimode G50/125   | OM2            | 2                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80196</b> |
| A-DQ(ZN)B2Y | 2             | Multimode G62.5/125 | OM1            | 2                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80212</b> |
| A-DQ(ZN)B2Y | 2             | Single-mode E9/125  | ITU-T G.652    | 2                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80180</b> |
| A-DQ(ZN)B2Y | 4             | Multimode G50/125   | OM2            | 4                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80197</b> |
| A-DQ(ZN)B2Y | 4             | Multimode G62.5/125 | OM1            | 4                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80213</b> |
| A-DQ(ZN)B2Y | 4             | Single-mode E9/125  | ITU-T G.652    | 4                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80181</b> |
| A-DQ(ZN)B2Y | 6             | Multimode G50/125   | OM2            | 6                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80198</b> |
| A-DQ(ZN)B2Y | 6             | Multimode G62.5/125 | OM1            | 6                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80214</b> |
| A-DQ(ZN)B2Y | 6             | Single-mode E9/125  | ITU-T G.652    | 6                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80182</b> |
| A-DQ(ZN)B2Y | 8             | Multimode G50/125   | OM2            | 8                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80199</b> |
| A-DQ(ZN)B2Y | 8             | Multimode G62.5/125 | OM1            | 8                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80215</b> |
| A-DQ(ZN)B2Y | 8             | Single-mode E9/125  | ITU-T G.652    | 8                         | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80183</b> |
| A-DQ(ZN)B2Y | 12            | Multimode G50/125   | OM2            | 12                        | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80201</b> |
| A-DQ(ZN)B2Y | 12            | Multimode G62.5/125 | OM1            | 12                        | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80217</b> |
| A-DQ(ZN)B2Y | 12            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,0            | 2700                 | 160,0                        | 1,60                     | 300                             | 85,0           | <b>80185</b> |
| A-DQ(ZN)B2Y | 16            | Multimode G50/125   | OM2            | 16                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80202</b> |
| A-DQ(ZN)B2Y | 16            | Multimode G62.5/125 | OM1            | 16                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80218</b> |
| A-DQ(ZN)B2Y | 16            | Single-mode E9/125  | ITU-T G.652    | 16                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80186</b> |
| A-DQ(ZN)B2Y | 24            | Multimode G50/125   | OM2            | 24                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80204</b> |
| A-DQ(ZN)B2Y | 24            | Multimode G62.5/125 | OM1            | 24                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80220</b> |
| A-DQ(ZN)B2Y | 24            | Single-mode E9/125  | ITU-T G.652    | 24                        | 10,0            | 2700                 | 180,0                        | 1,80                     | 300                             | 95,0           | <b>80187</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount and is rodent-protected. Around a central grooved cable, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where normal tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

# Fibre Optic Outdoor Cable

acc. DIN VDE 0888

**HELUCOM®**

A-DQ(ZN)B2Y, stranded



## Cable structure

Core type: Loose tube  
GRP support element  
Strain relief elements: Glass yarns  
Type of armouring: Glass yarns  
Outer sheath material: PE  
Outer sheath colour: Black

## Temperature range

Laying, min.: -5°C  
Laying, max.: +50°C  
Operating, min.: -20°C  
Operating, max.: +60°C

## Other data

Corrosiveness acc. to EN50267-2-3  
Halogen-free acc. to 60754-2  
Longitudinally water-tight acc. to IEC 60794-1-2-F5  
UV-resistant

| Designation | No. of fibres | Fibre type          | Fibre category | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Caloric load app. MJ / m | Max. transverse pressure N / cm | Weight kg / km | Part no.     |
|-------------|---------------|---------------------|----------------|---------------------------|-----------------|----------------------|------------------------------|--------------------------|---------------------------------|----------------|--------------|
| A-DQ(ZN)B2Y | 24            | Multimode G50/125   | OM2            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81382</b> |
| A-DQ(ZN)B2Y | 24            | Multimode G62.5/125 | OM1            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>80219</b> |
| A-DQ(ZN)B2Y | 24            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>80188</b> |
| A-DQ(ZN)B2Y | 36            | Multimode G50/125   | OM2            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81108</b> |
| A-DQ(ZN)B2Y | 36            | Multimode G62.5/125 | OM1            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81109</b> |
| A-DQ(ZN)B2Y | 36            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81110</b> |
| A-DQ(ZN)B2Y | 48            | Multimode G50/125   | OM2            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>82648</b> |
| A-DQ(ZN)B2Y | 48            | Multimode G62.5/125 | OM1            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81112</b> |
| A-DQ(ZN)B2Y | 48            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>81113</b> |
| A-DQ(ZN)B2Y | 60            | Multimode G50/125   | OM2            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>80207</b> |
| A-DQ(ZN)B2Y | 60            | Multimode G62.5/125 | OM1            | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>80223</b> |
| A-DQ(ZN)B2Y | 60            | Single-mode E9/125  | ITU-T G.652    | 12                        | 10,5            | 2700                 | 210,0                        | 2,70                     | 600                             | 95,0           | <b>80191</b> |
| A-DQ(ZN)B2Y | 72            | Multimode G50/125   | OM2            | 12                        | 11,0            | 2700                 | 220,0                        | 2,90                     | 600                             | 100,0          | <b>81133</b> |
| A-DQ(ZN)B2Y | 72            | Multimode G62.5/125 | OM1            | 12                        | 11,0            | 2700                 | 220,0                        | 2,90                     | 600                             | 100,0          | <b>81134</b> |
| A-DQ(ZN)B2Y | 72            | Single-mode E9/125  | ITU-T G.652    | 12                        | 11,0            | 2700                 | 220,0                        | 2,90                     | 600                             | 100,0          | <b>81120</b> |
| A-DQ(ZN)B2Y | 84            | Multimode G50/125   | OM2            | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>80208</b> |
| A-DQ(ZN)B2Y | 84            | Multimode G62.5/125 | OM1            | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>80224</b> |
| A-DQ(ZN)B2Y | 84            | Single-mode E9/125  | ITU-T G.652    | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>80192</b> |
| A-DQ(ZN)B2Y | 96            | Multimode G50/125   | OM2            | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>81135</b> |
| A-DQ(ZN)B2Y | 96            | Multimode G62.5/125 | OM1            | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>81136</b> |
| A-DQ(ZN)B2Y | 96            | Single-mode E9/125  | ITU-T G.652    | 12                        | 12,0            | 3000                 | 240,0                        | 3,60                     | 600                             | 140,0          | <b>81121</b> |
| A-DQ(ZN)B2Y | 108           | Multimode G50/125   | OM2            | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80209</b> |
| A-DQ(ZN)B2Y | 108           | Multimode G62.5/125 | OM1            | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80225</b> |
| A-DQ(ZN)B2Y | 108           | Single-mode E9/125  | ITU-T G.652    | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80193</b> |
| A-DQ(ZN)B2Y | 120           | Multimode G50/125   | OM2            | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80210</b> |
| A-DQ(ZN)B2Y | 120           | Multimode G62.5/125 | OM1            | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80226</b> |
| A-DQ(ZN)B2Y | 120           | Single-mode E9/125  | ITU-T G.652    | 12                        | 13,5            | 3000                 | 270,0                        | 4,30                     | 600                             | 155,0          | <b>80194</b> |
| A-DQ(ZN)B2Y | 144           | Multimode G50/125   | OM2            | 12                        | 14,5            | 3000                 | 290,0                        | 5,40                     | 600                             | 200,0          | <b>80211</b> |
| A-DQ(ZN)B2Y | 144           | Multimode G62.5/125 | OM1            | 12                        | 14,5            | 3000                 | 290,0                        | 5,40                     | 600                             | 200,0          | <b>80227</b> |
| A-DQ(ZN)B2Y | 144           | Single-mode E9/125  | ITU-T G.652    | 12                        | 14,5            | 3000                 | 290,0                        | 5,40                     | 600                             | 200,0          | <b>80195</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount, extremely tension-resistant and rodent-proof. Around a stranded grooved cable and filler elements, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where above-average tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.



# Fibre Optic Outdoor Cable

acc. DIN VDE 0888

**HELUCOM<sup>®</sup> pact**

A-DQ(ZN)B2Y fibre combi, stranded



## Cable structure

Core type: Loose tube  
 GRP support element  
 Strain relief elements: Glass yarns  
 Type of armouring: Glass yarns  
 Outer sheath material: PE  
 Outer sheath colour: Black

## Temperature range

Laying, min.: -5°C  
 Laying, max.: +50°C  
 Operating, min.: -20°C  
 Operating, max.: +60°C

## Other data

Corrosiveness acc. to EN50267-2-3  
 Longitudinally water-tight acc. to IEC 60794-1-2-F5  
 UV-resistant

| Designation | No. of fibres | Fibre type                        | Fibre category    | Number of fibres per core | Outer Ø app. mm | Max. tensile force N | Min. stat. bending radius mm | Caloric load app. MJ / m | Max. transverse pressure N / cm | Weight kg / km | Part no.      |
|-------------|---------------|-----------------------------------|-------------------|---------------------------|-----------------|----------------------|------------------------------|--------------------------|---------------------------------|----------------|---------------|
| A-DQ(ZN)B2Y | 24            | Single- and multimode G50/125     | OM2 + ITU-T G.652 | 12                        | 9,5             | 2500                 | 200,0                        | 2,50                     | 400                             | 90,0           | <b>803037</b> |
| A-DQ(ZN)B2Y | 24            | Single- und Multimode G50/125 OM3 | OM3 + ITU-T G.652 | 12                        | 9,5             | 2500                 | 200,0                        | 2,50                     | 400                             | 90,0           | <b>803923</b> |
| A-DQ(ZN)B2Y | 48            | Single- and multimode G50/125     | OM2 + ITU-T G.652 | 12                        | 9,5             | 2500                 | 200,0                        | 2,50                     | 400                             | 90,0           | <b>803038</b> |
| A-DQ(ZN)B2Y | 48            | Single- und Multimode G50/125 OM3 | OM3 + ITU-T G.652 | 12                        | 9,5             | 2500                 | 200,0                        | 2,50                     | 400                             | 90,0           | <b>803924</b> |

Dimensions and specifications may be changed without prior notice.

## Application

These HELUCOM<sup>®</sup> pact fibre-optic cables are characterized by a design that is particularly easy to mount, tension-resistant and rodent-proof. Around a stranded grooved cable and filler elements, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where packing density also plays a role.



Helutool HAP 6-20

Press tool APW 18

**WK-Electro-hydraulic radial-piston-pump**

Compression cable lug

# HELU-S-PK-CU-DIN

WK-SC-T Shear Bolt Connector



# ■ ACCESSORIES & TOOLS

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# Cable conduit and Cable grips

## Cable conduit with inner striations

Suitable for plowing-in, laying in trenches, for blowing-in and pulling-in fiber optic cable, outside diameter 32 to 50 mm.



## Cable installation grips with side loop

### Properties:

- with thimble and press clamp
- self-tightening under tension load
- back-woven



### Material:

galvanized stranded wire

### Application

Employed as a cable installation grip. For anti-slip installation of vertically attached cables.

### Cable installation grips with side loop, laterally displaced, open

| Part no. | Min. interior diameter mm | Max. interior diameter mm | Length mm | Loadability in kN | Weight kg |
|----------|---------------------------|---------------------------|-----------|-------------------|-----------|
| 905909   | 8                         | 10                        | 500       | 2,2               | 0,07      |
| 905601   | 10                        | 15                        | 500       | 3,4               | 0,08      |
| 905602   | 15                        | 20                        | 500       | 4,3               | 0,14      |
| 905603   | 20                        | 25                        | 500       | 6,8               | 0,16      |
| 905604   | 25                        | 30                        | 500       | 8,1               | 0,18      |
| 905597   | 30                        | 40                        | 500       | 11,7              | 0,4       |
| 905605   | 40                        | 50                        | 800       | 16,0              | 0,45      |
| 905606   | 50                        | 60                        | 800       | 16,0              | 0,6       |
| 905607   | 60                        | 70                        | 800       | 21,0              | 0,7       |
| 905918   | 70                        | 90                        | 800       | 21,0              | 0,9       |
| 905919   | 90                        | 110                       | 800       | 26,7              | 1,2       |

Dimensions and specifications may be changed without prior notice. Prices on request.

## Cable grips with thimble and press clamp

### Properties:

- with thimble and press clamp
- self-tightening under tension load
- back-woven



### Material:

galvanized stranded wire

### Application

This cable grip is used wherever cables with high tensile forces are routed.

### Cable grips with thimble and press clamp, closed

| Part no. | Min. interior diameter mm | Max. interior diameter mm | Length mm | Loadability in kN | Weight kg |
|----------|---------------------------|---------------------------|-----------|-------------------|-----------|
| 905891   | 6                         | 10                        | 600       | 2,2               | 0,07      |
| 905892   | 10                        | 15                        | 600       | 3,4               | 0,08      |
| 905893   | 15                        | 20                        | 600       | 6,8               | 0,14      |
| 905375   | 20                        | 25                        | 600       | 6,8               | 0,15      |
| 905371   | 25                        | 30                        | 1000      | 8,1               | 0,18      |
| 905376   | 30                        | 40                        | 1250      | 11,7              | 0,4       |
| 905894   | 40                        | 50                        | 1250      | 16,0              | 0,45      |
| 905163   | 50                        | 60                        | 1500      | 16,0              | 0,6       |
| 905895   | 60                        | 70                        | 1500      | 21,3              | 0,7       |
| 905896   | 70                        | 90                        | 1500      | 27,9              | 0,9       |
| 905897   | 90                        | 110                       | 1500      | 34,9              | 1,5       |

Dimensions and specifications may be changed without prior notice. Prices on request.

# Cable gland – HELUTOP®

## HELUTOP® HT

The plastic cable gland with vibration protection.

### Properties:

- Optimum strain relief through clamping plates
- Easy to assemble
- Large clamping areas



### Technical Data:

Protection classification: IP 68 - 5 bar / IP69 K  
Temperature range: -30°C up to +80°C  
Testing standard: EN50262

### Material:

• Halogen-free  
• Silicone-free  
• Cadmium-free  
Shell: polyamide PA 6  
Moulded seal: Neoprene

## HELUTOP® HT-MS

The cable gland made of nickel-plated brass.

### Properties:

- Optimum strain relief through clamping plates
- Easy to assemble
- Large clamping areas



### Technical Data:

Protection classification: IP 68 - 5 bar / IP69 K  
Temperature range: -40°C up to +100°C  
Testing standard: EN50262

### Material:

Shell: brass, nickel-plated  
Terminal insert: polyamide PA 6  
Moulded seal: Neoprene  
O-ring: Buna-N

## HELUTOP® MS-EP4

The new generation of EMC and earth glands with integrated contact system for reliable, quick assembly and contacting.

### Properties:

- Optimum strain relief by means of clamping plates
- Large clamping areas
- Simple installation with open contact springs and rotating spring ring
- Reliable contact with high-quality copper-beryllium springs
- Highly vibration-resistant due to short distance from clamping to contact range
- Reliable EMC screening even in rugged applications



### Technical Data:

Protection classification: IP68 – 5bar / IP69 K  
Temperature range: -40°C bis +100°C  
Testing standard: EN 50262

### Material:

Shell: brass, nickel-plated  
Contact spring: Copper-beryllium  
Terminal insert: polyamide PA 6  
Gasket: Neoprene  
O-ring: NBR

## HELUTOP® HT-E

The stainless steel cable gland for use in high-stress applications.

### Properties:

- Optimum strain relief through clamping plates
- Highly corrosion-resistant
- Highly durable
- Easy to assemble
- Large clamping areas



### Technical Data:

Protection classification: IP 68 - 5 bar / IP69 K  
Temperature range: -40°C up to +100°C  
Testing standard: EN50262

### Material:

stainless steel 1.4305  
Terminal insert: polyamide PA 6  
Moulded seal: Neoprene  
O-ring: Buna-N



# HELU-S-PK-CU-DIN Tubular compression cable lugs - straight



## Tubular compression lug HELU-S-PK-CU-DIN

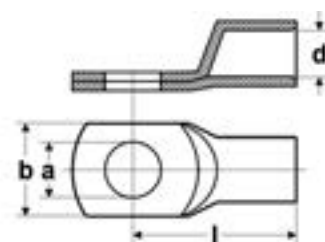
Uninsulated tubular compression lugs in eye type design for conductor arrangement RM, to DIN 46235.

### Material

Socket: Copper according to DIN EN 13600  
Surface: tin plated or optionally uncoated

### Note

Code type indicates the required hexagonal clamping insert.  
Compression instruction and instruction for assembly see chapter "Technical information".



### Diameter

- a Diameter of the boring
- d Inner diameter of the cable insertion
- b Flange width
- l Length till middle of the boring

### eye type

| Part no. | Type                    | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |
|----------|-------------------------|----------------------------------|---------|---------|---------|---------|--------------|------------------------------|------|
| 907677   | HELU-S-PK-CU-DIN 6-5    | 6,0                              | 5,3     | 3,7     | 8,5     | 24,0    | 5            | 3,1                          | 100  |
| 907678   | HELU-S-PK-CU-DIN 6-6    | 6,0                              | 6,4     | 3,7     | 3,7     | 24,0    | 5            | 3,4                          | 100  |
| 907680   | HELU-S-PK-CU-DIN 10-5   | 10,0                             | 5,3     | 4,4     | 10,0    | 27,0    | 6            | 3,5                          | 100  |
| 907681   | HELU-S-PK-CU-DIN 10-6   | 10,0                             | 6,4     | 4,4     | 10,0    | 27,0    | 6            | 3,7                          | 100  |
| 907685   | HELU-S-PK-CU-DIN 16-6   | 16,0                             | 6,4     | 5,5     | 13,0    | 36,0    | 8            | 12,7                         | 100  |
| 907686   | HELU-S-PK-CU-DIN 16-8   | 16,0                             | 8,4     | 5,5     | 13,0    | 37,0    | 8            | 13,0                         | 100  |
| 907687   | HELU-S-PK-CU-DIN 16-10  | 16,0                             | 10,5    | 5,5     | 16,5    | 38,0    | 8            | 13,2                         | 100  |
| 907689   | HELU-S-PK-CU-DIN 25-6   | 25,0                             | 6,4     | 7,0     | 14,0    | 39,0    | 10           | 16,2                         | 100  |
| 907690   | HELU-S-PK-CU-DIN 25-8   | 25,0                             | 8,4     | 7,0     | 17,0    | 39,0    | 10           | 17,3                         | 100  |
| 907691   | HELU-S-PK-CU-DIN 25-10  | 25,0                             | 10,5    | 7,0     | 17,0    | 40,5    | 10           | 17,7                         | 100  |
| 907692   | HELU-S-PK-CU-DIN 25-12  | 25,0                             | 13,0    | 7,0     | 18,0    | 40,5    | 10           | 17,2                         | 100  |
| 907695   | HELU-S-PK-CU-DIN 35-8   | 35,0                             | 8,4     | 8,2     | 18,0    | 42,0    | 12           | 31,9                         | 100  |
| 907696   | HELU-S-PK-CU-DIN 35-10  | 35,0                             | 10,5    | 8,2     | 20,0    | 42,5    | 12           | 31,7                         | 100  |
| 907697   | HELU-S-PK-CU-DIN 35-12  | 35,0                             | 13,0    | 8,2     | 21,0    | 44,0    | 12           | 31,1                         | 100  |
| 907701   | HELU-S-PK-CU-DIN 50-8   | 50,0                             | 8,4     | 9,8     | 20,0    | 52,0    | 14           | 50,0                         | 100  |
| 907702   | HELU-S-PK-CU-DIN 50-10  | 50,0                             | 10,5    | 9,8     | 22,0    | 52,0    | 14           | 49,4                         | 100  |
| 907703   | HELU-S-PK-CU-DIN 50-12  | 50,0                             | 13,0    | 9,8     | 23,0    | 52,0    | 14           | 49,1                         | 100  |
| 907705   | HELU-S-PK-CU-DIN 50-16  | 50,0                             | 17,0    | 9,8     | 28,0    | 55,5    | 14           | 50,4                         | 100  |
| 907707   | HELU-S-PK-CU-DIN 70-8   | 70,0                             | 8,4     | 11,3    | 24,0    | 56,0    | 16           | 65,4                         | 50   |
| 907708   | HELU-S-PK-CU-DIN 70-10  | 70,0                             | 10,5    | 11,3    | 24,0    | 56,0    | 16           | 65,4                         | 50   |
| 907709   | HELU-S-PK-CU-DIN 70-12  | 70,0                             | 13,0    | 11,3    | 24,0    | 56,5    | 16           | 65,7                         | 50   |
| 907711   | HELU-S-PK-CU-DIN 70-16  | 70,0                             | 17,0    | 11,3    | 29,0    | 57,0    | 16           | 69,2                         | 50   |
| 906524   | HELU-S-PK-CU-DIN 95-10  | 95,0                             | 10,5    | 13,5    | 28,0    | 65,5    | 18           | 95,5                         | 50   |
| 906525   | HELU-S-PK-CU-DIN 95-12  | 95,0                             | 13,0    | 13,5    | 28,0    | 65,5    | 18           | 94,5                         | 50   |
| 907715   | HELU-S-PK-CU-DIN 95-16  | 95,0                             | 17,0    | 13,5    | 30,0    | 65,5    | 18           | 94,4                         | 50   |
| 907716   | HELU-S-PK-CU-DIN 95-20  | 95,0                             | 21,0    | 13,5    | 33,0    | 71,0    | 18           | 98,6                         | 50   |
| 906526   | HELU-S-PK-CU-DIN 120-10 | 120,0                            | 10,5    | 15,5    | 31,0    | 70,0    | 20           | 114,0                        | 50   |
| 906527   | HELU-S-PK-CU-DIN 120-12 | 120,0                            | 13,0    | 15,5    | 31,0    | 70,5    | 20           | 114,3                        | 50   |
| 907719   | HELU-S-PK-CU-DIN 120-16 | 120,0                            | 17,0    | 15,5    | 31,5    | 70,0    | 20           | 113,6                        | 50   |
| 907720   | HELU-S-PK-CU-DIN 120-20 | 120,0                            | 21,0    | 15,5    | 36,0    | 72,0    | 20           | 115,1                        | 50   |
| 907722   | HELU-S-PK-CU-DIN 150-10 | 150,0                            | 10,5    | 17,0    | 34,0    | 79,0    | 22           | 164,6                        | 25   |
| 906528   | HELU-S-PK-CU-DIN 150-12 | 150,0                            | 13,0    | 17,0    | 34,0    | 78,5    | 22           | 165,3                        | 25   |
| 906529   | HELU-S-PK-CU-DIN 150-16 | 150,0                            | 17,0    | 17,0    | 34,0    | 78,0    | 22           | 163,5                        | 25   |
| 907724   | HELU-S-PK-CU-DIN 150-20 | 150,0                            | 21,0    | 17,0    | 38,0    | 78,0    | 22           | 163,4                        | 25   |
| 907726   | HELU-S-PK-CU-DIN 185-10 | 185,0                            | 10,5    | 19,0    | 37,0    | 83,0    | 25           | 185,0                        | 25   |
| 906530   | HELU-S-PK-CU-DIN 185-12 | 185,0                            | 13,0    | 19,0    | 37,0    | 82,5    | 25           | 189,5                        | 25   |
| 906531   | HELU-S-PK-CU-DIN 185-16 | 185,0                            | 17,0    | 19,0    | 37,0    | 82,0    | 25           | 194,1                        | 25   |

Continuation ▶

# HELU-S-PK-CU-DIN Tubular compression cable lugs - straight

## eye type

| Part no. | Type                     | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--------------------------|----------------------------------|---------|---------|---------|---------|--------------|------------------------------|------|---|
| 907728   | HELU-S-PK-CU-DIN 185-20  | 185,0                            | 21,0    | 19,0    | 40,0    | 83,0    | 25           | 190,1                        | 25   | - |
| 906532   | HELU-S-PK-CU-DIN 240-12  | 240,0                            | 13,0    | 21,5    | 42,5    | 92,0    | 28           | 266,5                        | 20   | - |
| 906533   | HELU-S-PK-CU-DIN 240-16  | 240,0                            | 17,0    | 21,5    | 42,5    | 92,0    | 28           | 274,5                        | 20   | - |
| 907731   | HELU-S-PK-CU-DIN 240-20  | 240,0                            | 21,0    | 21,5    | 45,0    | 92,0    | 28           | 276,7                        | 20   | - |
| 906534   | HELU-S-PK-CU-DIN 300-16  | 300,0                            | 17,0    | 24,5    | 48,5    | 100,0   | 32           | 341,6                        | 10   | - |
| 906535   | HELU-S-PK-CU-DIN 300-20  | 300,0                            | 21,0    | 24,5    | 48,5    | 100,0   | 32           | 344,6                        | 10   | - |
| 906536   | HELU-S-PK-CU-DIN 400-16  | 400,0                            | 17,0    | 27,5    | 55,0    | 117,0   | 38           | 717,5                        | 5    | - |
| 906537   | HELU-S-PK-CU-DIN 400-20  | 400,0                            | 21,0    | 27,5    | 55,0    | 117,0   | 38           | 706,4                        | 5    | - |
| 906538   | HELU-S-PK-CU-DIN 500-20  | 500,0                            | 21,0    | 31,0    | 60,0    | 130,0   | 42           | 876,6                        | 5    | - |
| 907744   | HELU-S-PK-CU-DIN 625-20  | 625,0                            | 21,0    | 34,5    | 63,0    | 135,0   | 44           | 820,5                        | 5    | - |
| 907747   | HELU-S-PK-CU-DIN 800-20  | 800,0                            | 21,0    | 40,0    | 75,0    | 165,0   | 100          | 1455,5                       | 2    | - |
| 907749   | HELU-S-PK-CU-DIN 1000-20 | 1000,0                           | 21,0    | 44,0    | 83,0    | 167,0   | 58           | 1890,0                       | 2    | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-RK-CU Copper tubular cable lug - straight

uninsulated



## Tubular cable lug

### HELU-S-RK-CU

Uninsulated, straight tubular cable lugs in eye type design.

## Material

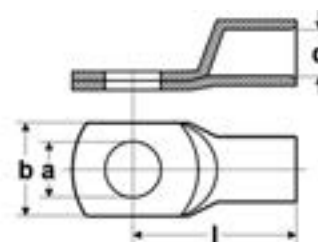
Socket: Copper according to DIN EN 13600  
Surface: tin plated

## Note

Also available in angulated version (45° and 90°).  
Compression instruction and instruction for assembly see chapter "Technical information".

## Technical data

Temperature range: up to +120°C



## Abmessungen

- a Diameter of the boring
- d Inner diameter of the cable insertion
- b Flange width
- l Length till middle of the boring

## eye type

| Part no. | Type                | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|---------------------|----------------------------------|---------|---------|---------|---------|--------------|------------------------------|------|---|
| 907303   | HELU-S-RK-CU 0,75-3 | 0,75                             | 3,2     | 1,4     | 6,5     | 12,5    | -            | 0,7                          | 100  | - |
| 907304   | HELU-S-RK-CU 0,75-4 | 0,75                             | 4,3     | 1,4     | 8,5     | 14,0    | -            | 0,8                          | 100  | - |
| 907305   | HELU-S-RK-CU 0,75-5 | 0,75                             | 5,3     | 1,4     | 10,0    | 15,0    | -            | 1,0                          | 100  | - |
| 907306   | HELU-S-RK-CU 1,5-3  | 1,5                              | 3,2     | 1,9     | 6,5     | 14,0    | -            | 1,2                          | 100  | - |
| 907307   | HELU-S-RK-CU 1,5-4  | 1,5                              | 4,3     | 1,9     | 8,5     | 15,0    | -            | 1,4                          | 100  | - |
| 907308   | HELU-S-RK-CU 1,5-5  | 1,5                              | 5,3     | 1,9     | 10,0    | 16,0    | -            | 1,5                          | 100  | - |
| 907309   | HELU-S-RK-CU 1,5-6  | 1,5                              | 6,4     | 1,9     | 11,0    | 18,0    | -            | 1,7                          | 100  | - |
| 907310   | HELU-S-RK-CU 2,5-4  | 2,5                              | 4,3     | 2,4     | 8,5     | 15,0    | -            | 1,6                          | 100  | - |
| 907311   | HELU-S-RK-CU 2,5-5  | 2,5                              | 5,3     | 2,4     | 10,0    | 16,0    | -            | 1,8                          | 100  | - |
| 907312   | HELU-S-RK-CU 2,5-6  | 2,5                              | 6,4     | 2,4     | 11,0    | 18,0    | -            | 1,9                          | 100  | - |
| 907313   | HELU-S-RK-CU 2,5-8  | 2,5                              | 8,4     | 2,4     | 13,0    | 20,0    | -            | 2,2                          | 100  | - |
| 907314   | HELU-S-RK-CU 4-4    | 4,0                              | 4,3     | 3,0     | 8,5     | 17,0    | -            | 2,2                          | 100  | - |
| 907315   | HELU-S-RK-CU 4-5    | 4,0                              | 5,3     | 3,0     | 10,0    | 18,0    | -            | 2,4                          | 100  | - |
| 907316   | HELU-S-RK-CU 4-6    | 4,0                              | 6,3     | 3,0     | 11,0    | 20,0    | -            | 2,6                          | 100  | - |
| 907317   | HELU-S-RK-CU 4-8    | 4,0                              | 8,4     | 3,0     | 14,0    | 22,0    | -            | 3,0                          | 100  | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-RK-CU-UL Tubular cable lug - straight



uninsulated



## Tubular cable lug HELU-S-RK-CU-UL

Uninsulated, straight tubular cable lugs in eye type design.

## Material

Socket: Copper according to DIN EN 13600  
Surface: tin plated

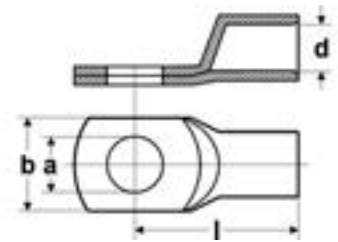
## Technical data

Temperature range: up to +120°C

## Note

Also available in angulated version (45° and 90°).

Compression instruction and instruction for assembly see chapter "Technical information".



## Abmessungen

- a Diameter of the boring
- d Inner diameter of the cable insertion
- b Flange width
- l Length till middle of the boring

## eye type

| Part no. | Type                  | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |
|----------|-----------------------|----------------------------------|---------|---------|---------|---------|--------------|------------------------------|------|
| 907318   | HELU-S-RK-CU-UL 6-4   | 6,0                              | 4,3     | 3,5     | 10,0    | 19,0    | -            | 4,6                          | 100  |
| 907319   | HELU-S-RK-CU-UL 6-5   | 6,0                              | 5,3     | 3,5     | 10,0    | 20,0    | -            | 4,7                          | 100  |
| 907320   | HELU-S-RK-CU-UL 6-6   | 6,0                              | 6,4     | 3,5     | 11,0    | 21,5    | -            | 5,4                          | 100  |
| 907321   | HELU-S-RK-CU-UL 6-8   | 6,0                              | 8,4     | 3,5     | 15,0    | 24,0    | -            | 5,9                          | 100  |
| 907322   | HELU-S-RK-CU-UL 6-10  | 6,0                              | 10,5    | 3,5     | 18,0    | 26,0    | -            | 6,4                          | 100  |
| 907323   | HELU-S-RK-CU-UL 6-12  | 6,0                              | 13,0    | 3,5     | 19,0    | 27,5    | -            | 6,4                          | 100  |
| 907324   | HELU-S-RK-CU-UL 10-4  | 10,0                             | 4,3     | 4,5     | 12,0    | 20,0    | -            | 4,3                          | 100  |
| 907325   | HELU-S-RK-CU-UL 10-5  | 10,0                             | 5,3     | 4,5     | 12,0    | 21,0    | -            | 4,8                          | 100  |
| 907326   | HELU-S-RK-CU-UL 10-6  | 10,0                             | 6,4     | 4,5     | 12,0    | 22,5    | -            | 5,1                          | 100  |
| 907327   | HELU-S-RK-CU-UL 10-8  | 10,0                             | 8,4     | 4,5     | 15,0    | 25,0    | -            | 5,8                          | 100  |
| 907328   | HELU-S-RK-CU-UL 10-10 | 10,0                             | 10,5    | 4,4     | 18,0    | 27,0    | -            | 6,3                          | 100  |
| 907329   | HELU-S-RK-CU-UL 10-12 | 10,0                             | 13,0    | 4,5     | 20,0    | 28,5    | -            | 6,3                          | 100  |
| 907330   | HELU-S-RK-CU-UL 16-4  | 16,0                             | 4,3     | 5,5     | 12,0    | 24,0    | -            | 8,2                          | 100  |
| 907331   | HELU-S-RK-CU-UL 16-5  | 16,0                             | 5,3     | 5,5     | 12,0    | 25,0    | -            | 8,9                          | 100  |
| 907332   | HELU-S-RK-CU-UL 16-6  | 16,0                             | 6,4     | 5,5     | 12,0    | 26,5    | -            | 9,6                          | 100  |
| 907333   | HELU-S-RK-CU-UL 16-8  | 16,0                             | 8,4     | 5,5     | 15,0    | 29,0    | -            | 10,3                         | 100  |
| 907334   | HELU-S-RK-CU-UL 16-10 | 16,0                             | 10,5    | 5,5     | 18,0    | 31,0    | -            | 11,0                         | 100  |
| 907335   | HELU-S-RK-CU-UL 16-12 | 16,0                             | 13,0    | 5,5     | 19,0    | 32,0    | -            | 10,8                         | 100  |
| 907336   | HELU-S-RK-CU-UL 25-5  | 25,0                             | 5,3     | 7,0     | 15,0    | 33,5    | -            | 13,5                         | 100  |
| 907337   | HELU-S-RK-CU-UL 25-6  | 25,0                             | 6,4     | 7,0     | 15,0    | 31,5    | -            | 13,1                         | 100  |
| 907338   | HELU-S-RK-CU-UL 25-8  | 25,0                             | 8,4     | 7,0     | 16,0    | 33,0    | -            | 12,9                         | 100  |
| 907339   | HELU-S-RK-CU-UL 25-10 | 25,0                             | 10,5    | 7,0     | 18,0    | 34,5    | -            | 14,6                         | 100  |
| 907340   | HELU-S-RK-CU-UL 25-12 | 25,0                             | 13,0    | 7,0     | 20,0    | 36,0    | -            | 15,5                         | 100  |
| 907341   | HELU-S-RK-CU-UL 25-14 | 25,0                             | 15,0    | 7,0     | 22,0    | 39,0    | -            | 16,6                         | 100  |
| 907342   | HELU-S-RK-CU-UL 25-16 | 25,0                             | 17,0    | 7,0     | 24,0    | 42,0    | -            | 17,3                         | 100  |
| 907343   | HELU-S-RK-CU-UL 35-6  | 35,0                             | 6,4     | 8,5     | 17,0    | 33,0    | -            | 20,7                         | 100  |
| 907344   | HELU-S-RK-CU-UL 35-8  | 35,0                             | 8,4     | 8,5     | 17,0    | 34,0    | -            | 21,8                         | 100  |
| 907345   | HELU-S-RK-CU-UL 35-10 | 35,0                             | 10,5    | 8,5     | 20,0    | 36,5    | -            | 21,9                         | 100  |
| 907346   | HELU-S-RK-CU-UL 35-12 | 35,0                             | 13,0    | 8,5     | 22,0    | 37,5    | -            | 23,3                         | 100  |
| 907347   | HELU-S-RK-CU-UL 35-14 | 35,0                             | 15,0    | 8,5     | 23,0    | 40,0    | -            | 24,4                         | 100  |

Continuation ▶

# HELU-S-RK-CU-UL Tubular cable lug - straight



uninsulated

eye type

| Part no. | Type                   | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|------------------------|----------------------------------|---------|---------|---------|---------|--------------|------------------------------|------|---|
| 907348   | HELU-S-RK-CU-UL 35-16  | 35,0                             | 17,0    | 8,5     | 28,0    | 44,0    | -            | 26,0                         | 100  | - |
| 907349   | HELU-S-RK-CU-UL 50-6   | 50,0                             | 6,4     | 10,0    | 20,0    | 37,0    | -            | 30,1                         | 100  | - |
| 907350   | HELU-S-RK-CU-UL 50-8   | 50,0                             | 8,4     | 10,0    | 20,0    | 39,0    | -            | 30,4                         | 100  | - |
| 907351   | HELU-S-RK-CU-UL 50-10  | 50,0                             | 10,5    | 10,0    | 20,0    | 40,5    | -            | 31,3                         | 100  | - |
| 907352   | HELU-S-RK-CU-UL 50-12  | 50,0                             | 13,0    | 10,0    | 23,0    | 42,0    | -            | 31,3                         | 100  | - |
| 907353   | HELU-S-RK-CU-UL 50-14  | 50,0                             | 15,0    | 10,0    | 23,0    | 44,0    | -            | 35,1                         | 100  | - |
| 907354   | HELU-S-RK-CU-UL 50-16  | 50,0                             | 17,0    | 10,0    | 27,0    | 46,0    | -            | 35,5                         | 100  | - |
| 907355   | HELU-S-RK-CU-UL 50-20  | 50,0                             | 21,0    | 10,0    | 30,5    | 52,5    | -            | 38,9                         | 100  | - |
| 907356   | HELU-S-RK-CU-UL 70-6   | 70,0                             | 6,4     | 12,0    | 24,0    | 40,5    | -            | 41,1                         | 25   | - |
| 907357   | HELU-S-RK-CU-UL 70-8   | 70,0                             | 8,4     | 12,0    | 24,0    | 42,5    | -            | 44,6                         | 25   | - |
| 907358   | HELU-S-RK-CU-UL 70-10  | 70,0                             | 10,5    | 12,0    | 24,0    | 43,5    | -            | 46,4                         | 25   | - |
| 907359   | HELU-S-RK-CU-UL 70-12  | 70,0                             | 13,0    | 12,0    | 24,0    | 45,0    | -            | 47,3                         | 25   | - |
| 907360   | HELU-S-RK-CU-UL 70-14  | 70,0                             | 15,0    | 12,0    | 25,0    | 46,0    | -            | 49,1                         | 25   | - |
| 907361   | HELU-S-RK-CU-UL 70-16  | 70,0                             | 17,0    | 12,0    | 28,0    | 48,5    | -            | 49,6                         | 25   | - |
| 907362   | HELU-S-RK-CU-UL 70-20  | 70,0                             | 21,0    | 12,0    | 29,0    | 52,0    | -            | 52,9                         | 25   | - |
| 907363   | HELU-S-RK-CU-UL 95-6   | 95,0                             | 6,4     | 13,5    | 26,0    | 43,0    | -            | 49,5                         | 25   | - |
| 907364   | HELU-S-RK-CU-UL 95-8   | 95,0                             | 8,4     | 13,5    | 26,0    | 46,0    | -            | 53,6                         | 25   | - |
| 907365   | HELU-S-RK-CU-UL 95-10  | 95,0                             | 10,5    | 13,5    | 26,0    | 47,0    | -            | 55,1                         | 25   | - |
| 907366   | HELU-S-RK-CU-UL 95-12  | 95,0                             | 13,0    | 13,5    | 26,0    | 48,0    | -            | 55,1                         | 25   | - |
| 907367   | HELU-S-RK-CU-UL 95-14  | 95,0                             | 15,0    | 13,5    | 26,0    | 51,5    | -            | 58,9                         | 25   | - |
| 907368   | HELU-S-RK-CU-UL 95-16  | 95,0                             | 17,0    | 13,5    | 28,0    | 51,0    | -            | 58,5                         | 25   | - |
| 907369   | HELU-S-RK-CU-UL 95-20  | 95,0                             | 21,0    | 13,5    | 30,0    | 55,0    | -            | 61,3                         | 25   | - |
| 907370   | HELU-S-RK-CU-UL 120-8  | 120,0                            | 8,4     | 15,0    | 29,0    | 49,5    | -            | 68,8                         | 25   | - |
| 907371   | HELU-S-RK-CU-UL 120-10 | 120,0                            | 10,5    | 15,0    | 29,0    | 52,0    | -            | 79,9                         | 25   | - |
| 907372   | HELU-S-RK-CU-UL 120-12 | 120,0                            | 13,0    | 15,0    | 29,0    | 51,5    | -            | 78,4                         | 25   | - |
| 907373   | HELU-S-RK-CU-UL 120-14 | 120,0                            | 15,0    | 15,0    | 30,0    | 53,0    | -            | 78,6                         | 25   | - |
| 907374   | HELU-S-RK-CU-UL 120-16 | 120,0                            | 17,0    | 15,0    | 30,0    | 55,0    | -            | 80,7                         | 25   | - |
| 907375   | HELU-S-RK-CU-UL 120-20 | 120,0                            | 21,0    | 15,0    | 35,0    | 60,0    | -            | 89,0                         | 25   | - |
| 907376   | HELU-S-RK-CU-UL 150-8  | 150,0                            | 8,4     | 16,8    | 31,0    | 55,5    | -            | 78,9                         | 25   | - |
| 907377   | HELU-S-RK-CU-UL 150-10 | 150,0                            | 10,5    | 16,8    | 31,0    | 56,5    | -            | 83,7                         | 25   | - |
| 907378   | HELU-S-RK-CU-UL 150-12 | 150,0                            | 13,0    | 16,8    | 31,0    | 56,0    | -            | 80,7                         | 25   | - |
| 907379   | HELU-S-RK-CU-UL 150-14 | 150,0                            | 15,0    | 16,8    | 31,0    | 57,0    | -            | 83,0                         | 25   | - |
| 907380   | HELU-S-RK-CU-UL 150-16 | 150,0                            | 17,0    | 16,8    | 31,0    | 58,0    | -            | 83,6                         | 25   | - |
| 907381   | HELU-S-RK-CU-UL 150-20 | 150,0                            | 21,0    | 16,8    | 35,0    | 63,0    | -            | 87,5                         | 25   | - |
| 907382   | HELU-S-RK-CU-UL 185-8  | 185,0                            | 8,4     | 19,0    | 35,0    | 58,0    | -            | 103,7                        | 25   | - |
| 907383   | HELU-S-RK-CU-UL 185-10 | 185,0                            | 10,5    | 19,0    | 35,0    | 59,0    | -            | 106,1                        | 25   | - |
| 907384   | HELU-S-RK-CU-UL 185-12 | 185,0                            | 13,0    | 19,0    | 35,0    | 58,5    | -            | 106,0                        | 25   | - |
| 907385   | HELU-S-RK-CU-UL 185-14 | 185,0                            | 15,0    | 19,0    | 35,0    | 61,0    | -            | 107,2                        | 25   | - |
| 907386   | HELU-S-RK-CU-UL 185-16 | 185,0                            | 17,0    | 19,0    | 35,0    | 63,0    | -            | 108,6                        | 25   | - |
| 907387   | HELU-S-RK-CU-UL 185-20 | 185,0                            | 21,0    | 19,0    | 35,0    | 66,0    | -            | 113,3                        | 25   | - |
| 907388   | HELU-S-RK-CU-UL 240-8  | 240,0                            | 8,4     | 21,0    | 38,0    | 67,0    | -            | 124,0                        | 25   | - |
| 907389   | HELU-S-RK-CU-UL 240-10 | 240,0                            | 10,5    | 21,0    | 38,0    | 67,0    | -            | 129,7                        | 25   | - |
| 907390   | HELU-S-RK-CU-UL 240-12 | 240,0                            | 13,0    | 21,0    | 38,0    | 67,0    | -            | 130,2                        | 25   | - |
| 907391   | HELU-S-RK-CU-UL 240-14 | 240,0                            | 15,0    | 21,0    | 38,0    | 69,0    | -            | 133,6                        | 25   | - |
| 907392   | HELU-S-RK-CU-UL 240-16 | 240,0                            | 17,0    | 21,0    | 38,0    | 69,5    | -            | 135,6                        | 20   | - |
| 907393   | HELU-S-RK-CU-UL 240-20 | 240,0                            | 21,0    | 21,0    | 38,0    | 71,0    | -            | 138,0                        | 25   | - |
| 907394   | HELU-S-RK-CU-UL 300-10 | 300,0                            | 10,5    | 24,0    | 44,0    | 79,5    | -            | 204,5                        | 20   | - |
| 907395   | HELU-S-RK-CU-UL 300-12 | 300,0                            | 13,0    | 24,0    | 44,0    | 82,0    | -            | 211,8                        | 20   | - |
| 907396   | HELU-S-RK-CU-UL 300-14 | 300,0                            | 15,0    | 24,0    | 44,0    | 84,0    | -            | 221,9                        | 20   | - |
| 907397   | HELU-S-RK-CU-UL 300-16 | 300,0                            | 17,0    | 24,0    | 44,0    | 85,0    | -            | 219,4                        | 20   | - |
| 907398   | HELU-S-RK-CU-UL 300-20 | 300,0                            | 21,0    | 24,0    | 44,0    | 85,0    | -            | 224,0                        | 20   | - |
| 907399   | HELU-S-RK-CU-UL 400-10 | 400,0                            | 10,5    | 27,5    | 49,0    | 92,0    | -            | 279,0                        | 15   | - |
| 907400   | HELU-S-RK-CU-UL 400-12 | 400,0                            | 13,0    | 27,5    | 49,0    | 92,0    | -            | 278,5                        | 15   | - |
| 907401   | HELU-S-RK-CU-UL 400-16 | 400,0                            | 17,0    | 27,5    | 49,0    | 92,0    | -            | 276,5                        | 15   | - |
| 907402   | HELU-S-RK-CU-UL 400-20 | 400,0                            | 21,0    | 27,5    | 49,0    | 92,0    | -            | 266,1                        | 15   | - |
| 907403   | HELU-S-RK-CU-UL 500-12 | 500,0                            | 13,0    | 31,0    | 55,5    | 113,0   | -            | 493,8                        | 5    | - |
| 907404   | HELU-S-RK-CU-UL 500-16 | 500,0                            | 17,0    | 31,0    | 55,5    | 113,0   | -            | 493,8                        | 5    | - |
| 907405   | HELU-S-RK-CU-UL 500-20 | 500,0                            | 21,0    | 31,0    | 55,5    | 113,0   | -            | 485,6                        | 5    | - |
| 907406   | HELU-S-RK-CU-UL 630-16 | 630,0                            | 17,0    | 34,0    | 60,0    | 115,0   | -            | 513,5                        | 5    | - |
| 907407   | HELU-S-RK-CU-UL 630-20 | 630,0                            | 21,0    | 34,0    | 60,0    | 115,0   | -            | 506,0                        | 5    | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-RK-45-CU Copper tubular cable lug - 45° angled



## Tubular cable lug angled HELU-S-RK-45-CU

Non-insulated tubular cable lugs in eye type design, 45° angled.

### Material

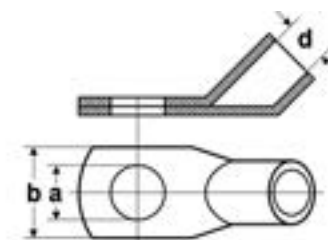
Socket: Copper according to DIN EN 13600  
Surface: tin plated

### Technical data

Temperature range: up to +120°C

### Note

Compression instruction and instruction for assembly see chapter "Technical information".



### Dimensions

- a Diameter of the boring
- d Inner diameter of the cable insertion
- b Flange width

### eye type

| Part no.<br>45° | Type                   | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | Weight<br>kg / 1000<br>items | Unit |
|-----------------|------------------------|----------------------------------|---------|---------|---------|------------------------------|------|
| 907600          | HELU-S-RK-45-CU 10-10  | 10,0                             | 10,5    | 4,5     | 18,0    | 6,6                          | 100  |
| 907478          | HELU-S-RK-45-CU 50-6   | 50,0                             | 6,4     | 10,0    | 20,0    | 29,4                         | 50   |
| 907488          | HELU-S-RK-45-CU 95-16  | 95,0                             | 17,0    | 13,5    | 28,0    | 68,0                         | 25   |
| 907493          | HELU-S-RK-45-CU 150-8  | 150,0                            | 8,4     | 16,8    | 31,0    | 113,1                        | 25   |
| 907497          | HELU-S-RK-45-CU 150-20 | 150,0                            | 21,0    | 16,8    | 35,0    | 101,2                        | 25   |
| 907505          | HELU-S-RK-45-CU 300-12 | 300,0                            | 13,0    | 24,0    | 43,0    | 257,0                        | 15   |
| 907506          | HELU-S-RK-45-CU 300-16 | 300,0                            | 17,0    | 24,0    | 43,0    | 256,8                        | 15   |
| 907507          | HELU-S-RK-45-CU 300-20 | 300,0                            | 21,0    | 24,0    | 43,0    | 273,0                        | 15   |

Dimensions and specifications may be changed without prior notice.



# HELU-S-RK-45-CU-UL Copper tubular cable lug - 45° angled



## Tubular cable lug angled

### HELU-S-RK-45-CU-UL

Non-insulated tubular cable lugs in eye type design, 45° angled.

## Material

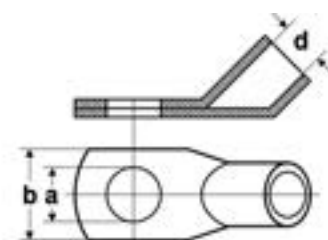
Socket: Copper according to DIN EN 13600  
Surface: tin plated

## Technical data

Temperature range: up to +120°C

## Note

Compression instruction and instruction for assembly see chapter "Technical information".



## Dimensions

- a Diameter of the boring
- d Inner diameter of the cable insertion
- b Flange width

## eye type

| Part no.<br>45° | Type                      | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | Weight<br>kg / 1000<br>items | Unit |
|-----------------|---------------------------|----------------------------------|---------|---------|---------|------------------------------|------|
| 907597          | HELU-S-RK-45-CU-UL 10-5   | 10,0                             | 5,3     | 4,5     | 12,0    | 5,5                          | 100  |
| 907598          | HELU-S-RK-45-CU-UL 10-6   | 10,0                             | 6,4     | 4,5     | 12,0    | 5,8                          | 100  |
| 907599          | HELU-S-RK-45-CU-UL 10-8   | 10,0                             | 8,4     | 4,5     | 15,0    | 6,5                          | 100  |
| 907601          | HELU-S-RK-45-CU-UL 16-5   | 16,0                             | 5,3     | 5,5     | 12,0    | 9,5                          | 100  |
| 907467          | HELU-S-RK-45-CU-UL 16-6   | 16,0                             | 6,4     | 5,5     | 12,0    | 10,2                         | 100  |
| 907468          | HELU-S-RK-45-CU-UL 16-8   | 16,0                             | 8,4     | 5,5     | 15,0    | 11,7                         | 100  |
| 907469          | HELU-S-RK-45-CU-UL 16-10  | 16,0                             | 10,5    | 5,5     | 18,0    | 11,7                         | 100  |
| 907470          | HELU-S-RK-45-CU-UL 25-6   | 25,0                             | 6,4     | 7,0     | 15,0    | 13,9                         | 100  |
| 907471          | HELU-S-RK-45-CU-UL 25-8   | 25,0                             | 8,4     | 7,0     | 16,0    | 15,1                         | 100  |
| 907472          | HELU-S-RK-45-CU-UL 25-10  | 25,0                             | 10,5    | 7,0     | 18,0    | 16,6                         | 100  |
| 907473          | HELU-S-RK-45-CU-UL 25-12  | 25,0                             | 13,0    | 7,0     | 20,0    | 17,0                         | 100  |
| 907474          | HELU-S-RK-45-CU-UL 35-6   | 35,0                             | 6,4     | 8,5     | 17,0    | 21,7                         | 50   |
| 907475          | HELU-S-RK-45-CU-UL 35-8   | 35,0                             | 8,4     | 8,5     | 17,0    | 22,3                         | 50   |
| 907476          | HELU-S-RK-45-CU-UL 35-10  | 35,0                             | 10,5    | 8,5     | 20,0    | 23,4                         | 50   |
| 907477          | HELU-S-RK-45-CU-UL 35-12  | 35,0                             | 13,0    | 8,5     | 22,0    | 24,0                         | 50   |
| 907479          | HELU-S-RK-45-CU-UL 50-8   | 50,0                             | 8,4     | 10,0    | 20,0    | 33,4                         | 50   |
| 907480          | HELU-S-RK-45-CU-UL 50-10  | 50,0                             | 10,5    | 10,0    | 20,0    | 36,5                         | 50   |
| 907481          | HELU-S-RK-45-CU-UL 50-12  | 50,0                             | 13,0    | 10,0    | 23,0    | 36,5                         | 50   |
| 907482          | HELU-S-RK-45-CU-UL 70-8   | 70,0                             | 8,4     | 12,0    | 24,0    | 49,0                         | 25   |
| 907483          | HELU-S-RK-45-CU-UL 70-10  | 70,0                             | 10,5    | 12,0    | 24,0    | 52,3                         | 25   |
| 907484          | HELU-S-RK-45-CU-UL 70-12  | 70,0                             | 13,0    | 12,0    | 24,0    | 53,4                         | 25   |
| 907485          | HELU-S-RK-45-CU-UL 95-8   | 95,0                             | 8,4     | 13,5    | 26,0    | 61,8                         | 25   |
| 907486          | HELU-S-RK-45-CU-UL 95-10  | 95,0                             | 10,5    | 13,5    | 26,0    | 62,0                         | 25   |
| 907487          | HELU-S-RK-45-CU-UL 95-12  | 95,0                             | 13,0    | 13,5    | 26,0    | 62,0                         | 25   |
| 907489          | HELU-S-RK-45-CU-UL 120-8  | 120,0                            | 8,4     | 15,0    | 29,0    | 78,0                         | 25   |
| 907490          | HELU-S-RK-45-CU-UL 120-10 | 120,0                            | 10,5    | 15,0    | 29,0    | 89,0                         | 25   |
| 907491          | HELU-S-RK-45-CU-UL 120-12 | 120,0                            | 13,0    | 15,0    | 29,0    | 89,1                         | 25   |
| 907492          | HELU-S-RK-45-CU-UL 120-16 | 120,0                            | 17,0    | 15,0    | 30,0    | 93,1                         | 25   |
| 907494          | HELU-S-RK-45-CU-UL 150-10 | 150,0                            | 10,5    | 16,8    | 31,0    | 98,0                         | 25   |
| 907495          | HELU-S-RK-45-CU-UL 150-12 | 150,0                            | 13,0    | 16,8    | 31,0    | 96,8                         | 25   |
| 907496          | HELU-S-RK-45-CU-UL 150-16 | 150,0                            | 17,0    | 16,8    | 31,0    | 101,2                        | 25   |
| 907498          | HELU-S-RK-45-CU-UL 185-10 | 185,0                            | 10,5    | 19,0    | 35,0    | 123,5                        | 20   |
| 907499          | HELU-S-RK-45-CU-UL 185-12 | 185,0                            | 13,0    | 19,0    | 35,0    | 122,4                        | 20   |
| 907500          | HELU-S-RK-45-CU-UL 185-16 | 185,0                            | 17,0    | 19,0    | 35,0    | 128,4                        | 20   |
| 907501          | HELU-S-RK-45-CU-UL 185-20 | 185,0                            | 21,0    | 19,0    | 35,0    | 139,9                        | 20   |
| 907502          | HELU-S-RK-45-CU-UL 240-12 | 240,0                            | 13,0    | 21,0    | 38,0    | 154,6                        | 15   |
| 907503          | HELU-S-RK-45-CU-UL 240-16 | 240,0                            | 17,0    | 21,0    | 38,0    | 165,1                        | 15   |
| 907504          | HELU-S-RK-45-CU-UL 240-20 | 240,0                            | 21,0    | 21,0    | 38,0    | 170,4                        | 15   |

Dimensions and specifications may be changed without prior notice.

# HELU-S-RK-90-CU-UL Copper tubular cable lug - 90° angled



## Tubular cable lug angled HELU-S-RK-90-CU-UL

Non-insulated tubular cable lugs in eye type design, 90° angled.

### Material

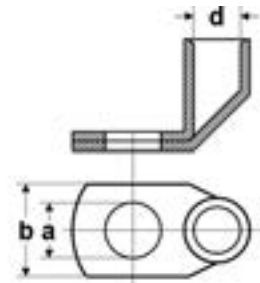
Socket: Copper according to DIN EN 13600  
Surface: tin plated

### Technical data

Temperature range: up to +120°C

### Note

Compression instruction and instruction for assembly see chapter "Technical information".



### Dimensions

- a Diameter of boring
- d Inner diameter of the cable insertion
- b Flange width

### eye type

| Part no.<br>90° | Type                     | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | Weight<br>kg / 1000<br>items | Unit |   |
|-----------------|--------------------------|----------------------------------|---------|---------|---------|------------------------------|------|---|
| 907508          | HELU-S-RK-90-CU-UL 6-5   | 6,0                              | 5,3     | 3,5     | 11,0    | 5,6                          | 100  | - |
| 907509          | HELU-S-RK-90-CU-UL 6-6   | 6,0                              | 6,4     | 3,5     | 11,0    | 6,2                          | 100  | - |
| 907510          | HELU-S-RK-90-CU-UL 6-8   | 6,0                              | 8,4     | 3,5     | 15,0    | 6,4                          | 100  | - |
| 907511          | HELU-S-RK-90-CU-UL 6-10  | 6,0                              | 10,5    | 3,5     | 18,0    | 6,8                          | 100  | - |
| 907512          | HELU-S-RK-90-CU-UL 6-12  | 6,0                              | 13,0    | 3,5     | 20,0    | 6,6                          | 100  | - |
| 907513          | HELU-S-RK-90-CU-UL 10-5  | 10,0                             | 5,3     | 4,5     | 12,0    | 5,4                          | 100  | - |
| 907514          | HELU-S-RK-90-CU-UL 10-6  | 10,0                             | 6,4     | 4,5     | 12,0    | 5,9                          | 100  | - |
| 907515          | HELU-S-RK-90-CU-UL 10-8  | 10,0                             | 8,4     | 4,5     | 15,0    | 6,7                          | 100  | - |
| 907516          | HELU-S-RK-90-CU-UL 10-10 | 10,0                             | 10,5    | 4,5     | 18,0    | 7,0                          | 100  | - |
| 907517          | HELU-S-RK-90-CU-UL 10-12 | 10,0                             | 13,0    | 4,5     | 20,0    | 7,0                          | 100  | - |
| 907518          | HELU-S-RK-90-CU-UL 16-5  | 16,0                             | 5,3     | 5,5     | 12,0    | 10,7                         | 100  | - |
| 907519          | HELU-S-RK-90-CU-UL 16-6  | 16,0                             | 6,4     | 5,5     | 12,0    | 11,5                         | 100  | - |
| 907520          | HELU-S-RK-90-CU-UL 16-8  | 16,0                             | 8,4     | 5,5     | 15,0    | 12,0                         | 100  | - |
| 907521          | HELU-S-RK-90-CU-UL 16-10 | 16,0                             | 10,5    | 5,5     | 18,0    | 12,3                         | 100  | - |
| 907522          | HELU-S-RK-90-CU-UL 16-12 | 16,0                             | 13,0    | 5,5     | 20,0    | 12,3                         | 100  | - |
| 907523          | HELU-S-RK-90-CU-UL 25-6  | 25,0                             | 6,4     | 7,0     | 15,0    | 13,5                         | 100  | - |
| 907524          | HELU-S-RK-90-CU-UL 25-8  | 25,0                             | 8,4     | 7,0     | 16,0    | 14,3                         | 100  | - |
| 907525          | HELU-S-RK-90-CU-UL 25-10 | 25,0                             | 10,5    | 7,0     | 18,0    | 15,7                         | 100  | - |
| 907526          | HELU-S-RK-90-CU-UL 25-12 | 25,0                             | 13,0    | 7,0     | 20,0    | 15,1                         | 100  | - |
| 907527          | HELU-S-RK-90-CU-UL 35-6  | 35,0                             | 6,4     | 8,5     | 17,0    | 21,0                         | 100  | - |
| 907528          | HELU-S-RK-90-CU-UL 35-8  | 35,0                             | 8,4     | 8,5     | 17,0    | 23,1                         | 100  | - |
| 907529          | HELU-S-RK-90-CU-UL 35-10 | 35,0                             | 10,5    | 8,5     | 20,0    | 23,6                         | 100  | - |
| 907530          | HELU-S-RK-90-CU-UL 35-12 | 35,0                             | 13,0    | 8,5     | 22,0    | 23,7                         | 100  | - |
| 907531          | HELU-S-RK-90-CU-UL 35-16 | 35,0                             | 17,0    | 8,5     | 28,0    | 24,8                         | 100  | - |
| 907532          | HELU-S-RK-90-CU-UL 50-6  | 50,0                             | 6,4     | 10,0    | 20,0    | 30,0                         | 100  | - |
| 907533          | HELU-S-RK-90-CU-UL 50-8  | 50,0                             | 8,4     | 10,0    | 20,0    | 32,2                         | 100  | - |
| 907534          | HELU-S-RK-90-CU-UL 50-10 | 50,0                             | 10,5    | 10,0    | 20,0    | 33,2                         | 100  | - |
| 907535          | HELU-S-RK-90-CU-UL 50-12 | 50,0                             | 13,0    | 10,0    | 23,0    | 32,8                         | 100  | - |
| 907536          | HELU-S-RK-90-CU-UL 50-16 | 50,0                             | 17,0    | 10,0    | 27,0    | 36,3                         | 100  | - |
| 907537          | HELU-S-RK-90-CU-UL 50-20 | 50,0                             | 21,0    | 10,0    | 30,0    | 38,9                         | 100  | - |
| 907538          | HELU-S-RK-90-CU-UL 70-6  | 70,0                             | 6,4     | 12,0    | 24,0    | 44,1                         | 25   | - |
| 907539          | HELU-S-RK-90-CU-UL 70-8  | 70,0                             | 8,4     | 12,0    | 24,0    | 48,6                         | 25   | - |
| 907540          | HELU-S-RK-90-CU-UL 70-10 | 70,0                             | 10,5    | 12,0    | 24,0    | 50,6                         | 25   | - |
| 907541          | HELU-S-RK-90-CU-UL 70-12 | 70,0                             | 13,0    | 12,0    | 24,0    | 49,4                         | 25   | - |
| 907542          | HELU-S-RK-90-CU-UL 70-16 | 70,0                             | 17,0    | 12,0    | 28,0    | 51,1                         | 25   | - |
| 907543          | HELU-S-RK-90-CU-UL 70-20 | 70,0                             | 21,0    | 12,0    | 29,0    | 52,6                         | 25   | - |

Continuation ▶

# HELU-S-RK-90-CU-UL Copper tubular cable lug - 90° angled



## eye type

| Part no.<br>90° | Type                      | Cross-section<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | Weight<br>kg / 1000<br>items | Unit |   |
|-----------------|---------------------------|----------------------------------|---------|---------|---------|------------------------------|------|---|
| 907544          | HELU-S-RK-90-CU-UL 95-8   | 95,0                             | 8,4     | 13,5    | 26,0    | 53,3                         | 25   | - |
| 907545          | HELU-S-RK-90-CU-UL 95-10  | 95,0                             | 10,5    | 13,5    | 26,0    | 55,9                         | 25   | - |
| 907546          | HELU-S-RK-90-CU-UL 95-12  | 95,0                             | 13,0    | 13,5    | 26,0    | 56,6                         | 25   | - |
| 907547          | HELU-S-RK-90-CU-UL 95-16  | 95,0                             | 17,0    | 13,5    | 28,0    | 60,0                         | 25   | - |
| 907548          | HELU-S-RK-90-CU-UL 120-8  | 120,0                            | 8,4     | 15,0    | 29,0    | 76,3                         | 25   | - |
| 907549          | HELU-S-RK-90-CU-UL 120-10 | 120,0                            | 10,5    | 15,0    | 29,0    | 80,7                         | 25   | - |
| 907550          | HELU-S-RK-90-CU-UL 120-12 | 120,0                            | 13,0    | 15,0    | 29,0    | 79,9                         | 25   | - |
| 907551          | HELU-S-RK-90-CU-UL 120-16 | 120,0                            | 17,0    | 15,0    | 30,0    | 84,6                         | 25   | - |
| 907552          | HELU-S-RK-90-CU-UL 150-8  | 150,0                            | 8,4     | 16,8    | 31,0    | 80,3                         | 25   | - |
| 907553          | HELU-S-RK-90-CU-UL 150-10 | 150,0                            | 10,5    | 16,8    | 31,0    | 80,7                         | 25   | - |
| 907554          | HELU-S-RK-90-CU-UL 150-12 | 150,0                            | 13,0    | 16,8    | 31,0    | 82,9                         | 25   | - |
| 907555          | HELU-S-RK-90-CU-UL 150-16 | 150,0                            | 17,0    | 16,8    | 31,0    | 85,0                         | 25   | - |
| 907556          | HELU-S-RK-90-CU-UL 150-20 | 150,0                            | 21,0    | 16,8    | 35,0    | 88,9                         | 25   | - |
| 907557          | HELU-S-RK-90-CU-UL 185-10 | 185,0                            | 10,5    | 19,0    | 35,0    | 114,1                        | 25   | - |
| 907558          | HELU-S-RK-90-CU-UL 185-12 | 185,0                            | 13,0    | 19,0    | 35,0    | 120,4                        | 25   | - |
| 907559          | HELU-S-RK-90-CU-UL 185-16 | 185,0                            | 17,0    | 19,0    | 35,0    | 124,8                        | 25   | - |
| 907560          | HELU-S-RK-90-CU-UL 185-20 | 185,0                            | 21,0    | 19,0    | 35,0    | 127,0                        | 25   | - |
| 907561          | HELU-S-RK-90-CU-UL 240-10 | 240,0                            | 10,5    | 21,0    | 38,0    | 133,2                        | 25   | - |
| 907562          | HELU-S-RK-90-CU-UL 240-12 | 240,0                            | 13,0    | 21,0    | 38,0    | 134,0                        | 25   | - |
| 907563          | HELU-S-RK-90-CU-UL 240-16 | 240,0                            | 17,0    | 21,0    | 38,0    | 137,6                        | 25   | - |
| 907564          | HELU-S-RK-90-CU-UL 240-20 | 240,0                            | 21,0    | 21,0    | 38,0    | 142,3                        | 25   | - |
| 907565          | HELU-S-RK-90-CU-UL 300-12 | 300,0                            | 13,0    | 24,0    | 43,0    | 199,2                        | 20   | - |
| 907566          | HELU-S-RK-90-CU-UL 300-16 | 300,0                            | 17,0    | 24,0    | 43,0    | 209,0                        | 20   | - |
| 907567          | HELU-S-RK-90-CU-UL 300-20 | 300,0                            | 21,0    | 24,0    | 43,0    | 218,1                        | 20   | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-PK-AL-DIN Tubular compression cable lugs

uninsulated



## Compression cable lug HELU-S-PK-AL-DIN

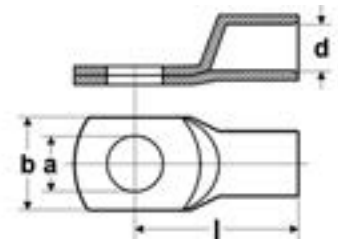
Uninsulated, straight tubular cable lug in eye type design made of aluminium. High quality version for reliable crimping. Designed for conductor type RM acc. to DIN 48201 and circular reshaped conductors.

## Material

AL 99,5  
Surface: bare

## Note

Code type indicates the required hexagonal crimping insert.  
Sleeves are prefilled with contact grease and sealed with plastic plug  
Compression instruction and instruction for assembly see chapter "Technical information".



## Dimensions

- a Diameter of the bore
- d Inner diameter of the cable inclusion
- b Flange width
- l Length to middle of the bore

## eye type

| Part no. | Type                    | Cross-section<br>RM/SM - SE<br>mm <sup>2</sup> | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |
|----------|-------------------------|--|---------|---------|---------|---------|--------------|------------------------------|------|
| 907865   | HELU-S-PK-AL-DIN 16-8   | 16,0 - 25,0                                    | 8,4     | 5,6     | 16,0    | 52,0    | 12           | 9,6                          | 50   |
| 907866   | HELU-S-PK-AL-DIN 16-10  | 16,0 - 25,0                                    | 10,5    | 5,6     | 18,0    | 52,0    | 12           | 9,7                          | 50   |
| 907867   | HELU-S-PK-AL-DIN 25-8   | 25,0 - 35,0                                    | 8,4     | 6,8     | 16,0    | 60,0    | 12           | 14,8                         | 50   |
| 907868   | HELU-S-PK-AL-DIN 25-10  | 25,0 - 35,0                                    | 10,5    | 6,8     | 18,0    | 60,0    | 12           | 15,3                         | 50   |
| 907869   | HELU-S-PK-AL-DIN 35-8   | 35,0 - 50,0                                    | 8,4     | 8,0     | 20,0    | 67,0    | 14           | 24,5                         | 50   |
| 907870   | HELU-S-PK-AL-DIN 35-10  | 35,0 - 50,0                                    | 10,5    | 8,0     | 20,0    | 67,0    | 14           | 24,5                         | 50   |
| 907871   | HELU-S-PK-AL-DIN 35-12  | 35,0 - 50,0                                    | 13,0    | 8,0     | 20,0    | 67,0    | 14           | 23,5                         | 50   |
| 907872   | HELU-S-PK-AL-DIN 50-8   | 50,0 - 70,0                                    | 8,4     | 10,0    | 23,0    | 74,0    | 16           | 32,9                         | 25   |
| 907873   | HELU-S-PK-AL-DIN 50-10  | 50,0 - 70,0                                    | 10,5    | 10,0    | 23,0    | 74,0    | 16           | 28,8                         | 25   |
| 907874   | HELU-S-PK-AL-DIN 50-12  | 50,0 - 70,0                                    | 13,0    | 10,0    | 23,0    | 74,0    | 16           | 33,8                         | 25   |
| 907875   | HELU-S-PK-AL-DIN 70-10  | 70,0 - 95,0                                    | 10,5    | 11,5    | 28,0    | 84,0    | 18           | 47,7                         | 25   |
| 907876   | HELU-S-PK-AL-DIN 70-12  | 70,0 - 95,0                                    | 13,0    | 11,5    | 28,0    | 87,0    | 18           | 47,3                         | 25   |
| 907877   | HELU-S-PK-AL-DIN 95-10  | 95,0 - 120,0                                   | 10,5    | 13,2    | 32,0    | 90,0    | 22           | 70,1                         | 10   |
| 907878   | HELU-S-PK-AL-DIN 95-12  | 95,0 - 120,0                                   | 13,0    | 13,2    | 32,0    | 90,0    | 22           | 78,2                         | 10   |
| 907879   | HELU-S-PK-AL-DIN 95-16  | 95,0 - 120,0                                   | 17,0    | 13,2    | 32,0    | 90,0    | 22           | 76,2                         | 10   |
| 907880   | HELU-S-PK-AL-DIN 120-10 | 120,0 - 150,0                                  | 10,5    | 14,7    | 32,0    | 98,0    | 22           | 83,8                         | 10   |
| 907881   | HELU-S-PK-AL-DIN 120-12 | 120,0 - 150,0                                  | 13,0    | 14,7    | 32,0    | 98,0    | 22           | 87,9                         | 10   |
| 907882   | HELU-S-PK-AL-DIN 120-16 | 120,0 - 150,0                                  | 17,0    | 14,7    | 32,0    | 98,0    | 22           | 86,4                         | 10   |
| 906459   | HELU-S-PK-AL-DIN 150-10 | 150,0 - 185,0                                  | 10,5    | 16,3    | 35,0    | 104,0   | 25           | 99,8                         | 10   |
| 906436   | HELU-S-PK-AL-DIN 150-12 | 150,0 - 185,0                                  | 13,0    | 16,3    | 35,0    | 104,0   | 25           | 102,3                        | 10   |
| 906461   | HELU-S-PK-AL-DIN 150-16 | 150,0 - 185,0                                  | 17,0    | 16,3    | 35,0    | 104,0   | 25           | 100,8                        | 10   |
| 906462   | HELU-S-PK-AL-DIN 150-20 | 150,0 - 185,0                                  | 21,0    | 16,3    | 35,0    | 104,0   | 25           | 100,2                        | 10   |
| 907883   | HELU-S-PK-AL-DIN 185-10 | 185,0 - 240,0                                  | 10,5    | 18,5    | 40,0    | 109,0   | 28           | 133,9                        | 10   |
| 906463   | HELU-S-PK-AL-DIN 185-12 | 185,0 - 240,0                                  | 13,0    | 18,5    | 40,0    | 109,0   | 28           | 133,9                        | 10   |
| 906464   | HELU-S-PK-AL-DIN 185-16 | 185,0 - 240,0                                  | 17,0    | 18,5    | 40,0    | 109,0   | 28           | 137,5                        | 10   |
| 906465   | HELU-S-PK-AL-DIN 185-20 | 185,0 - 240,0                                  | 21,0    | 18,5    | 40,0    | 109,0   | 28           | 137,5                        | 10   |
| 907884   | HELU-S-PK-AL-DIN 240-10 | 240,0 - 300,0                                  | 10,5    | 21,0    | 46,0    | 119,0   | 32           | 182,8                        | 10   |
| 906466   | HELU-S-PK-AL-DIN 240-12 | 240,0 - 300,0                                  | 13,0    | 21,0    | 46,0    | 119,0   | 32           | 179,4                        | 10   |
| 906467   | HELU-S-PK-AL-DIN 240-16 | 240,0 - 300,0                                  | 17,0    | 21,0    | 46,0    | 119,0   | 32           | 176,2                        | 10   |
| 906468   | HELU-S-PK-AL-DIN 240-20 | 240,0 - 300,0                                  | 21,0    | 21,0    | 46,0    | 119,0   | 32           | 179,0                        | 10   |
| 906469   | HELU-S-PK-AL-DIN 300-12 | 300,0  | 13,0    | 23,3    | 50,0    | 125,0   | 34           | 205,4                        | 5    |
| 906470   | HELU-S-PK-AL-DIN 300-16 | 300,0  | 17,0    | 23,3    | 50,0    | 125,0   | 34           | 201,4                        | 5    |
| 906471   | HELU-S-PK-AL-DIN 300-20 | 300,0  | 21,0    | 23,3    | 50,0    | 125,0   | 34           | 194,3                        | 5    |
| 906472   | HELU-S-PK-AL-DIN 400-12 | 400,0  | 13,0    | 26,0    | 55,0    | 120,0   | 38           | 283,0                        | 5    |
| 906473   | HELU-S-PK-AL-DIN 400-16 | 400,0  | 17,0    | 26,0    | 55,0    | 120,0   | 38           | 273,3                        | 5    |
| 906474   | HELU-S-PK-AL-DIN 400-20 | 400,0  | 21,0    | 26,0    | 55,0    | 120,0   | 38           | 240,0                        | 5    |
| 906475   | HELU-S-PK-AL-DIN 500-12 | 500,0  | 13,0    | 29,0    | 63,0    | 140,0   | 44           | 380,0                        | 5    |
| 906476   | HELU-S-PK-AL-DIN 500-16 | 500,0  | 17,0    | 29,0    | 63,0    | 140,0   | 44           | 378,0                        | 5    |
| 906477   | HELU-S-PK-AL-DIN 500-20 | 500,0  | 21,0    | 29,0    | 63,0    | 140,0   | 44           | 373,5                        | 5    |

Dimensions and specifications may be changed without prior notice.

# HELU-S-PK-AL-FG compression cable lug, FG, extruded, straight ring design

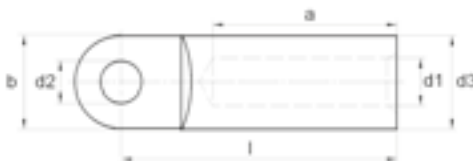


## Technical Data

**Material:** Aluminium AL 99,5  
**Surface:** bright or tinned  
**Special feature:** smaller connecting flange (b) than DIN compression cable lugs

## Note

- Sleeve filled with contact lubricant and closed against drying out
- Strain-relieved for aluminum conductors
- DIN 46329



## HELU-S-PK-AL-FG

| Part No. bright | Part No. tinned | Cross section mm <sup>2</sup> rm/sm* | Hole M | Key Figures | Dimensions in mm |      |      |    |     |    |
|-----------------|-----------------|--------------------------------------|--------|-------------|------------------|------|------|----|-----|----|
|                 |                 |                                      |        |             | d1               | d3   | d2   | b  | l   | a  |
| 909835          | 909853          | 16*                                  | 8      | 12          | 5,8              |      | 8,4  | 20 | 53  | 30 |
| 909836          | 909854          | 16                                   | 10     | 12          | 5,8              |      | 10,5 | 20 | 53  | 30 |
| 909837          | 909855          | 25                                   | 8      | 12          | 6,8              |      | 8,4  | 25 | 53  | 30 |
| 909838          | 909856          | 25                                   | 10     | 12          | 6,8              |      | 10,5 | 25 | 53  | 30 |
| 909839          | 909857          | 25                                   | 12     | 12          | 6,8              |      | 13   | 25 | 53  | 30 |
| 909840          | 909858          | 35                                   | 8      | 14          | 8                |      | 8,4  | 25 | 65  | 42 |
| 909841          | 909859          | 35                                   | 10     | 14          | 8                |      | 10,5 | 25 | 65  | 42 |
| 909842          | 909860          | 35                                   | 12     | 14          | 8                |      | 13   | 25 | 65  | 42 |
| 909843          | 909861          | 50                                   | 8      | 16          | 9,8              |      | 8,4  | 25 | 65  | 42 |
| 909844          | 909862          | 50                                   | 10     | 16          | 9,8              |      | 10,5 | 25 | 65  | 42 |
| 909845          | 909863          | 50                                   | 12     | 16          | 9,8              |      | 13   | 25 | 65  | 42 |
| 909846          | 909864          | 70                                   | 8      | 18          | 11,2             |      | 8,4  | 25 | 75  | 52 |
| 909847          | 909865          | 70                                   | 10     | 18          | 11,2             |      | 10,5 | 25 | 75  | 52 |
| 909848          | 909866          | 70                                   | 12     | 18          | 11,2             |      | 13   | 25 | 75  | 52 |
| 909849          | 909867          | 95                                   | 8      | 22          | 13,2             | 22   | 8,4  | 25 | 81  | 56 |
| 906539          | 906562          | 95                                   | 10     | 22          | 13,2             | 22   | 10,5 | 25 | 81  | 56 |
| 906540          | 906563          | 95                                   | 12     | 22          | 13,2             | 22   | 13   | 25 | 81  | 56 |
| 906541          | 906564          | 120                                  | 10     | 22          | 14,7             | 23   | 10,5 | 30 | 86  | 56 |
| 906542          | 906565          | 120                                  | 12     | 22          | 14,7             | 23   | 13   | 30 | 86  | 56 |
| 906543          | 906566          | 120                                  | 16     | 22          | 14,7             | 23   | 17   | 30 | 86  | 56 |
| 906544          | 906567          | 150                                  | 10     | 25          | 16,3             | 25   | 10,5 | 30 | 90  | 60 |
| 906545          | 906568          | 150                                  | 12     | 25          | 16,3             | 25   | 13   | 30 | 90  | 60 |
| 906546          | 906569          | 150                                  | 16     | 25          | 16,3             | 25   | 17   | 30 | 90  | 60 |
| 909850          | 909868          | 150                                  | 20     | 25          | 16,3             | 25   | 21   | 25 | 90  | 60 |
| 906547          | 906570          | 185                                  | 10     | 28          | 18,3             | 28,5 | 10,5 | 30 | 91  | 60 |
| 906548          | 906571          | 185                                  | 12     | 28          | 18,3             | 28,5 | 13   | 30 | 91  | 60 |
| 906549          | 906572          | 185                                  | 16     | 28          | 18,3             | 28,5 | 17   | 30 | 91  | 60 |
| 909851          | 909869          | 185                                  | 20     | 28          | 18,3             | 28,5 | 21   | 25 | 91  | 60 |
| 909852          | 909870          | 240                                  | 10     | 32          | 21               | 32   | 10,5 | 38 | 106 | 70 |
| 906550          | 906573          | 240                                  | 12     | 32          | 21               | 32   | 13   | 38 | 106 | 70 |
| 906551          | 906574          | 240                                  | 16     | 32          | 21               | 32   | 17   | 38 | 106 | 70 |
| 906552          | 906575          | 240                                  | 20     | 32          | 21               | 32   | 21   | 38 | 106 | 70 |
| 906553          | 906576          | 300                                  | 12     | 34          | 23,3             | 34   | 13   | 38 | 106 | 70 |
| 906554          | 906577          | 300                                  | 16     | 34          | 23,3             | 34   | 17   | 38 | 106 | 70 |
| 906555          | 906578          | 300                                  | 20     | 34          | 23,3             | 34   | 21   | 38 | 106 | 70 |
| 906556          | 906579          | 400                                  | 12     | 38          | 26               | 38,5 | 13   | 38 | 116 | 73 |
| 906557          | 906580          | 400                                  | 16     | 38          | 26               | 38,5 | 17   | 38 | 116 | 73 |
| 906558          | 906581          | 400                                  | 20     | 38          | 26               | 38,5 | 21   | 38 | 116 | 73 |
| 906559          | 906582          | 500                                  | 12     | 44          | 29               | 44   | 13   | 44 | 122 | 79 |
| 906560          | 906583          | 500                                  | 16     | 44          | 29               | 44   | 17   | 44 | 122 | 79 |
| 906561          | 906584          | 500                                  | 20     | 44          | 29               | 44   | 21   | 44 | 122 | 79 |

rm = round cable multi-wire  
sm = sector cable multi-wire

\* not normed

Other dimensions available on request. Subject to technical changes. Prices available on request.

\* Please observe: Processing must be done exclusively with the C8 compression die intended for it. Only then can you achieve the required pull-out values according to DIN EN 61238 Part 1. The key figures on the compression cable lug and the compression die must match.

# HELU-S-PK-AL/CU Aluminium / Copper compression cable lug – straight



## Compression cable lug HELU-S-PK-AL/CU

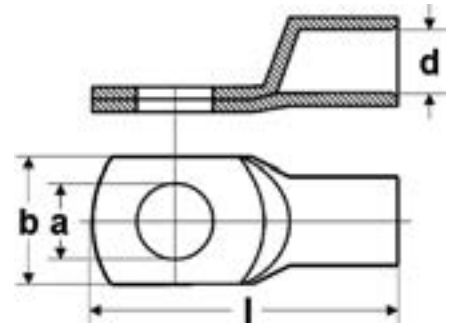
Non-insulated, straight compression lug in eye type design made of aluminium. High quality version for reliable crimping. Designed for conductor type RM and circularly reshaped conductors.

### Material

Socket: Al 99,5 and Cu acc. to DIN EN 13601  
Surface: bare

### Note

Code type indicates the required hexagonal crimping insert.  
Al-sleeves are prefilled with contact grease and sealed with plastic plugs  
Compression instruction and instruction for assembly see chapter "Technical information".



### Dimensions

a Diameter of the boring  
d Inner diameter of the cable inclusion  
b Flange width  
l Length

### eye type

| Part no. | Cross-section<br>RM/SM - SE<br>mm <sup>2</sup> | Boring<br>M | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--|-------------|---------|---------|---------|---------|--------------|------------------------------|------|---|
| 907568   | 10 - -   | 8           | 8,4     | 5,0     | 20,0    | 50,0    | 10           | 26,5                         | 25   | - |
| 907569   | 16 - 25  | 8           | 8,4     | 5,6     | 20,0    | 60,0    | 12           | 35,4                         | 25   | - |
| 907570   | 16 - 25  | 10          | 10,5    | 5,6     | 20,0    | 60,0    | 12           | 34,2                         | 25   | - |
| 907571   | 25 - 35  | 8           | 8,4     | 6,8     | 20,0    | 65,0    | 12           | 35,7                         | 25   | - |
| 907572   | 25 - 35  | 10          | 10,5    | 6,8     | 20,0    | 65,0    | 12           | 34,4                         | 25   | - |
| 907573   | 25 - 35  | 12          | 13,0    | 6,8     | 26,0    | 67,0    | 12           | 44,5                         | 25   | - |
| 907574   | 35 - 50  | 8           | 8,4     | 8,0     | 20,0    | 75,0    | 14           | 45,5                         | 25   | - |
| 907575   | 35 - 50  | 10          | 10,5    | 8,0     | 20,0    | 75,0    | 14           | 44,2                         | 25   | - |
| 907576   | 35 - 50  | 12          | 13,0    | 8,0     | 26,0    | 75,0    | 14           | 51,5                         | 25   | - |
| 907577   | 50 - 70  | 8           | 8,4     | 9,8     | 20,0    | 75,0    | 16           | 48,7                         | 25   | - |
| 907578   | 50 - 70  | 10          | 10,5    | 9,8     | 20,0    | 75,0    | 16           | 47,2                         | 25   | - |
| 907579   | 50 - 70  | 12          | 13,0    | 9,8     | 26,0    | 75,0    | 16           | 59,9                         | 25   | - |
| 907580   | 70 - 95  | 8           | 8,4     | 11,2    | 26,0    | 85,0    | 18           | 61,9                         | 10   | - |
| 907581   | 70 - 95  | 0           | 10,5    | 11,2    | 26,0    | 10,0    | 18           | 73,7                         | 10   | - |
| 907582   | 70 - 95  | 0           | 13,0    | 11,2    | 26,0    | 85,0    | 18           | 73,7                         | 10   | - |
| 907583   | 70 - 95  | 16          | 17,0    | 11,2    | 30,0    | 88,0    | 18           | 81,0                         | 10   | - |
| 907584   | 95 - 120                                       | 8           | 8,4     | 13,2    | 26,0    | 86,0    | 22           | 102,9                        | 10   | - |
| 907585   | 95 - 120                                       | 10          | 10,5    | 13,2    | 26,0    | 86,0    | 22           | 105,9                        | 10   | - |
| 907586   | 95 - 120                                       | 12          | 13,0    | 13,2    | 26,0    | 86,0    | 22           | 103,4                        | 10   | - |
| 907587   | 95 - 120                                       | 16          | 17,0    | 13,2    | 30,0    | 88,0    | 22           | 109,9                        | 10   | - |
| 907588   | 120 - 150                                      | 8           | 8,4     | 14,7    | 26,0    | 88,0    | 22           | 106,8                        | 10   | - |
| 907589   | 120 - 150                                      | 10          | 10,5    | 14,7    | 26,0    | 88,0    | 22           | 106,8                        | 10   | - |
| 907590   | 120 - 150                                      | 12          | 13,0    | 14,7    | 26,0    | 88,0    | 22           | 104,5                        | 10   | - |
| 907591   | 120 - 150                                      | 16          | 17,0    | 14,7    | 30,0    | 90,0    | 22           | 114,5                        | 10   | - |
| 907592   | 150 - 185                                      | 8           | 8,4     | 16,3    | 30,0    | 100,0   | 25           | 138,8                        | 5    | - |
| 906478   | 150 - 185                                      | 10          | 10,5    | 16,3    | 30,0    | 100,0   | 25           | 138,0                        | 5    | - |
| 906172   | 150 - 185                                      | 12          | 13,0    | 16,3    | 30,0    | 100,0   | 25           | 135,7                        | 5    | - |
| 906173   | 150 - 185                                      | 16          | 17,0    | 16,3    | 30,0    | 100,0   | 25           | 128,8                        | 5    | - |
| 907593   | 185 - 240                                      | 8           | 8,4     | 18,3    | 30,0    | 102,0   | 28           | 183,7                        | 5    | - |
| 906479   | 185 - 240                                      | 10          | 10,5    | 18,3    | 30,0    | 102,0   | 28           | 176,1                        | 5    | - |
| 906480   | 185 - 240                                      | 12          | 13,0    | 18,3    | 30,0    | 102,0   | 28           | 173,1                        | 5    | - |
| 906481   | 185 - 240                                      | 16          | 17,0    | 18,3    | 36,0    | 105,0   | 28           | 196,8                        | 5    | - |
| 906482   | 185 - 240                                      | 8           | 21,0    | 18,3    | 36,0    | 105,0   | 28           | 189,7                        | 5    | - |
| 906483   | 240 - 300                                      | 10          | 10,5    | 21,0    | 30,0    | 112,0   | 32           | 204,1                        | 5    | - |
| 906185   | 240 - 300                                      | 12          | 13,0    | 21,0    | 30,0    | 112,0   | 32           | 204,1                        | 5    | - |
| 906484   | 240 - 300                                      | 16          | 17,0    | 21,0    | 36,0    | 115,0   | 32           | 225,8                        | 5    | - |
| 906485   | 240 - 300                                      | 20          | 21,0    | 21,0    | 36,0    | 115,0   | 32           | 218,5                        | 5    | - |

Continuation ▶



# HELU-S-PK-AL/CU Aluminium / Copper compression cable lug – straight

## eye type

| Part no. | Cross-section<br>RM/SM - SE<br>mm <sup>2</sup> | Boring<br>M | a<br>mm | d<br>mm | b<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--|-------------|---------|---------|---------|---------|--------------|------------------------------|------|---|
| 906486   | 300 - -  | 10          | 10,5    | 23,3    | 30,0    | 115,0   | 34           | 218,4                        | 5    | - |
| 906487   | 300 - -  | 12          | 13,0    | 23,3    | 30,0    | 116,0   | 34           | 226,4                        | 5    | - |
| 906488   | 300 - -  | 16          | 17,0    | 23,3    | 36,0    | 116,0   | 34           | 232,2                        | 5    | - |
| 906489   | 300 - -  | 20          | 21,0    | 23,3    | 36,0    | 116,0   | 34           | 225,0                        | 5    | - |
| 906490   | 400 - -  | 10          | 10,5    | 26,0    | 36,0    | 125,0   | 38           | 328,7                        | 5    | - |
| 906212   | 400 - -  | 12          | 13,0    | 26,0    | 36,0    | 125,0   | 38           | 332,7                        | 5    | - |
| 906174   | 400 - -  | 16          | 17,0    | 26,0    | 36,0    | 125,0   | 38           | 352,6                        | 5    | - |
| 906175   | 400 - -  | 20          | 21,0    | 26,0    | 36,0    | 125,0   | 38           | 341,5                        | 5    | - |
| 906491   | 500 - -  | 10          | 10,5    | 29,0    | 44,0    | 140,0   | 44           | 437,1                        | 1    | - |
| 906492   | 500 - -  | 12          | 13,0    | 29,0    | 44,0    | 140,0   | 44           | 433,3                        | 1    | - |
| 906493   | 500 - -  | 16          | 17,0    | 29,0    | 44,0    | 140,0   | 44           | 428,3                        | 1    | - |
| 906494   | 500 - -  | 20          | 21,0    | 29,0    | 44,0    | 140,0   | 44           | 420,8                        | 1    | - |
| 907594   | 625 - -  | 12          | 13,0    | 35,0    | 50,0    | 177,0   | 52           | 630,1                        | 1    | - |
| 907595   | 625 - -  | 16          | 17,0    | 35,0    | 50,0    | 177,0   | 52           | 770,0                        | 1    | - |
| 907596   | 625 - -  | 20          | 21,0    | 35,0    | 50,0    | 177,0   | 52           | 763,0                        | 1    | - |

Dimensions and specifications may be changed without prior notice.

# KAC-U AL/CU-bi-metallic washer

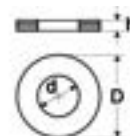


## Washer KAC-U

Bi-metallic washer for the processing of aluminium-copper materials.  
Only for use in dry areas.

## Material

E-Al, one side copper plated



## Dimensions

D Outer diameter  
d Inner diameter  
h Height

| Part no. | Size      | Inner Ø<br>mm | Outer Ø<br>mm | Thickness<br>mm | Unit |   |
|----------|-----------|---------------|---------------|-----------------|------|---|
| 906049   | M8 x 1,5  | 8,5           | 18,0          | 1,0             | 10   | - |
| 906050   | M10 x 1,5 | 11,0          | 22,0          | 2,0             | 10   | - |
| 906051   | M12 x 1,5 | 13,0          | 28,0          | 2,0             | 10   | - |
| 906052   | M14 x 1,5 | 15,0          | 28,0          | 2,0             | 10   | - |
| 906053   | M16 x 1,5 | 17,0          | 35,0          | 2,0             | 10   | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-PV-AL-DIN Aluminium press connector



## Press connector HELU-S-PV-AL-DIN

Press connector for strain-relieved connections of conductors designed acc. to DIN 46267 part 2.

## Material

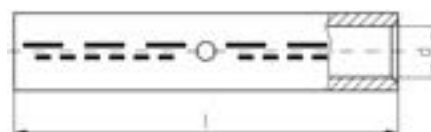
Socket: Al 99,5  
Surface: bare

## Technical data

Temperature range: up to +120°C

## Note

- Code type indicates the required hexagonal crimping insert.
- Part No. 907835 is not standardized.
- Sleeves are prefilled with contact grease and sealed with plastic plug.



## Dimensions

d Inner diameter of the cable inclusion  
l Length

## blank

| Part no. | Cross-section<br>RM/SM - SE<br>mm <sup>2</sup> | d<br>mm | l<br>mm | Code<br>type | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--|---------|---------|--------------|------------------------------|------|---|
| 907835   | 16 - 25  | 5,6     | 55,0    | 12           | 13,4                         | 50   | - |
| 906511   | 25 - 35  | 6,8     | 70,0    | 12           | 15,4                         | 50   | - |
| 906512   | 35 - 50  | 8,0     | 85,0    | 14           | 28,5                         | 50   | - |
| 906513   | 50 - 70  | 10,0    | 85,0    | 16           | 34,0                         | 25   | - |
| 906514   | 70 - 95  | 11,5    | 105,0   | 18           | 55,9                         | 25   | - |
| 906515   | 95 - 120                                       | 13,2    | 105,0   | 22           | 82,1                         | 10   | - |
| 906516   | 120 - 150                                      | 14,7    | 105,0   | 22           | 86,4                         | 10   | - |
| 906406   | 150 - 185                                      | 16,3    | 125,0   | 25           | 111,3                        | 10   | - |
| 906517   | 185 - 240                                      | 18,5    | 125,0   | 28           | 143,5                        | 10   | - |
| 906518   | 240 - 300                                      | 21,0    | 145,0   | 32           | 191,7                        | 10   | - |
| 906519   | 300 - -  | 23,3    | 145,0   | 34           | 227,1                        | 10   | - |
| 906520   | 400 - -  | 26,0    | 210,0   | 38           | 359,0                        | 5    | - |
| 906521   | 500 - -  | 29,0    | 210,0   | 44           | 455,0                        | 5    | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-PV-AL/CU Aluminium / Copper press connector



## Press Connector HELU-S-PV-AL/CU

Press connector for aluminium conductors, strain relieved

## Material

Socket: Al 99,5 and Cu acc. to DIN EN 13601  
Surface: bare

## Note

Al-sleeves are prefilled with contact grease and sealed with plastic plug.

## Technical data

Temperature range: up to +120°C



## Dimensions

- d1 Inner diameter of the cable inclusion, copper side
- d2 Inner diameter of the cable inclusion, aluminium side
- l Length

## blank

| Part no. | Cross-section<br>AL<br>RM/SM - SE<br>mm <sup>2</sup> | Cross-section<br>CU<br>SE<br>mm <sup>2</sup> | Code<br>type<br>AL / CU | d1<br>CU<br>mm | d2<br>AL<br>mm | l<br>mm | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--|--|-------------------------|----------------|----------------|---------|------------------------------|------|---|
| 907836   | 16 - 25  | 6  | 12 / 5                  | 3,7            | 5,6            | 45,0    | 9,2                          | 25   | - |
| 907837   | 16 - 25  | 10   | 12 / 6                  | 4,4            | 5,6            | 45,0    | 9,4                          | 25   | - |
| 907838   | 16 - 25  | 16   | 12 / 8                  | 5,5            | 5,6            | 56,0    | 15,8                         | 25   | - |
| 907839   | 25 - 35  | 10   | 12 / 6                  | 4,4            | 6,8            | 51,0    | 9,9                          | 25   | - |
| 907840   | 25 - 35  | 16   | 12 / 8                  | 5,5            | 6,8            | 61,0    | 16,1                         | 25   | - |
| 907841   | 25 - 35  | 25   | 12 / 10                 | 7,0            | 6,8            | 62,0    | 19,2                         | 25   | - |
| 907842   | 35 - 50  | 16   | 14 / 8                  | 5,5            | 8,0            | 71,0    | 21,2                         | 25   | - |
| 907843   | 35 - 50  | 25   | 14 / 10                 | 7,0            | 8,0            | 71,0    | 24,1                         | 25   | - |
| 907844   | 35 - 50  | 35   | 14 / 12                 | 8,2            | 8,0            | 70,0    | 29,9                         | 25   | - |
| 907845   | 50 - 70  | 25   | 16 / 10                 | 7,0            | 9,8            | 71,5    | 26,6                         | 25   | - |
| 907846   | 50 - 70  | 35   | 16 / 12                 | 8,2            | 9,8            | 71,5    | 33,4                         | 25   | - |
| 907847   | 50 - 70  | 50   | 16 / 14                 | 10,0           | 9,8            | 71,5    | 43,5                         | 25   | - |
| 907848   | 70 - 95  | 25   | 18 / 10                 | 7,0            | 11,2           | 79,0    | 36,2                         | 10   | - |
| 907849   | 70 - 95  | 35   | 18 / 12                 | 8,2            | 11,2           | 79,0    | 42,2                         | 10   | - |
| 907850   | 70 - 95  | 50   | 18 / 14                 | 10,0           | 11,2           | 85,0    | 53,3                         | 10   | - |
| 907851   | 70 - 95  | 70   | 18 / 16                 | 11,5           | 11,2           | 88,0    | 64,0                         | 10   | - |
| 907852   | 95 - 120   | 35   | 22 / 12                 | 8,2            | 13,2           | 79,0    | 57,4                         | 10   | - |
| 907853   | 95 - 120   | 50   | 22 / 14                 | 10,0           | 13,2           | 85,0    | 69,1                         | 10   | - |
| 907854   | 95 - 120   | 70   | 22 / 26                 | 11,5           | 13,2           | 87,0    | 78,9                         | 10   | - |
| 907855   | 95 - 120   | 95   | 22 / 18                 | 13,5           | 13,2           | 94,0    | 98,8                         | 10   | - |
| 907856   | 120 - 150  | 50   | 22 / 14                 | 10,0           | 14,7           | 87,0    | 66,5                         | 10   | - |
| 907857   | 120 - 150  | 70   | 22 / 16                 | 11,5           | 14,7           | 89,0    | 76,1                         | 10   | - |
| 907858   | 120 - 150  | 95   | 22 / 18                 | 13,5           | 14,7           | 97,0    | 97,7                         | 10   | - |
| 907859   | 120 - 150  | 120  | 22 / 20                 | 15,5           | 14,7           | 98,0    | 108,3                        | 10   | - |
| 906460   | 150 - 185  | 70   | 25 / 16                 | 11,5           | 16,3           | 101,0   | 95,9                         | 5    | - |
| 906495   | 150 - 185  | 95   | 25 / 18                 | 13,5           | 16,3           | 108,0   | 116,6                        | 5    | - |
| 906209   | 150 - 185  | 120  | 25 / 20                 | 15,5           | 16,3           | 108,0   | 125,9                        | 5    | - |
| 906496   | 150 - 185  | 150  | 25 / 22                 | 17,0           | 16,3           | 113,0   | 155,0                        | 5    | - |
| 906497   | 185 - 240  | 95   | 28 / 18                 | 13,5           | 18,3           | 108,0   | 130,0                        | 5    | - |
| 906498   | 185 - 240  | 120  | 28 / 20                 | 15,5           | 18,3           | 108,0   | 140,1                        | 5    | - |
| 906499   | 185 - 240  | 150  | 28 / 22                 | 17,0           | 18,3           | 113,0   | 169,3                        | 5    | - |
| 906500   | 185 - 240  | 185  | 28 / 25                 | 19,0           | 18,3           | 116,0   | 185,3                        | 5    | - |
| 906501   | 240 - 300  | 120  | 32 / 20                 | 15,5           | 21,0           | 120,0   | 173,6                        | 5    | - |
| 906502   | 240 - 300  | 150  | 32 / 22                 | 17,0           | 21,0           | 124,0   | 200,8                        | 5    | - |
| 906503   | 240 - 300  | 185  | 32 / 25                 | 19,0           | 21,0           | 127,0   | 218,4                        | 5    | - |
| 906504   | 240 - 300  | 240  | 32 / 28                 | 21,5           | 21,0           | 132,0   | 280,0                        | 5    | - |
| 906505   | 300 - -  | 150  | 34 / 22                 | 17,0           | 23,3           | 124,0   | 205,1                        | 5    | - |
| 906506   | 300 - -  | 185  | 34 / 25                 | 19,0           | 23,3           | 128,0   | 225,8                        | 5    | - |
| 906507   | 300 - -  | 240  | 34 / 28                 | 21,5           | 23,3           | 134,0   | 290,0                        | 5    | - |
| 906508   | 300 - -  | 300  | 34 / 32                 | 24,5           | 23,3           | 144,0   | 349,0                        | 5    | - |

Continuation ▶

# HELU-S-PV-AL/CU Aluminium / Copper press connector

blank

| Part no. | Cross-section<br>AL<br>RM/SM - SE<br>mm <sup>2</sup> | Cross-section<br>CU<br>SE<br>mm <sup>2</sup> | Code<br>type<br>AL / CU | d1<br>CU<br>mm | d2<br>AL<br>mm | l<br>mm | Weight<br>kg / 1000<br>items | Unit |   |
|----------|--|--|-------------------------|----------------|----------------|---------|------------------------------|------|---|
| 906509   | 400 - -  | 185  | 38 / 25                 | 19,0           | 26,0           | 131,0   | 267,0                        | 1    | - |
| 906210   | 400 - -  | 240  | 38 / 28                 | 21,5           | 26,0           | 135,0   | 329,0                        | 1    | - |
| 906510   | 400 - -  | 300  | 38 / 32                 | 24,5           | 26,0           | 145,0   | 386,0                        | 1    | - |
| 907860   | 500 - -  | 240  | 44 / 28                 | 21,5           | 29,0           | 145,0   | 402,0                        | 1    | - |
| 907861   | 500 - -  | 300  | 44 / 32                 | 24,5           | 29,0           | 155,0   | 464,1                        | 1    | - |
| 907862   | 500 - -  | 400  | 44 / 38                 | 27,5           | 29,0           | 173,0   | 643,6                        | 1    | - |

Dimensions and specifications may be changed without prior notice.

# HELU-S-PAB-AL-DIN Aluminium Compression Terminal Pin Type



## Aluminium Compression Terminal Pin Type

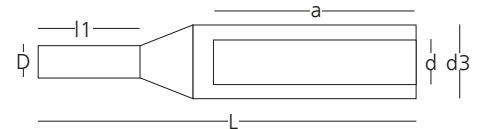
HELU-S-PAB-AL-DIN

### Material

• Aluminium Alloy 99,5

### Note

- Code type indicates the required hexagonal crimp insert
- AL-sleeves are prefilled with contact grease and sealed with plastic plug



### Dimensions

- a depth of bore
- d inner diameter, tube
- d3 outer diameter, tube
- D outer diameter, pin
- l1 bolt length
- L total length

| Part no. | Type                  | cross section |                 | a    | d    | d3   | D  | l1 | L   | key figures |      |
|----------|-----------------------|---------------|-----------------|------|------|------|----|----|-----|-------------|------|
|          |                       | mm            | mm <sup>2</sup> |      |      |      |    |    |     | mm          | Type |
| 908301   | HELU-S-PAB-AL-DIN 50  | 50            | 70              | 41,0 | 9,8  | 16,0 | 8  | 25 | 77  | 16          |      |
| 908302   | HELU-S-PAB-AL-DIN 70  | 70            | 95              | 48,0 | 11,2 | 18,5 | 10 | 30 | 89  | 18          |      |
| 908303   | HELU-S-PAB-AL-DIN 95  | 95            | 120             | 48,0 | 13,2 | 22,0 | 12 | 33 | 93  | 22          |      |
| 908304   | HELU-S-PAB-AL-DIN 120 | 120           | 150             | 49,0 | 14,7 | 23,0 | 13 | 38 | 100 | 22          |      |
| 908305   | HELU-S-PAB-AL-DIN 150 | 150           | 185             | 58,5 | 16,3 | 25,0 | 14 | 38 | 110 | 25          |      |
| 908306   | HELU-S-PAB-AL-DIN 185 | 185           | 240             | 58,5 | 18,3 | 28,5 | 16 | 44 | 120 | 28          |      |
| 908307   | HELU-S-PAB-AL-DIN 240 | 240           | 300             | 69,0 | 21,0 | 32,0 | 18 | 44 | 130 | 32          |      |
| 908308   | HELU-S-PAB-AL-DIN 300 | 300           | -               | 69,0 | 23,3 | 34,0 | 20 | 46 | 132 | 34          |      |
| 908309   | HELU-S-PAB-AL-DIN 400 | 400           | -               | 70,0 | 26,0 | 38,5 | 23 | 52 | 140 | 38          |      |
| 908310   | HELU-S-PAB-AL-DIN 500 | 500           | -               | 80,0 | 29,0 | 44,0 | 26 | 58 | 156 | 44          |      |



# HELU-S-PAB-AL/CU-DIN Bimetallic Compression Terminal Pin Type



## Bimetallic Compression Terminal Pin Type

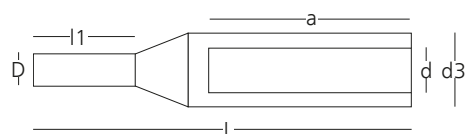
HELU-S-PAB-AL/CU-DIN

### Material

- Aluminium Alloy 99,5 (tube) and bare copper (pin) according to DIN EN 13601
- Surface: bare

### Note

- Code type indicates the required hexagonal crimp insert
- AL-sleeves are prefilled with contact grease and sealed with plastic plug

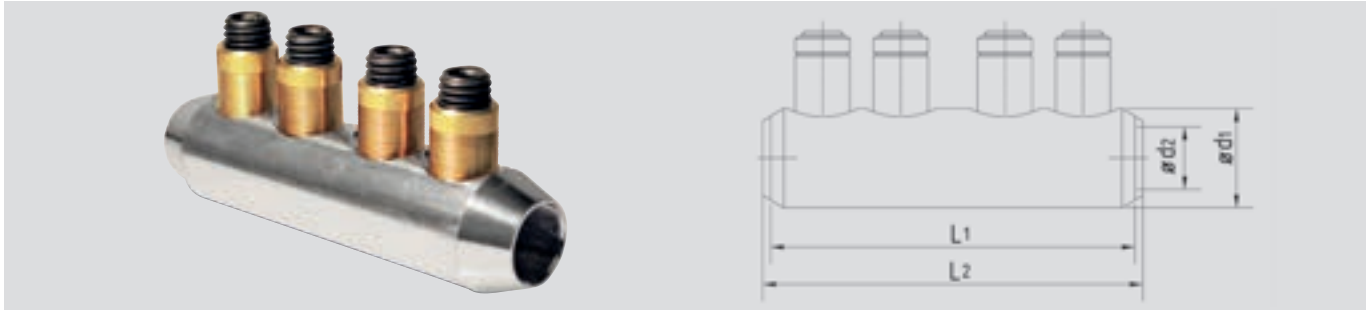


### Dimensions

- a depth of bore
- d inner diameter, tube
- d3 outer diameter, tube
- D outer diameter, pin
- l1 bolt length
- L total length

| Part no. | Type                     | cross section |                 | a    | d    | d3   | D  | l1 | L     | key figures | Weight | Unit |
|----------|--------------------------|---------------|-----------------|------|------|------|----|----|-------|-------------|--------|------|
|          |                          | mm            | mm <sup>2</sup> |      |      |      |    |    |       |             |        |      |
| 908191   | HELU-S-PAB-AL/CU-DIN 16  | 16            | 35              | 26,0 | 5,6  | 12,0 | 6  | 20 | 56,0  | 12          | 15,40  | 25   |
| 908192   | HELU-S-PAB-AL/CU-DIN 25  | 25            | 35              | 31,0 | 6,8  | 12,0 | 6  | 20 | 61,5  | 12          | 16,00  | 25   |
| 908193   | HELU-S-PAB-AL/CU-DIN 35  | 35            | 50              | 41,0 | 8,0  | 14,0 | 7  | 22 | 72,5  | 14          | 25,10  | 25   |
| 908194   | HELU-S-PAB-AL/CU-DIN 50  | 50            | 70              | 41,0 | 9,8  | 16,0 | 8  | 25 | 78,0  | 16          | 34,50  | 25   |
| 908195   | HELU-S-PAB-AL/CU-DIN 70  | 70            | 95              | 48,0 | 11,2 | 18,5 | 10 | 30 | 92,5  | 18          | 57,80  | 10   |
| 908196   | HELU-S-PAB-AL/CU-DIN 95  | 95            | 120             | 48,0 | 13,2 | 22,0 | 12 | 33 | 95,0  | 22          | 86,40  | 10   |
| 908197   | HELU-S-PAB-AL/CU-DIN 120 | 120           | 150             | 49,0 | 14,7 | 23,0 | 12 | 38 | 105,0 | 22          | 96,70  | 10   |
| 908198   | HELU-S-PAB-AL/CU-DIN 150 | 150           | 185             | 58,5 | 16,3 | 25,0 | 12 | 38 | 117,5 | 25          | 115,20 | 5    |
| 908199   | HELU-S-PAB-AL/CU-DIN 185 | 185           | 240             | 58,5 | 18,3 | 28,5 | 14 | 44 | 124,0 | 28          | 167,80 | 5    |
| 908200   | HELU-S-PAB-AL/CU-DIN 240 | 240           | 300             | 69,0 | 21,0 | 32,0 | 16 | 44 | 136,5 | 32          | 223,00 | 5    |
| 908201   | HELU-S-PAB-AL/CU-DIN 300 | 300           | -               | 69,0 | 23,3 | 34,0 | 18 | 46 | 138,0 | 34          | 272,40 | 5    |
| 908202   | HELU-S-PAB-AL/CU-DIN 400 | 400           | -               | 70,0 | 26,0 | 38,5 | 20 | 52 | 150,0 | 38          | 379,00 | 5    |
| 908203   | HELU-S-PAB-AL/CU-DIN 500 | 500           | -               | 80,0 | 29,0 | 44,0 | 22 | 58 | 176,0 | 44          | 575,20 | 5    |

# WK-SC-P Shear Bolt Connector



## Technical Data

**Material:** Aluminium alloy  
**Surface:** tin plated  
**Dimensions:**  $d_1 = 42 \text{ mm}$   
 $d_2 = 26.2 \text{ mm}$   
 $L_1 = 220 \text{ mm}$

## Design

- with divider
- Conductor channel with transverse grooves and protection against conductor oxidation

**These bolt connectors were developed especially for the HELUWIND® WK POWERLINE ALU and successfully tested according to IEC– DIN EN 61238-1 Class A.**

SICON bolt connector

185-400 + 500 mm<sup>2</sup> RE Al/Cu + 300 flex

**Thanks to the special design of the bolts, there are no pre-determined breaking points in the threads. Instead the bolt always reliably rips on the surface of the terminal body.**

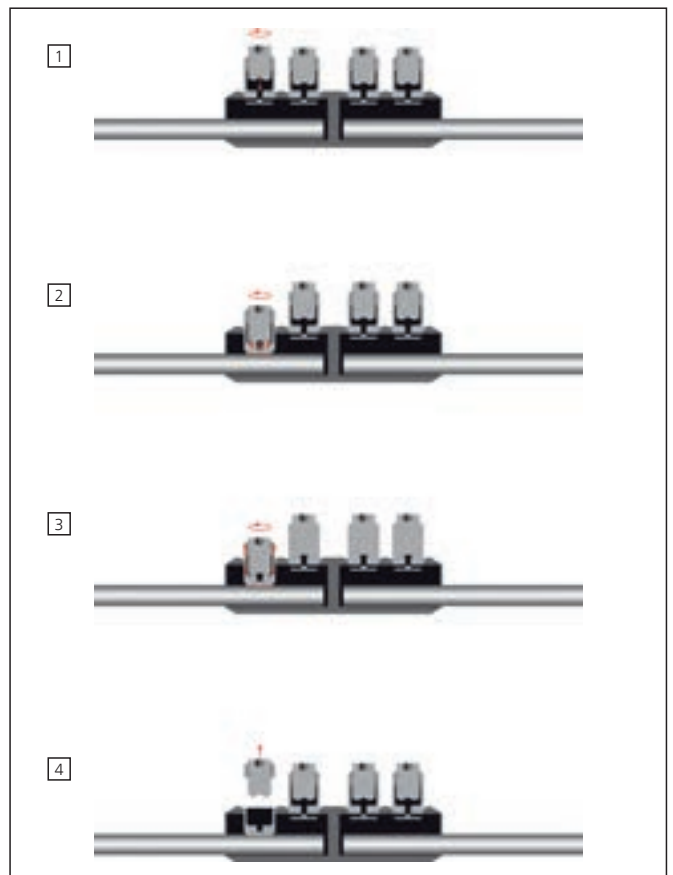
- **No protrusions on the terminal body**
- **Full utilization of the thread load carrying capacity for every conductor cross section**
- **No special tool required**
- **Gentle shearing off of the shear bolt makes tightening easier**

|  |  |                                       |
|--|--|---------------------------------------|
| fine-wire                                  | 185 - 240 (300 max. Ø 26 mm)             | 185 - 240 (300 max. Ø 26 mm)          |
| SM 120°                                    | 185 (240 pressed round)                  | 185 (240 pressed round)               |
| SE 120°                                    | 185 - 240                                |                                       |
| SM 90°                                     | 185 - 240                                | 185 - 240                             |
| SE 90°                                     | 185 - 240                                |                                       |
| RE   | 185 - 500                                | 185 - 500                             |
| RMV  | 185 - 400                                | 185 - 400                             |
| RM   | 185 - 400                                | 185 - 400                             |
| Conductor types as per DIN 60228 - 09/2005 | Cross section range: aluminium conductor | Cross section range: copper conductor |

Other conductor cross sections and dimensions on request.

## SICON – The first stepless shear bolt

- 1 A standard hexagonal wrench works on a threaded pin which will be screwed into the hole of the stepless compression bolt. The traction is not interrupted by any step or notch on the bolt.
- 2 When screwing in the SICON bolt, the pressure plate loosens on the bottom of the bolt. The bolt now turns on this plate; compared to conventional bolts, no head friction occurs on the conductor. The bolt's torque generates the contact pressure almost independently of the conductor material. This way, a significantly higher contact pressure is achieved for Aluminium conductors and even fine-wired conductors are not damaged.
- 3 The SICON bolt continues to turn until the shearing moment is reached. When screwed in, the thrust bolt is tensioned; on reaching the shearing moment, it stretches axially and tears. Compared with conventional shear bolts, the bolt breaks very smoothly.
- 4 The SICON bolt always shears directly on the surface of the terminal body. This ensures that the protrusion is always minimized, irrespective of the conductor to be connected.



Dimensions and specifications may be changed without prior notice.

# WK-SC-T Shear Bolt Connector



## Bolt connector with shear bolts for HELUWIND® WK POWERLINE ALU fine-wire aluminium conductors.

A connection technology with dual shear bolts, especially developed for the WK POWERLINE ALU series. This newly-developed bolt technology differs from conventional techniques as the aluminium conductor is contacted in a 2-step-procedure. First of all, the dual bolt technology fastens the fine-wire aluminium conductor. As a second step a mandrel is inserted into the conductor, what completes the conductor's crucial sealing and contacting.

### Properties

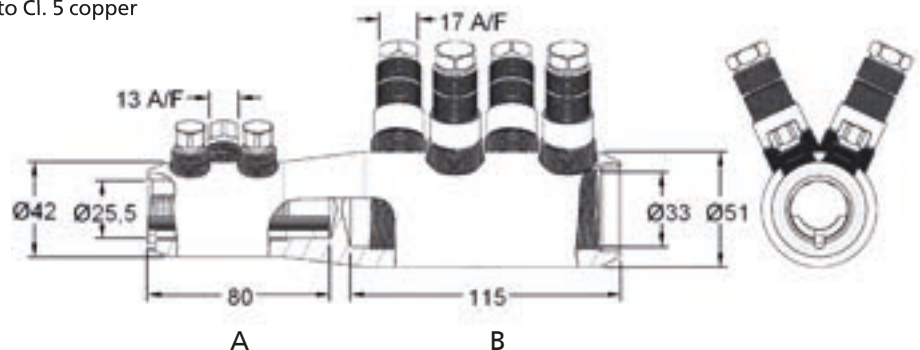
- Easy and secure connection system for flexible Cl. 5 aluminium cables tested according to IEC-61238-1 Class A.
- New patented two-step shear off bolts provide predetermined torque & ensure reliable and secure contact without damaging fine aluminium strands.
- Easier and faster installation - no tools required.
- Available for cable cross sections 70 mm<sup>2</sup> through 500 mm<sup>2</sup>.
- Dual connection technology available for connecting the HELUWIND® WK POWERLINE ALU series.

#### Optional: Reduction Connector

HELUWIND® WK POWERLINE ALU series to Cl. 2 aluminium

HELUWIND® WK POWERLINE ALU series to Cl. 5 copper

Part no. and prices on request.



| Diameter range table |                 | AL          |             |         |                           |                  | CU          |         |                  |
|----------------------|-----------------|-------------|-------------|---------|---------------------------|------------------|-------------|---------|------------------|
|                      |                 |             |             |         |                           |                  |             |         |                  |
| A                    | mm <sup>2</sup> | 150/400     | 150/400     | 150/240 | 185/300<br>(300 with 90°) |                  | 150 / 400   | 150/185 | 300<br>(Class 5) |
|                      | Ø mm            | 13,7 / 24,6 | 12,9 / 22,2 |         |                           |                  | 13,7 / 24,6 |         | 23,5 / 25        |
| B                    | mm <sup>2</sup> |             |             |         |                           | 400<br>(Class 5) |             |         |                  |
|                      | Ø mm            |             |             |         |                           | 27 / 29          |             |         |                  |

Dimensions and specifications may be changed without prior notice.

# WK-SL-T Shear Bolt Cable Lug



## **Bolt cable lug with shear bolts for HELUWIND® WK POWERLINE ALU fine-wire aluminium conductors.**

A connection technology with dual shear bolts, especially developed for the HELUWIND® WK POWERLINE ALU series. This newly-developed bolt technology differs from conventional techniques as the aluminium conductor is contacted in a 2-step-procedure. First of all, the dual bolt technology fastens the fine-wire aluminium conductor. As a second step, a mandrel is inserted into the conductor, what completes the conductor's crucial sealing and contacting.

### **Properties**

- Easy and secure connection system for Cl. 5, flexible aluminium conductors, tested according to IEC-61238-1 Cl. A.
- Patented two-step, shear off bolts provide predetermined torque & ensure reliable and secure contact without damaging fine aluminium strands.
- Easier and faster installation - no tools required.
- Available for cross sections: 70 mm<sup>2</sup> - 500 mm<sup>2</sup>.
- Dual shear bolt cable lugs are designed for connecting the HELUWIND® WK POWERLINE ALU series.

Part no. and prices on request.

Dimensions and specifications may be changed without prior notice.

# Bolt Cable Lug with Shear Head

For copper Cl. 5 and aluminium Cl. 2



## Bolt Cable Lug with Shear Head

### Properties

- Available for cross sections 120 mm<sup>2</sup> through 400 mm<sup>2</sup>
- Tested according to IEC 61238-1 Cl. A
- Up to U<sub>0</sub> /U (U<sub>m</sub>) 18/30 (36) kV
- Connector: High-strength aluminium alloy
- Threaded screws: aluminium alloy with multiple shear heads
- Surface: tin-plated for aluminium and copper conductors

### Advantages

- Designed with insulation throughout the entire length
- Suitable for indoor and outdoor applications
- Particularly-long sealing length to protect against moisture

Not for fine-wire aluminium stranding.

Part no. and prices on request.

# Bolt Connector with Shear Head

For copper Cl. 5 and aluminium Cl. 2



## Bolt Connector with Shear Head

### Properties

- Available for cross sections 10 mm<sup>2</sup> through 1000 mm<sup>2</sup>
- Tested according to IEC 61238-1 Cl. A
- Up to  $U_0/U (U_m)$  18/30 (36) kV
- Connector: High-strength aluminium alloy
- Threaded screws: aluminium alloy with multiple shear heads
- Surface: tin-plated for aluminium and copper conductors

### Advantages

- Greater connection area
- Conductor connection canal with longitudinal and lateral grooves, which allows for good electrical contacts and tearing up the oxide coating on the conductors

Not for fine-wire aluminium stranding.

Part no. and prices on request.



# Mechanical Split Connector with Shear Head

For copper Cl. 5 and aluminium Cl. 2



## Mechanical Split Connector with Shear Head

### Properties

- Available for cross sections 120 mm<sup>2</sup> through 400 mm<sup>2</sup>
- Tested according to IEC 61238-1 Cl. A
- Connector: High-strength aluminium alloy
- Threaded screws: aluminium alloy with multiple shear heads
- Surface: tin-plated for aluminium and copper conductors

### Advantages

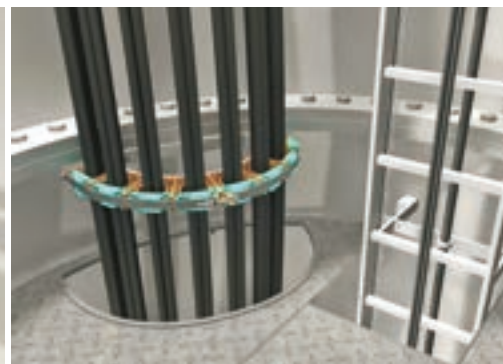
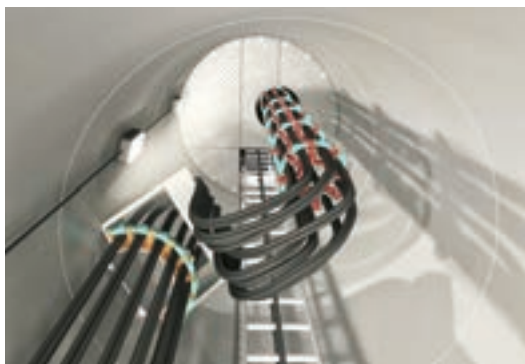
- Greater connection area
- Conductor connection canal with longitudinal and lateral grooves, which allows for good electrical contacts and tearing up the oxide coating on the conductors

Not for fine-wire aluminium stranding.

Part no. and prices on request.

Dimensions and specifications may be changed without prior notice.

# HYDAC - Fastening systems in the turret



TURRET – “half-moon”  
HRFLEX 3x to 9x (AC)



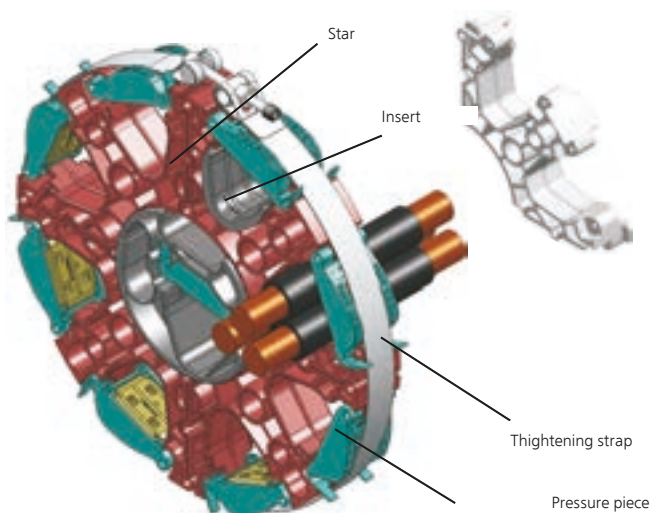
Requirements from the customer for the new cable fastening:

- Modular construction system
- Compact design
- Turret: Simple assembly of the fastening system
- Cable: Fast and simple type of fastening
- Good accessibility to all cables
- Simple to replace the cable
- Compensation of the cable tolerances up to 10%
- Short-circuit proof up to 20 kA
- Fire resistant material
- Temperature independent and reliable retention force of the cable
- No damage of the cable insulation (e.g., pinching)

Advantages:

- Flexible for power cable up to 10% Ø difference
- Cable diameter up to 35mm
- Fast and maintenance friendly assembly in the horizontal and vertical turret.
- For 1-3 power cables through inserts
- Fire resistant acc. to UL94-class V0
- Designed for short-circuit current up to 20 kA
- Better protection of insulation of the power cable
- Suitable for temperatures from -40°C (survival) bis +90°C
- Fast replacability of the individual cables
- Constant pressure force through spring assemblies

TURRET – “star” spacer



Test and inspections performed:

- Short-circuit test up to 41 kA  
(Short-circuit test with ASTA certificate existing)
- Cold test under load -40°C, 20h
- Hot test +90°C (copper core) under load
- Material acc. to UL94 – V0 (fire resistant)
- Load test > 30 days, outside of the premises
- Tensile test of the trigger
- Loading and bending test of the base frame
- Loop test
- Lifetime and aging test of the material
- Salt and spray test

Outstanding tests and certificates:

- GL - certificate

# Cable clamps



## Cable clamps K

For fastening single-wire and multiple-wire cables.

### With additional elastic insert:

- 1) For padding the cable (over an outside diameter of  $\geq 60$  mm), to avoid damage during loading, or change of the ambient temperature.
- 2) In the area of riser lines of a desired height to accept the weight forces and secure fixation of the cables.
- 3) Fastening of cables with smaller outside diameter to expand the clamping range of the clamp.

### Technical Data

|   |                                   |
|---|-----------------------------------|
| Material:                                       | Polyamide, glass fiber reinforced |
| Diameter range:                                 | 18 to 90 mm                       |
| Mechanical short-circuit protection:            | 10000 N                           |
| Max. tightening torque of the fastening screws: | 5 Nm                              |

## Cable clamps KS

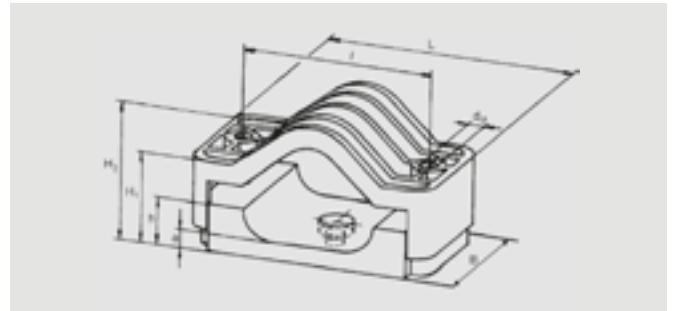
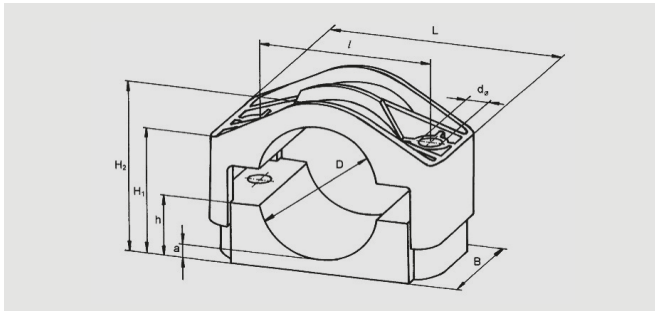
For fastening single-wire cable in diagonal bracing.

### With additional elastic insert:

- 1) In the area of riser lines of a desired height to accept the weight forces and secure fixation of the cables.
- 2) Expansion of the clamping range of the clamp to fasten cables with smaller outside diameter.
- 3) The hole for a M10 bolt in the lower part of the cable clamps enables a direct fastening, e.g., on floors, walls, lattice, concrete or wood masts.

### Technical Data

|   |                                   |
|---|-----------------------------------|
| Material:                                       | Polyamide, glass fiber reinforced |
| Diameter range:                                 | 22 to 46 mm                       |
| Mechanical short-circuit protection:            | 12500 N                           |
| Max. tightening torque of the fastening screws: | 5 Nm                              |



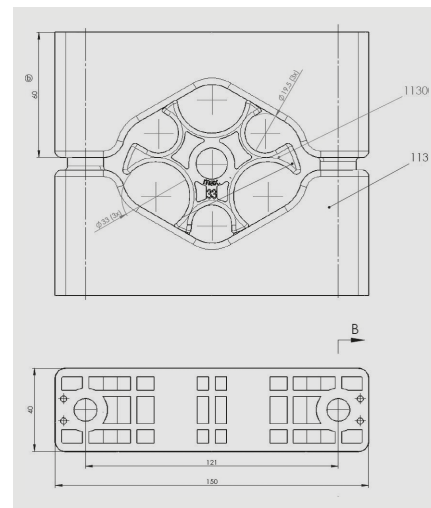
### Cable clamps K

| Type   | D mm  | Diameter with an elastic insert in mm | Diameter with an elastic insert in mm | L in mm | B in mm | l in mm | d in mm | H1 in mm | H2 in mm | h in mm | a in mm |
|--------|-------|---------------------------------------|---------------------------------------|---------|---------|---------|---------|----------|----------|---------|---------|
| K26/38 | 24-38 | 21-35                                 | 18-32                                 | 91      | 60      | 60      | 12      | 36-47    | 46-57    | 19      | 7       |
| K36/52 | 36-52 | 32-49                                 | 29-46                                 | 108     | 60      | 75      | 12      | 43-56    | 56-72    | 24      | 8       |
| K50/75 | 50-75 | 47-72                                 | 44-69                                 | 126     | 60      | 95      | 12      | 51-77    | 74-98    | 30      | 9       |
| K66/90 | 66-90 | 63-87                                 | 60-84                                 | 158     | 70      | 120     | 14      | 65-89    | 91-115   | 42      | 10      |

### Cable clamps KS

| Type     | D mm  | Diameter with an elastic insert in mm | L in mm | B in mm | l in mm | d in mm | H1 in mm | H2 in mm | h in mm | a in mm |
|----------|-------|---------------------------------------|---------|---------|---------|---------|----------|----------|---------|---------|
| KS 25/36 | 25-36 | 22-33                                 | 150     | 80      | 110     | 12      | 55-75    | 77-97    | 35      | 15      |
| KS 33/46 | 33-46 | 30-43                                 | 170     | 80      | 130     | 12      | 55-85    | 95-115   | 35      | 19      |

# HELUWIND® WK-Multiclamp



## Requirements of the customer for the new cable fastening

- Modular construction: For single or surface mounting (with several layers)
- Clamp bodies and inner adapter made of flame-retardant plastic PPV0: Test and V0 classification corresponding to UL 94 (Vertical Burning Test)
- Fastening accessories (as for example, threaded pins, nuts, cover plates and any kind of sub-construction) made of steel or stainless steel – selection of suitable fastenings based on various test routines – dependent on application surroundings (e.g., dimensions, weight, and insulation of the used cables).

## Material PPV0

To further improve the preventative fire protection, wind energy clamps are made out of the flame-retardant plastic PPV0. These were tested corresponding to UL 94 (Vertical Burning Test) and classified in the category V0.

UL 94 is a test method of the Underwriters Laboratories for inter-branch evaluation and classification of the flammability of plastics:

A test specimen is fastened in the vertical position and subjected to a flame for a duration of 10 seconds from the bottom out over an open ignition source.

A second flame treatment was introduced for a duration of 10 seconds directly after extinguishing the test specimen.

V0 then the highest level and classified as the most flame resistant materials: Extinguish clamped test specimen within 10 seconds without burning drops of melted plastic.



## Special clamps

Individually fabricated fastening solutions for pipes, cables and other parts:

- Fabricated according to customer specifications or on the basis of own developments
- As machined or die cast version, depending on material, dimensions and quantity
- Fabrication of various plastics (PP oder PA), thermoplastics, elastomer or non-ferrous metals
- Flame-retardant materials according to various international fire protection standards





# The Roxtec Sealing Solution

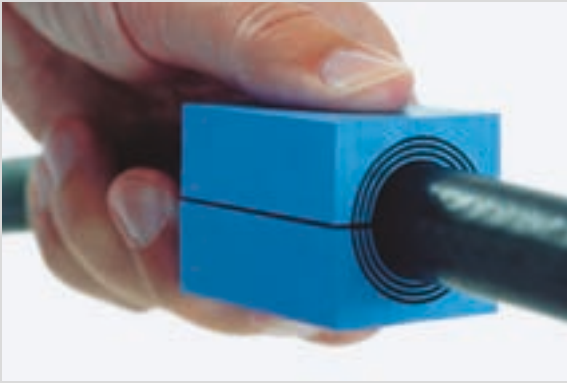
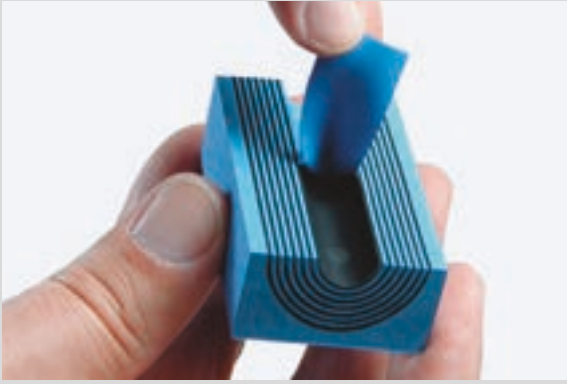
The Roxtec module partitions secure cable and pipe installations in demanding applications in wind-turbine engineering.

Special products for the housing insert and control-cabinet construction sectors are available.

## The solution:

Multidiameter™ – the flexible, adaptable Roxtec delayering technology provides thousands of constructors, fitters and operators secure and sophisticated lead-throughs for cables and pipes.

With our wide spectrum of frames and inserts you will achieve perfect sealing in every outer diameter. Even subsequent expansions to finished installations become problem-free.



## Multidiameter™ Module kits for frame size 6



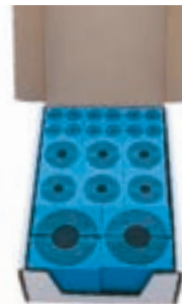
RM Kit 601



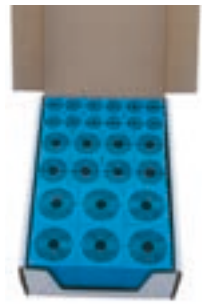
RM Kit 602



RM Kit 603



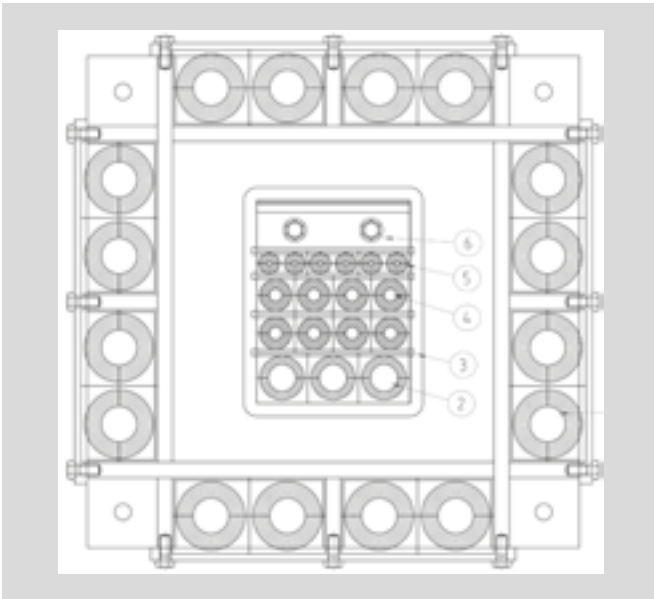
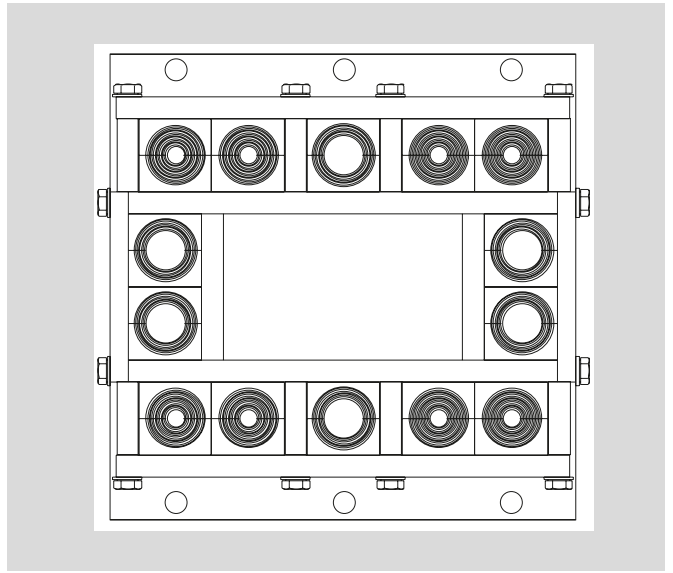
RM Kit 604



RM Kit 605

# The Roxtec Sealing Solution

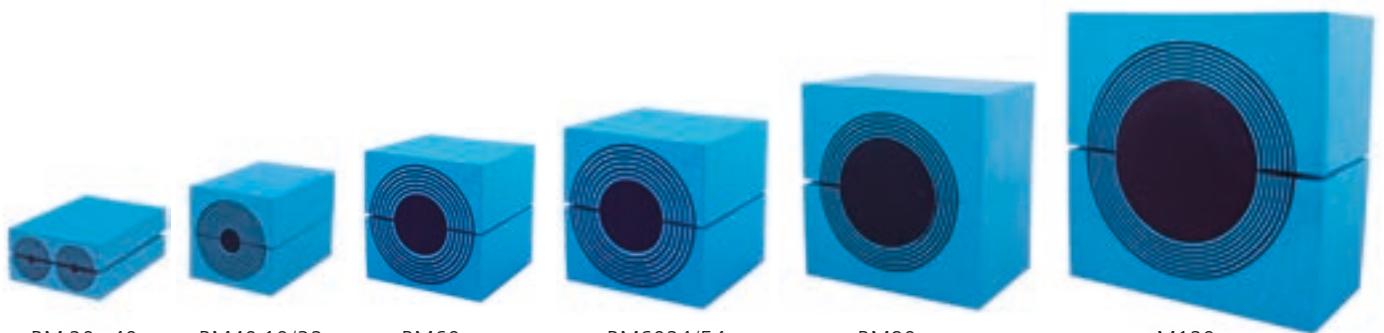
## Example of use



This layout facilitates separating power cables from signal and OWG connections

Separating the power cable in the cable retainers positively influences any arising stagnation temperatures

## Multidiameter™ Modules with core



RM 20w40

RM40 10/32

RM60

RM6024/54

RM90

M120



# Cable Fittings from Tyco Electronics Raychem GmbH

## Cable connection RSTI

Screened, separable connection system RSTI, 630A up to 36kV, cross section: 25mm<sup>2</sup> - 630mm<sup>2</sup> for SF6-insulated switchgear with 630A bushings, Type C, 630/1250A according to CENELEC HD506 S1, EN 50180 and EN 50181



## Coupling plug RSTI-CC

Screened, separable coupling connection system RSTI-CC, 630A up to 36kV, cross section: 25mm<sup>2</sup> - 630mm<sup>2</sup> in combination with connection system RSTI for SF6-insulated switchgear with 630A bushings, Type C, 630/1250A according to CENELEC HD506 S1, EN 50180 and EN 50181



Typical application in a switching system.

# Cable Fittings from Tyco Electronics Raychem GmbH

## Medium-voltage

### MXSU Heat-shrink joint

Heat-shrink joint MXSU for polymeric insulated cables up to 36kV, cross section: 25mm<sup>2</sup> - 500mm<sup>2</sup> incl. mechanical connectors



### SXSU Heat-shrink joint

Heat-shrink joint SXSU for polymeric insulated cables up to 36kV, cross section: 25mm<sup>2</sup> - 1200mm<sup>2</sup> for compression joints



## Low-voltage

### UAGA Heat-shrink joint

Heat-shrink joint UAGA for polymeric insulated cables up to 1kV, cross section: 1.5mm<sup>2</sup> - 300mm<sup>2</sup>



### VMDU Heat-shrink joint

Heat-shrink joint VMDU for control cables, cross section: 4 - 75 x 1.5mm<sup>2</sup> - 2,5mm<sup>2</sup>



# IREV-S indoor termination, shrinking type



## IREV-S

The interior end seals are suitable for all single-conductor and three-conductor. Medium-range voltage plastic cables with differing conductor layers and sheath designs up to 18/30(36)kV.

## Properties

- safe field effect
- simple assembly
- wider application range
- excellent external layer behaviour
- unlimited conductivity
- immediately operational

## Scope of delivery

- Packing unit: 1
- suspensible silicon control element
- sealing band
- creeping current resistant, weather-proof heat shrink-on tube
- assembly instruction
- suspensible silicone sheds

## Note

- An additional earthing kit is required for cables with copper sheath.
- Without terminals.
- 1 unit = 1 set with 3 items.

## single core

| Part no. | Type       | Nominal voltage<br>U <sub>0</sub> /U(U <sub>m</sub> ) | Cross-section<br>mm <sup>2</sup> | Unit |   |
|----------|------------|---|----------------------------------|------|---|
| 93190    | IREV-S12/1 | 6/10kV  | 10,0 - 25,0                      | 1    | - |
| 93191    | IREV-S12/1 | 6/10kV  | 25,0 - 95,0                      | 1    | - |
| 94420    | IREV-S12/1 | 6/10kV  | 95,0 - 240,0                     | 1    | - |
| 93192    | IREV-S12/1 | 6/10kV  | 150,0 - 400,0                    | 1    | - |
| 93193    | IREV-S12/1 | 6/10kV  | 240,0 - 500,0                    | 1    | - |
| 94421    | IREV-S12/1 | 6/10kV  | 400,0 - 800,0                    | 1    | - |
| 94422    | IREV-S12/1 | 6/10kV  | 800,0 - 1000,0                   | 1    | - |
| 94423    | IREV-S24/1 | 12/20kV   | 10,0 - 35,0                      | 1    | - |
| 93194    | IREV-S24/1 | 12/20kV   | 25,0 - 150,0                     | 1    | - |
| 93195    | IREV-S24/1 | 12/20kV   | 70,0 - 240,0                     | 1    | - |
| 93196    | IREV-S24/1 | 12/20kV   | 120,0 - 300,0                    | 1    | - |
| 93197    | IREV-S24/1 | 12/20kV   | 240,0 - 500,0                    | 1    | - |
| 94424    | IREV-S24/1 | 12/20kV   | 630,0 - 1000,0                   | 1    | - |
| 93198    | IREV-S36/1 | 18/30kV   | 35,0 - 70,0                      | 1    | - |
| 94425    | IREV-S36/1 | 18/30kV   | 50,0 - 150,0                     | 1    | - |
| 93199    | IREV-S36/1 | 18/30kV   | 150,0 - 400,0                    | 1    | - |
| 93200    | IREV-S36/1 | 18/30kV   | 500,0 - 800,0                    | 1    | - |

Dimensions and specifications may be changed without prior notice.

# FLEV-S outdoor termination, shrinking type



## FLEV-S

The outside end seals are suitable for all single-conductor and three-conductor medium-range voltage plastic cables with differing conductor layers and sheath designs up to 18/30(36)kV.

## Properties

- Safe field effect
- Simple assembly
- Wider application range
- Excellent external layer behaviour
- Unlimited conductivity
- Immediately operational

## Scope of delivery

- Packing unit: 1
- suspensible silicon control element
- sealing band
- creeping current resistant, weather-proof heat shrink-on tube
- assembly instruction
- suspensible silicone sheds

## Note

- An additional earthing kit is required for cables with copper sheath.
- Without terminals.
- 1 unit = 1 set with 3 items.

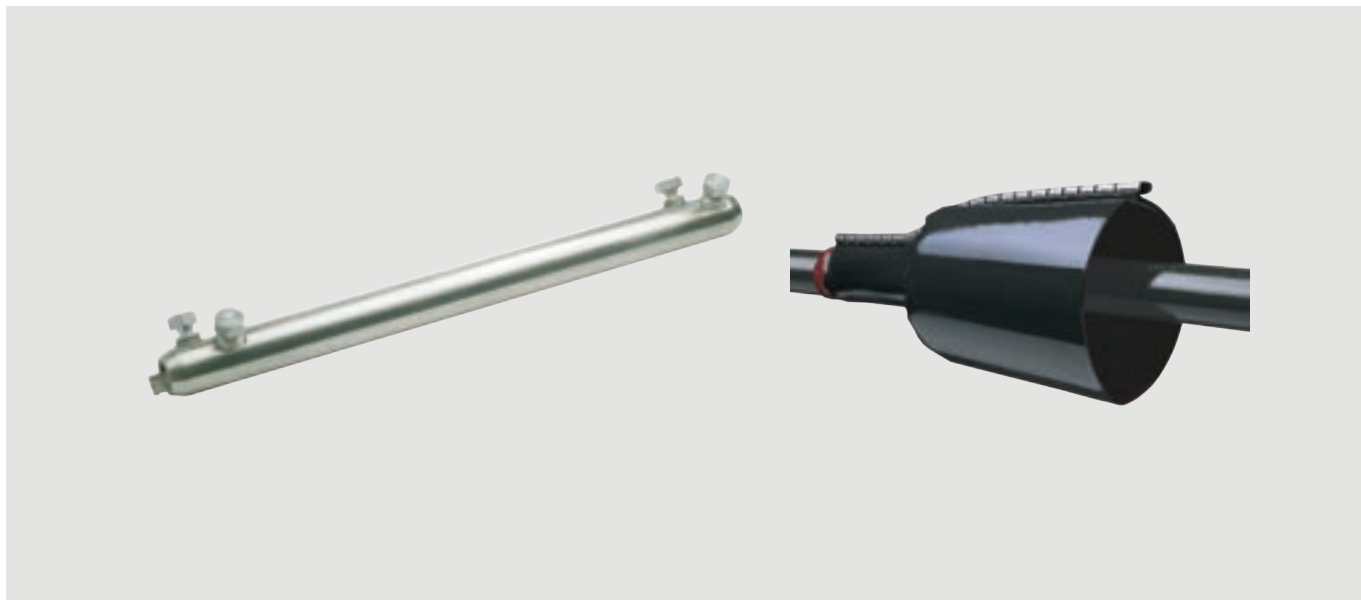
## single core

| Part no. | Type       | Nominal voltage<br>U <sub>0</sub> /U(U <sub>m</sub> ) | Cross-section<br>mm <sup>2</sup> | Unit |   |
|----------|------------|---|----------------------------------|------|---|
| 93360    | FLEV-S12/1 | 6/10kV  | 10,0 - 25,0                      | 1    | - |
| 93361    | FLEV-S12/1 | 6/10kV  | 25,0 - 95,0                      | 1    | - |
| 94426    | FLEV-S12/1 | 6/10kV  | 95,0 - 240,0                     | 1    | - |
| 93362    | FLEV-S12/1 | 6/10kV  | 150,0 - 400,0                    | 1    | - |
| 93363    | FLEV-S12/1 | 6/10kV  | 240,0 - 500,0                    | 1    | - |
| 94427    | FLEV-S12/1 | 6/10kV  | 400,0 - 800,0                    | 1    | - |
| 94428    | FLEV-S12/1 | 6/10kV  | 800,0 - 1000,0                   | 1    | - |
| 94429    | FLEV-S24/1 | 12/20kV   | 10,0 - 35,0                      | 1    | - |
| 93364    | FLEV-S24/1 | 12/20kV   | 25,0 - 150,0                     | 1    | - |
| 93365    | FLEV-S24/1 | 12/20kV   | 70,0 - 240,0                     | 1    | - |
| 93366    | FLEV-S24/1 | 12/20kV   | 120,0 - 300,0                    | 1    | - |
| 93380    | FLEV-S24/1 | 12/20kV   | 240,0 - 500,0                    | 1    | - |
| 94430    | FLEV-S24/1 | 12/20kV   | 630,0 - 1000,0                   | 1    | - |
| 93367    | FLEV-S36/1 | 18/30kV   | 35,0 - 70,0                      | 1    | - |
| 93368    | FLEV-S36/1 | 18/30kV   | 50,0 - 150,0                     | 1    | - |
| 93369    | FLEV-S36/1 | 18/30kV   | 150,0 - 400,0                    | 1    | - |
| 93370    | FLEV-S36/1 | 18/30kV   | 500,0 - 800,0                    | 1    | - |

Dimensions and specifications may be changed without prior notice.

# Repair Sleeves for shielded single-conductor plastic cable

with bolt connector -  $U_0/U_m$  6/10 (12) kV to 12/20 (24) kV



## Sleeve

• Sleeve designed for 12 kV and 24kV plastic-insulated cables:

The main design of these sleeves matches the hereafter mentioned MXSU connection sleeves, in which the feeder terminal hose and the sleeve body are roughly twice as long. From prior experience a part of the cable or sleeve will need to be cut out when the cables are damaged, a longer repair bolt connector and a fibre-reinforced cuff are used to restore the conductor connection, which significantly reduces space requirements for the sleeve hole, since the outer hose's stop position is no longer necessary. This allows for bridging gaps up to 320 mm.

## Pressure-resistant sleeve

• Pressure-resistant repair sleeves 24 kV:

This sleeve is a special product that was developed during the "Cable Cure" cable refurbishing process. The design matches the repair sleeve for plastic cables. The sleeve's required compressive strength is achieved by additional, pressure-resistant cuffs over the sleeve body. A bolt connector with the appropriate length allows for smooth replacement of the missing conductor piece after disassembling the existing connection sleeves. This application is available upon request.

## Cable

• The sleeves described here are used for repairing cable errors and/or defective sleeves up to 320 mm long on plastic-insulated cables of up to 24 kV. This application is available for the following cables: N(A)YSY, N(A)2YSY, N(A)2XS(FL)2Y, N(A)2YHCaY, N(A)2XS(FL)Y. Additional cable types available upon request.

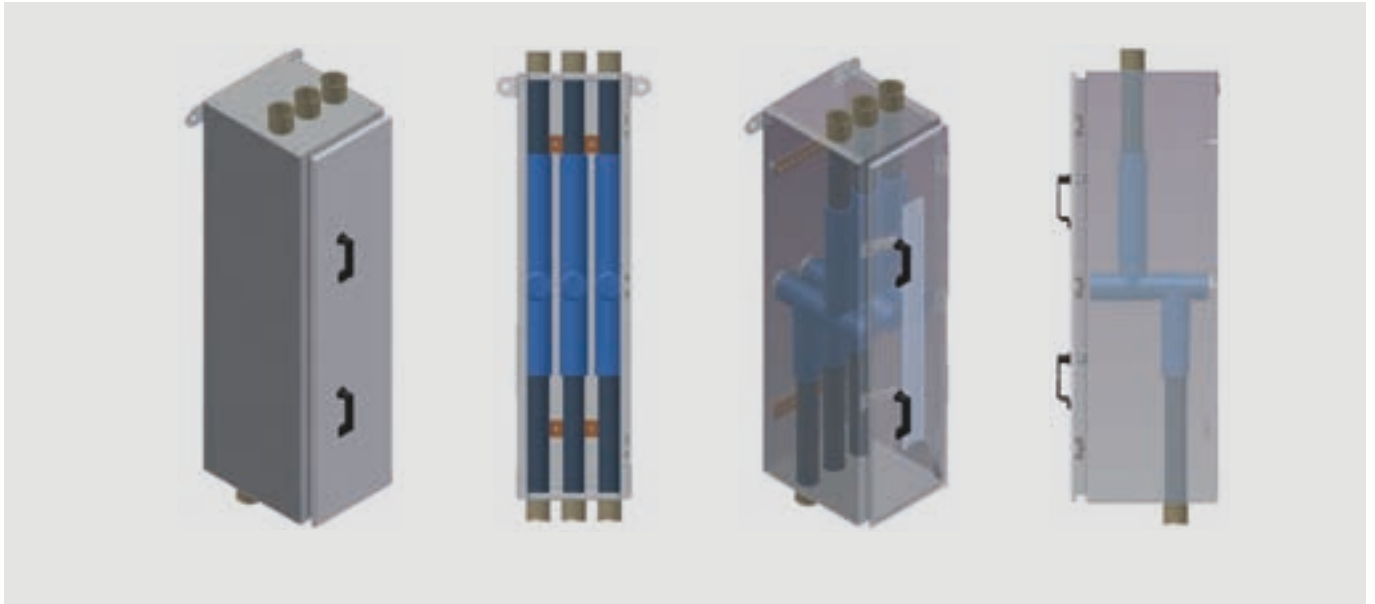
## Note

• For cross sections from 25mm<sup>2</sup> to 500mm<sup>2</sup>

Part no. and prices on request.

# Medium-Voltage Cable Accessories

## INLINE Junction Box up to 42 kV



### Medium-voltage distributor connector for three insulated cable connectors, up to a max. of 42KV

The MS distributor connector saves a lot of space, thanks to the inline array of the insulated medium-voltage cable connectors, and is easy to install.

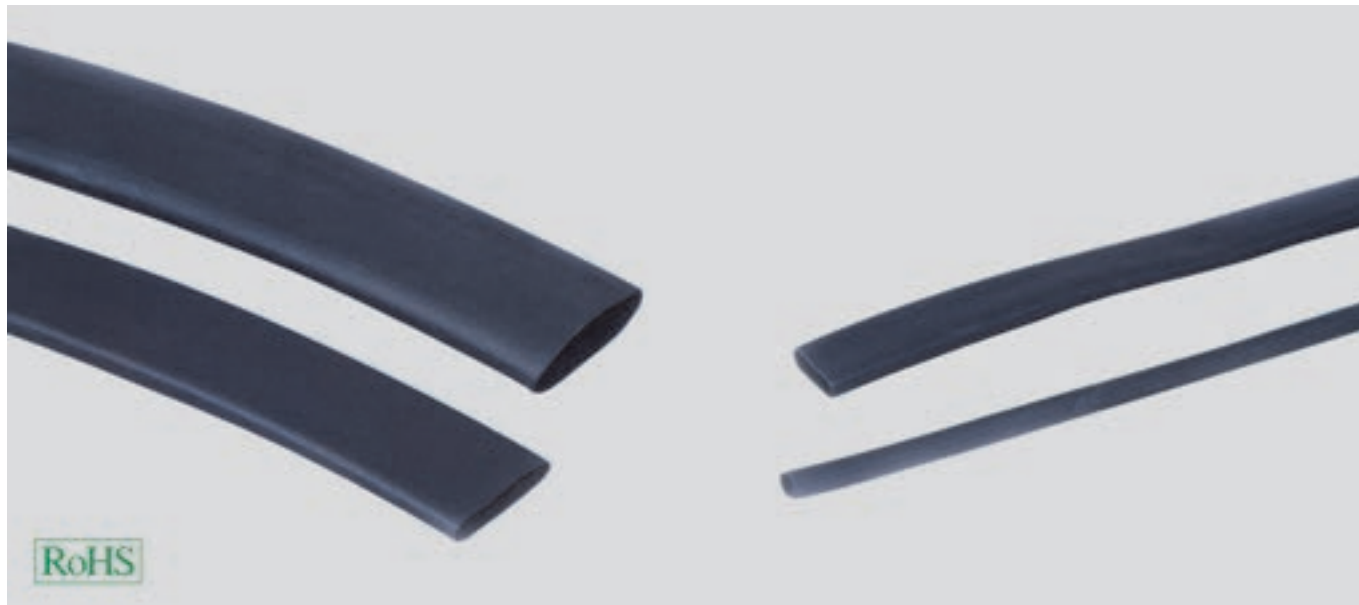
- Conductor cross section 25mm<sup>2</sup> to 300mm<sup>2</sup>
- Connection for many conductor materials, copper or aluminium cables
- Voltage level up to 42 kV
- Powder-coated metal housing
- On request: corrosion resistant high-grade steel for offshore uses
- Height: 1200mm/Depth: 400mm/Width: 320mm
- For medium-voltage cable connection set type RST1

Part no. and prices on request.



# SK-D heat shrink 3:1 - with interior adhesive

polyolefine - thick walled



## SK-D

Polyolefine shrunk tube with internal adhesive for repairing insulation and sealing electrical components.

For the protection of cable sleeves and terminations for low-voltage applications (600V).

Good protection against impact and abrasion.

## Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

## Material

PO (Polyolefine) with internal adhesive

Colour: black

- halogen-free

## Note

Form of shipment:

1.2 m rods

Approval:

UR-listed up to size 68,1mm

## Technical data

Temperature range: -55°C up to +110°C

## black

| Part no. | Inner Ø before shrinkage mm | Wall thickness mm | Inner Ø after shrinkage mm | Content m     | Unit |
|----------|-----------------------------|-------------------|----------------------------|---------------|------|
| 905344   | 8,9                         | 1,8               | 3,0                        | rods of 1,22m | 1    |
| 905335   | 13,0                        | 2,4               | 4,1                        | rods of 1,22m | 1    |
| 905336   | 19,1                        | 2,4               | 6,1                        | rods of 1,22m | 1    |
| 905337   | 27,9                        | 3,0               | 8,9                        | rods of 1,22m | 1    |
| 905338   | 38,1                        | 4,1               | 11,9                       | rods of 1,22m | 1    |
| 905339   | 50,8                        | 4,1               | 16,0                       | rods of 1,22m | 1    |
| 905340   | 68,1                        | 4,1               | 22,1                       | rods of 1,22m | 1    |
| 905731   | 89,9                        | 4,1               | 30,0                       | rods of 1,22m | 1    |
| 905732   | 119,9                       | 2,0               | 39,9                       | rods of 1,22m | 1    |

Dimensions and specifications may be changed without prior notice.

# Rollover Insulation Hose

For fixed connection of a 0.6/1kV single-conductor cable



## Field of application

- Good versatility; for connecting and sealing single-conductor and coax cables
- Indoors, outdoors, soil, water, installation channels and pipes
- Ideal for locations without flames

## Approval

- UL/CSA ANSI

## Properties

- The hoses consist of a double-walled endless EPDM pipe filled with lubricant, which is easily rolled over the cable and connector.
- Large field of application, with only 4 types, the full low-voltage range is covered.
- UV-resistant and halogen-free
- Resistant against environmental and chemical influences such as alkalis in the soil.
- Suitable for press connectors (not included)

## Advantages

- Reliable protection against moisture and water
- Quick and easy installation without tools
- Can be installed at up to -25°C without significant effort
- Voltage is immediately switched on after successful installation
- Continuous operation temperature range -40°C to +130°C
- Can be stored indefinitely

Part no. and prices on request.

# WK-APW 18 Battery-operated compression tool



## WK-APW 18 Battery-powered compression tool

- Special tool for crimping cable lugs and connectors up to 1000mm<sup>2</sup>
- 3 years warranty or 20,000 cycles
- Fast feed in low pressure, with dual-piston hydraulic
- Variable speed for positioning the tool
- Ergonomic design for effortless work
- Service friendly, compact design
- Two-component handle with optimum weight distribution
- Integrated LED for illuminating the working area
- Pressing force: 130 kN
- Max. stroke: 42 mm
- Head opening: 42 mm
- Dimensions: W 95mm x L 430mm x H 310mm
- Weight: approx. 8,7 kg
- Rechargeable battery: Li-Ionen; 18V; 3Ah

| Part no. | Type      | Unit |
|----------|-----------|------|
| 909871   | WK-APW 18 | 1    |

Dimensions and specifications may be changed without prior notice.

### C8-Crimping dies for HELUWIND® WK POWERLINE ALU

| Part No. | Cross Section                       |
|----------|-------------------------------------|
| 907014   | 95 mm <sup>2</sup> + adapter 906411 |
| 906434   | 150 mm <sup>2</sup>                 |
| 907200   | 185 mm <sup>2</sup>                 |
| 906446   | 240 mm <sup>2</sup>                 |
| 906206   | 300 mm <sup>2</sup>                 |
| 906766   | 400 mm <sup>2</sup>                 |

Please order crimping dies separately!

# WK-Electro hydraulic pump with battery



## WK-electro-hydraulic, battery-operated pump

- Light, compact and robust structure
- Double piston technology for rapid, high-pressure feed
- Quick tool return by high return conveyor volume
- Pressure monitoring with an electronic pressure sensor
- High-performance battery (lithium-ion) with charge level indicator
- Remote control, 1.5 m
- Power button located on the device and on the remote control
- Remote controlled hydraulic cylinder
- Control by means of microcontroller
- LED-display (green) for correct processing on the device and remote control
- LED-display for battery and processing errors on the device
- Automatic energy save mode after 5 min. in idle
- Crimp and error message history on internal memory (app. 100000 cycles)
- Read out of all cycles and error messages from USB
- Permanent supervision of remaining battery load prevents uncompleted crimping cycles
- Controlled engine drive for long life of gear, engine and battery
- Automatic and manual retract, retract stop function
- Increased cutting frequency by means of automatic cutting detection (pat. pending)
- Integrated service-management
- Software update from USB connection
- Temperature monitor
- Pump can be carried using shoulder strap, carry bag with additional pockets
- Remote control can be fastened to the pump, belt or shoulder strap

## Note

Pressing cylinder and crimping head are **not** part of the product. Please order C8 Pressing cylinder and crimping head separately.

## Scope of delivery

- Battery-operated pump
- Remote control, 1,5m
- Flexible hose, 1,5m
- USB cable
- Li-Ion battery, 18V, 3,0Ah
- Battery charger
- Software (CD)
- Shoulder strap
- Carry bag with additional pockets

| Part no. | Type                                   | Unit |
|----------|--|------|
| 906207   | WK-Electro hydraulic pump with battery | 1    |

Dimensions and specifications may be changed without prior notice.

# WK-Electro-hydraulic radial-piston-pump (230) with transport cart



## WK-Electro-hydraulic radial-piston-pump (230V) with transport cart

- Electrical controls
- Pressure control valve
- Magnet valve
- Oil sight glass
- 3 meter high-pressure hose
- Pump controlled with a foot pedal which is equipped with a high-quality, 3-point safety switch
- Operating pressure: max. 700 bar
- Operating voltage: 230V, 50Hz
- Delivery rate: 0,64l/min
- Nominal capacity: 0,75 kW
- Foot pedal with one switch
- Weight: 32,5 kg

## Note

Without cutting and crimping tool  
Optional: 400V version available

## Scope of delivery

- Battery-operated hydraulic compression tool
- Battery
- Charger
- Transport cart

| Part no. | Type | Unit |
|----------|------|------|
| 906721   | -    | 1    |

Dimensions and specifications may be changed without prior notice.

# HELUTOOL HAP 60-2 Battery-powered hydraulic tool in toolbox



## HELUTOOL HAP 60-2 Battery hydraulic tool in toolbox

- For processing Cable lugs and Connectors up to 300mm<sup>2</sup>
- Quick infeed due to doublee piston hydraulic system
- Variable speed fir placing the tool
- Ergonomic design for fatigue-free work
- Easy to service and compact design
- Two-piece component handles with optimal weight distribution
- Powerful Li-Ion battery 18 V
- LED to illumination of the workspace
- Crimping area: 6-300 mm<sup>2</sup>
- Pressing forces: ca. 60 kN
- Head rotation: 360°
- Opening range: 17 mm
- Battery voltage: 18 V
- Weight incl. battery: approx. 4,4 kg
- Tool dimensions: 330 x 331 x 75 mm

## Note

Exclusive inserts

Matching inserts:  
HELU-S-PE-SK und HELU-S-PE-WM  
Further inserts on request

## Scope of delivery

- Battery-powered hydraulic tool
- Battery
- Battery charger
- Carry strap
- Manual
- Transport case

| Part no. | Type     | Unit |
|----------|----------|------|
| 908494   | HAP 60-2 | 1    |

Dimensions and specifications may be changed without prior notice.





VDEA

A014024

CCC

H07V-K

CCC

VDEA

HARD

H07V-K

# ■ READY FOR CHINA



HELUKABEL has been represented in China for more than 12 years and has a wide product program specially developed for the Chinese market. HELUKABEL provides the largest assortment of cables and wires with the „Ready for China“ rating. This makes it possible for us to simplify the complexity of the Chinese certification, which requires significant personnel and financial effort. Talk to us, we would be glad to advise you!

With 3 locations, HELUKABEL is represented in the most important economic regions along the east coast. This includes **Shanghai** located in the Yangtze delta and the metropolitan area of **Beijing**. This is where more

than 30 expert consultants are available for you with advice, of course also in German and English.

In **Taicang**, HELUKABEL produces cables and wires for the Asian market from a 7,000 m<sup>2</sup> manufacturing facility. Similar to the plants in Germany, the focus is on high quality, flexible and highly-flexible cables and wires, which are produced in accordance with German, Chinese and international standards and norms. Flexible production cells permit short delivery times.

Based on a comprehensive stock program at different locations, cables, wires and accessories can be called up directly at the location without any time delay. The new HELUKABEL logistics centre in Taicang is also used as a product hub for the entire Asian market and offers significant benefits especially for the processing of large projects that are critical with respect to time and volume.

At the same time, we frequently ship by air and sea freight from Germany. More than 70 cable types, have been documented and approved for a quick and easy movement of goods.



HELUKABEL® Production and Logistics Center in Taicang / China



HELUKABEL® Products with CCC-Certificate available on stock.

# ACHIEVING SUCCESS THROUGH QUALITY AND INNOVATION



Product certificates document the tested quality level of our products

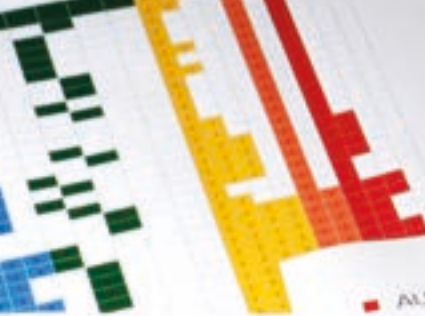
ISO 9000ff is used as the basis for quality management processes carried out at HELUKABEL®. Product certificates issued by accredited institutions also make it easier for you to evaluate your suppliers.

Our continuous quality improvement process enables us not only to maintain a consistently high quality standard, it also ensures continued development and new product development.

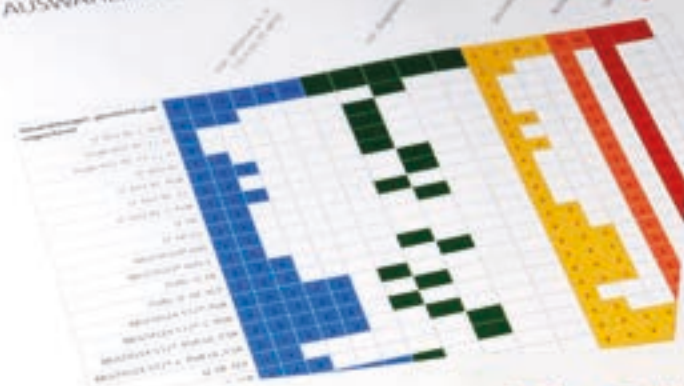
Our commitment to protecting the environment can be seen in our state-of-the-art environment management systems.







**AUSWAHLTABELLE - Leitungen für Energieführungsketten**



**AUSWAHLTABELLE KABEL & LEITUNGEN**

| Artikel-Nr. | Bezeichnung | Material | Abmessung | Verpackung |
|-------------|-------------|----------|-----------|------------|
| 33240       | ...         | ...      | ...       | ...        |
| 33275       | ...         | ...      | ...       | ...        |

**Typen-/Stichwortvi**

| Typ/Stichwort | Seite |
|---------------|-------|
| ...           | ...   |
| ...           | ...   |

**AUSWAHLTABELLE KABEL & LEITUNGEN**

| Artikel-Nr. | Bezeichnung | Material | Abmessung | Verpackung |
|-------------|-------------|----------|-----------|------------|
| 33240       | ...         | ...      | ...       | ...        |
| 33275       | ...         | ...      | ...       | ...        |

**Erhebungsbogen für Energieführungsketten**

Name: \_\_\_\_\_

Vorname, Name: \_\_\_\_\_

Straße, Nr: \_\_\_\_\_

PLZ, Ort: \_\_\_\_\_

Telefon / Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Abnehmen/Bestellen: \_\_\_\_\_

**1. Energieführungsparameter**

1. Kabellänge/Kabelbreite: \_\_\_\_\_ m/mm

2. Kabellinierung: \_\_\_\_\_ mm

3. Krümmungsradius: \_\_\_\_\_ mm

4. Trennstöße vorhanden:  Ja  Nein

5. Zwischenbeuge vorhanden:  Ja  Nein

6. Anordnung/Installation:  horizontal  vertikal

**2. Einsatz- und Bewegungsparameter**

1. Verfahrweg (max.): \_\_\_\_\_

2. Verfahrweggeschwindigkeit: \_\_\_\_\_

3. Verfahrweise: \_\_\_\_\_

4. Verfahrhöhe: \_\_\_\_\_

5. Mittl. Verfahr: \_\_\_\_\_

6. Tägliche Einsätze: \_\_\_\_\_

7. Einplanung in: \_\_\_\_\_

8. Zusatzgewicht: \_\_\_\_\_

**3. Leitungsp.**

1. Leitungslänge (ger.): \_\_\_\_\_

2. Leitungslänge (be): \_\_\_\_\_

3. Anzahl der Leitungen: \_\_\_\_\_

4. Leitung zugelastet: \_\_\_\_\_

5. Anzahl der Adern pro: \_\_\_\_\_

6. Leitung geschirmt: \_\_\_\_\_

7. Leitung halogenfrei: \_\_\_\_\_

**4. Umgebungsparameter**

1. Betriebstemperatur: \_\_\_\_\_ °C

2. Art der chemischen Beanspruchung: \_\_\_\_\_

3. Sonstige Umgebungsrisiko: \_\_\_\_\_

**Anfrage Spezialkabel**

Leitungsbedarf ca. \_\_\_\_\_ m

gew. Leitensystem: \_\_\_\_\_

Abmessung: \_\_\_\_\_

**Anfrage**

a)  innen  außen

b)  feste Verlegung  beweglicher Einsatz

c)  Schleppkabel  Verfahrweise

**Einsatz**

Temperatur: \_\_\_\_\_ °C

Kupfer  Aluminium

massiv  flexibel

Adernzahl x Querschnitt: \_\_\_\_\_

Adernzahl x Querschnitt: \_\_\_\_\_

**Aufbau**

1. Leiter: \_\_\_\_\_

**2. Isolation**

PVC  Aluminium

PP  PP

thermoplast. Gummi  flexibel

**3. Adernkennzeichnung**

wie mit ws Zeichen  Phase

farbige n. VDL  farbige n. VDL

**4. Abschirmung**

Einzelschirm  Phase

Cu-blank  Cu-verz

Geflecht (C)  Alu-fol

blank / verzinkt  blank / verzinkt

mit/ohne Berührungsschutz  mit/ohne Berührungsschutz

Hart  Hart

TPE  TPE

**Artikelnummern-Verzeichnis**

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HELUKABEL® GmbH - Stamm

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## HINT

Due to legal restrictions, the chapter „Technical information“ is completely only available in the printed version.

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# ■ ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM-VOLTAGE CABLES, 6-30 kV

## Conductor resistance at 20°C

| cross-section<br>mm <sup>2</sup> | maximum value           |                          |
|----------------------------------|-------------------------|--------------------------|
|                                  | Cu-conductor<br>Ohm/ km | Alu-conductor<br>Ohm/ km |
| 25                               | 0,727                   | 1,20                     |
| 35                               | 0,524                   | 0,868                    |
| 50                               | 0,387                   | 0,641                    |
| 70                               | 0,268                   | 0,443                    |
| 95                               | 0,193                   | 0,320                    |
| 120                              | 0,153                   | 0,253                    |
| 150                              | 0,124                   | 0,206                    |
| 185                              | 0,0991                  | 0,164                    |
| 240                              | 0,0754                  | 0,125                    |
| 300                              | 0,0601                  | 0,100                    |
| 400                              | 0,0470                  | 0,0778                   |
| 500                              | 0,0366                  | 0,0605                   |

## Conversion factors for the conductor temperatures

| Temperature at °C | 60    | 65    | 70    | 80    | 90    |
|-------------------|-------|-------|-------|-------|-------|
| Cu-conductor      | 1,157 | 1,177 | 1,196 | 1,236 | 1,275 |
| Alu-conductor     | 1,161 | 1,181 | 1,202 | 1,242 | 1,282 |

## Conversion formula:

$$R_{\delta} = R_{20} \cdot \frac{234,5 + \delta}{254,5} \quad \text{for Cu-conductor}$$







$$R_{\delta} = R_{20} \cdot \frac{228 + \delta}{248} \quad \text{for Alu-conductor}$$

Conductor temperature at      °C =  $\delta$   
 Conductor resistance at  $\delta$    °C in Ohm/ km =  $R_{\delta}$   
 Conductor resistance at 20   °C in Ohm/ km =  $R_{20}$







# ■ ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM-VOLTAGE CABLES, 6-30 kV

## Effective resistance at 50 Hz (Alternating-current resistance)







### Copper conductor

| Nominal voltage | 6/ 10 kV  |   | 12/ 20 kV   |   | 18/ 30 kV   |   |
|-----------------|---|---|---|---|---|---|
| Cross-section   | approx Ohm/ km  |   |   |   |   |   |
| mm <sup>2</sup> |  |  |  |  |  |  |
| 35              | 0,671   | 0,673   | 0,671   | 0,672   | –   | –   |
| 50              | 0,497   | 0,498   | 0,496   | 0,498   | 0,496   | 0,497   |
| 70              | 0,345   | 0,346   | 0,345   | 0,346   | 0,344   | 0,346   |
| 95              | 0,249   | 0,251   | 0,249   | 0,250   | 0,249   | 0,250   |
| 120             | 0,198   | 0,200   | 0,198   | 0,200   | 0,198   | 0,199   |
| 150             | 0,163   | 0,165   | 0,163   | 0,165   | 0,162   | 0,164   |
| 185             | 0,132   | 0,134   | 0,131   | 0,133   | 0,131   | 0,133   |
| 240             | 0,102   | 0,104   | 0,101   | 0,103   | 0,101   | 0,103   |
| 300             | 0,082   | 0,085   | 0,082   | 0,084   | 0,082   | 0,084   |
| 400             | 0,068   | 0,071   | 0,067   | 0,070   | 0,067   | 0,069   |
| 500             | 0,055   | 0,058   | 0,055   | 0,058   | 0,054   | 0,057   |

### Aluminium conductor

| Nominal voltage | 6/ 10 kV  |   | 12/ 20 kV   |   | 18/ 30 kV   |   |
|-----------------|---|---|---|---|---|---|
| Cross-section   | approx Ohm/ km  |   |   |   |   |   |
| mm <sup>2</sup> |  |  |  |  |  |  |
| 35              | 1,12  | 1,12  | 1,12  | 1,12  | –   | –   |
| 50              | 0,825   | 0,826   | 0,825   | 0,826   | 0,824   | 0,826   |
| 70              | 0,571   | 0,572   | 0,571   | 0,572   | 0,571   | 0,572   |
| 95              | 0,413   | 0,415   | 0,413   | 0,414   | 0,413   | 0,414   |
| 120             | 0,327   | 0,329   | 0,327   | 0,329   | 0,327   | 0,328   |
| 150             | 0,269   | 0,271   | 0,268   | 0,270   | 0,268   | 0,270   |
| 185             | 0,215   | 0,217   | 0,215   | 0,217   | 0,214   | 0,216   |
| 240             | 0,165   | 0,167   | 0,165   | 0,167   | 0,164   | 0,166   |
| 300             | 0,133   | 0,135   | 0,133   | 0,135   | 0,133   | 0,135   |
| 400             | 0,106   | 0,109   | 0,106   | 0,109   | 0,106   | 0,108   |
| 500             | 0,085   | 0,088   | 0,084   | 0,087   | 0,084   | 0,087   |

## Inductive resistance at 50 Hz







| Nominal voltage | 6/ 10 kV  |   | 12/ 20 kV   |   | 18/ 30 kV   |   |
|-----------------|---|---|---|---|---|---|
| Cross-section   | Ohm/ km   |   |   |   |   |   |
| mm <sup>2</sup> |  |  |  |  |  |  |
| 35              | 0,144   | 0,158   | 0,153   | 0,168   | –   | –   |
| 50              | 0,136   | 0,150   | 0,145   | 0,159   | 0,154   | 0,169   |
| 70              | 0,129   | 0,143   | 0,138   | 0,152   | 0,147   | 0,161   |
| 95              | 0,123   | 0,137   | 0,131   | 0,145   | 0,139   | 0,154   |
| 120             | 0,118   | 0,132   | 0,126   | 0,140   | 0,134   | 0,148   |
| 150             | 0,114   | 0,128   | 0,121   | 0,135   | 0,129   | 0,143   |
| 185             | 0,110   | 0,124   | 0,117   | 0,131   | 0,125   | 0,139   |
| 240             | 0,105   | 0,120   | 0,112   | 0,126   | 0,120   | 0,134   |
| 300             | 0,102   | 0,116   | 0,108   | 0,123   | 0,115   | 0,130   |
| 400             | 0,097   | 0,111   | 0,103   | 0,117   | 0,110   | 0,124   |
| 500             | 0,094   | 0,108   | 0,100   | 0,114   | 0,106   | 0,120   |

# ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM-VOLTAGE CABLES, 6-30 kV

## Mutual capacitance

| Nominal voltage | 6/ 10 kV | 12/ 20 kV | 18/ 30 kV |
|-----------------|----------|-----------|-----------|
| Cross-section   |          |           |           |
| mm <sup>2</sup> | μF/ km   | μF/ km    | μF/ km    |
| 35              | 0,22     | 0,16      | –         |
| 50              | 0,25     | 0,18      | 0,14      |
| 70              | 0,28     | 0,20      | 0,15      |
| 95              | 0,31     | 0,22      | 0,17      |
| 120             | 0,34     | 0,23      | 0,18      |
| 150             | 0,37     | 0,25      | 0,19      |
| 185             | 0,40     | 0,27      | 0,20      |
| 240             | 0,44     | 0,30      | 0,22      |
| 300             | 0,48     | 0,32      | 0,24      |
| 400             | 0,55     | 0,36      | 0,27      |
| 500             | 0,60     | 0,40      | 0,29      |

## Inductance

| Nominal voltage | 6/ 10 kV  |   | 12/ 20 kV   |  | 18/ 30 kV   |   |
|-----------------|---|---|---|--|---|---|
| Cross-section   |  |  |  |  |  |  |
| mm <sup>2</sup> | mH/ km  | mH/ km  | mH/ km  | mH/ km   | mH/ km  | mH/ km  |
| 35              | 0,45  | 0,76  | 0,48  | 0,76   | –   | –   |
| 50              | 0,42  | 0,73  | 0,45  | 0,74   | 0,48  | 0,75  |
| 70              | 0,39  | 0,70  | 0,43  | 0,70   | 0,45  | 0,71  |
| 95              | 0,38  | 0,67  | 0,41  | 0,68   | 0,43  | 0,68  |
| 120             | 0,36  | 0,65  | 0,39  | 0,65   | 0,42  | 0,66  |
| 150             | 0,35  | 0,63  | 0,38  | 0,63   | 0,41  | 0,64  |
| 185             | 0,34  | 0,61  | 0,36  | 0,62   | 0,39  | 0,63  |
| 240             | 0,32  | 0,59  | 0,35  | 0,59   | 0,37  | 0,60  |
| 300             | 0,31  | 0,57  | 0,33  | 0,58   | 0,36  | 0,59  |
| 400             | 0,30  | 0,55  | 0,33  | 0,55   | 0,34  | 0,56  |
| 500             | 0,29  | 0,53  | 0,31  | 0,53   | 0,33  | 0,54  |

# ■ ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM-VOLTAGE CABLES, 6-30 kV

## Short-circuit current carrying capacity up to 30 kV

Conductor temperature: 90° C

Short-circuit temperature: 250° C

### Cable with Cu-conductors

| Cross-section   | short-circuit time in s (seconds) |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|-----------------|-----------------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
|                 | 0,1                               | 0,2   | 0,3   | 0,4   | 0,5   | 0,6  | 0,7  | 0,8  | 0,9  | 1,0  | 1,5  | 2,0  | 3,0  | 4,0  | 5,0  |
| mm <sup>2</sup> | permissible short-circuit in kA   |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
| 25              | 11,3                              | 8,0   | 6,5   | 5,7   | 5,1   | 4,6  | 4,3  | 4,0  | 3,8  | 3,6  | 2,9  | 2,5  | 2,1  | 1,8  | 1,6  |
| 35              | 15,8                              | 11,2  | 9,1   | 7,9   | 7,1   | 6,5  | 6,0  | 5,6  | 5,3  | 5,0  | 4,1  | 3,5  | 2,9  | 2,5  | 2,2  |
| 50              | 22,6                              | 16,0  | 13,1  | 11,3  | 10,1  | 9,2  | 8,5  | 8,0  | 7,5  | 7,2  | 5,8  | 5,1  | 4,1  | 3,6  | 3,2  |
| 7031,7          | 22,4                              | 18,3  | 15,8  | 14,2  | 12,9  | 12,0 | 11,2 | 10,6 | 10,0 | 8,2  | 7,1  | 5,8  | 5,0  | 4,5  |      |
| 95              | 43,0                              | 30,4  | 24,8  | 21,5  | 19,2  | 17,5 | 16,2 | 15,2 | 14,3 | 13,6 | 11,1 | 9,6  | 7,8  | 6,8  | 6,1  |
| 120             | 54,3                              | 38,4  | 31,3  | 27,1  | 24,3  | 22,2 | 20,5 | 19,2 | 18,1 | 17,2 | 14,0 | 12,1 | 9,9  | 8,6  | 7,7  |
| 150             | 67,8                              | 48,0  | 39,2  | 33,9  | 30,3  | 27,7 | 25,6 | 24,0 | 22,6 | 21,5 | 17,5 | 15,2 | 12,4 | 10,7 | 9,6  |
| 185             | 83,7                              | 59,2  | 48,3  | 41,8  | 37,4  | 34,2 | 31,6 | 29,6 | 27,9 | 26,5 | 21,6 | 18,7 | 15,3 | 13,2 | 11,8 |
| 240             | 108,5                             | 76,7  | 62,7  | 54,3  | 48,5  | 44,3 | 41,0 | 38,4 | 36,2 | 34,3 | 28,0 | 24,3 | 19,8 | 17,2 | 15,3 |
| 300             | 135,7                             | 95,9  | 78,3  | 67,8  | 60,7  | 55,4 | 51,3 | 48,0 | 45,2 | 42,9 | 35,0 | 30,3 | 24,8 | 21,5 | 19,2 |
| 400             | 180,9                             | 127,9 | 104,4 | 90,4  | 80,9  | 73,8 | 68,4 | 64,0 | 60,3 | 57,2 | 46,7 | 40,4 | 33,0 | 28,6 | 25,6 |
| 500             | 226,1                             | 159,9 | 130,5 | 113,1 | 101,1 | 92,3 | 85,5 | 79,9 | 75,4 | 71,5 | 58,4 | 50,6 | 41,3 | 35,8 | 32,0 |

### Cable with Alu-conductors

| Cross-section   | short-circuit time in s (seconds) |       |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------|-----------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                 | 0,1                               | 0,2   | 0,3  | 0,4  | 0,5  | 0,6  | 0,7  | 0,8  | 0,9  | 1,0  | 1,5  | 2,0  | 3,0  | 4,0  | 5,0  |
| mm <sup>2</sup> | permissible short-circuit in kA   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 25              | 7,4                               | 5,3   | 4,3  | 3,7  | 3,3  | 3,0  | 2,8  | 2,6  | 2,5  | 2,4  | 1,9  | 1,7  | 1,4  | 1,2  | 1,1  |
| 35              | 10,4                              | 7,4   | 6,0  | 5,2  | 4,7  | 4,2  | 3,9  | 3,7  | 3,5  | 3,3  | 2,7  | 2,3  | 1,9  | 1,6  | 1,5  |
| 50              | 14,9                              | 10,5  | 8,6  | 7,4  | 6,6  | 6,1  | 5,6  | 5,3  | 5,0  | 4,7  | 3,8  | 3,3  | 2,7  | 2,4  | 2,1  |
| 70              | 20,8                              | 14,7  | 12,0 | 10,4 | 9,3  | 8,5  | 7,9  | 7,4  | 6,9  | 6,6  | 5,4  | 4,7  | 3,8  | 3,3  | 2,9  |
| 95              | 28,2                              | 20,0  | 16,3 | 14,1 | 12,6 | 11,5 | 10,7 | 10,0 | 9,4  | 8,9  | 7,3  | 6,3  | 5,2  | 4,5  | 4,0  |
| 120             | 35,7                              | 25,2  | 20,6 | 17,8 | 16,0 | 14,6 | 13,5 | 12,6 | 11,9 | 11,3 | 9,2  | 8,0  | 6,5  | 5,6  | 5,0  |
| 150             | 44,6                              | 31,5  | 25,7 | 22,3 | 19,9 | 18,2 | 16,9 | 15,8 | 14,9 | 14,1 | 11,5 | 10,0 | 8,1  | 7,1  | 6,3  |
| 185             | 55,0                              | 38,9  | 31,7 | 27,5 | 24,6 | 22,5 | 20,8 | 19,4 | 18,3 | 17,4 | 14,2 | 12,3 | 10,0 | 8,7  | 7,8  |
| 240             | 71,3                              | 50,4  | 41,2 | 35,7 | 31,9 | 29,1 | 27,0 | 25,2 | 23,8 | 22,6 | 18,4 | 16,0 | 13,0 | 11,3 | 10,1 |
| 300             | 89,2                              | 63,1  | 51,5 | 44,6 | 39,9 | 36,4 | 33,7 | 31,5 | 29,7 | 28,2 | 23,0 | 19,9 | 16,3 | 14,1 | 12,6 |
| 400             | 118,9                             | 84,1  | 68,6 | 59,5 | 53,2 | 48,5 | 44,9 | 42,0 | 39,6 | 37,6 | 30,7 | 26,6 | 21,7 | 18,8 | 16,8 |
| 500             | 148,6                             | 105,1 | 85,8 | 74,3 | 66,5 | 60,7 | 56,2 | 52,5 | 49,5 | 47,0 | 38,4 | 33,2 | 27,1 | 23,5 | 21,0 |

# ■ ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM-VOLTAGE CABLES, 6-30 kV

## Short-circuit to ground

| Nominal voltage                  | 6/ 10 kV | 12/ 20 kV | 18/ 30 kV |
|----------------------------------|----------|-----------|-----------|
| cross-section<br>mm <sup>2</sup> | A/ km    | A/ km     | A/ km     |
| 35                               | 1,2      | 1,7       | –         |
| 50                               | 1,4      | 1,9       | 2,3       |
| 70                               | 1,5      | 2,1       | 2,5       |
| 95                               | 1,7      | 2,4       | 2,7       |
| 120                              | 1,9      | 2,6       | 2,9       |
| 150                              | 2,0      | 2,7       | 3,1       |
| 185                              | 2,2      | 3,0       | 3,3       |
| 240                              | 2,4      | 3,3       | 3,7       |
| 300                              | 2,6      | 3,5       | 4,0       |
| 400                              | 3,0      | 4,0       | 4,4       |
| 500                              | 3,3      | 4,3       | 4,8       |

## Short-circuit current carrying capacity of copper screens Short-circuit temperature: 350°C

| short-circuit time<br>in seconds | load of short-circuit current in kA |                    |                    |
|----------------------------------|-------------------------------------|--------------------|--------------------|
|                                  | up to 16 mm <sup>2</sup>            | 25 mm <sup>2</sup> | 35 mm <sup>2</sup> |
|                                  | kA                                  | kA                 | kA                 |
| s                                |                                     |                    |                    |
| 0,1                              | 9,7                                 | 15,1               | 21,2               |
| 0,2                              | 6,9                                 | 10,7               | 15,1               |
| 0,3                              | 5,7                                 | 8,9                | 12,5               |
| 0,4                              | 5,0                                 | 7,7                | 10,9               |
| 0,5                              | 4,5                                 | 7,0                | 9,8                |
| 0,6                              | 4,2                                 | 6,4                | 9,0                |
| 0,7                              | 3,9                                 | 6,0                | 8,4                |
| 0,8                              | 3,5                                 | 5,6                | 7,9                |
| 0,9                              | 3,4                                 | 5,3                | 7,5                |
| 1,0                              | 3,3                                 | 5,1                | 7,2                |
| 1,5                              | 2,7                                 | 4,2                | 5,9                |
| 2,0                              | 2,3                                 | 3,6                | 5,1                |
| 3,0                              | 1,9                                 | 2,9                | 4,2                |
| 4,0                              | 1,7                                 | 2,6                | 3,6                |
| 5,0                              | 1,5                                 | 2,3                | 3,2                |

## Coordination of screen-cross-section

| conductor cross-section<br>mm <sup>2</sup> | screen-cross-section<br>mm <sup>2</sup> |
|--|---|
| 35 to 120                                  | 16                                      |
| 150 to 300                                 | 25                                      |
| 400 and 500                                | 35                                      |

# ■ CONVERSION FACTORS FOR CURRENT CARRYING CAPACITY FOR INSTALLATION OF MEDIUM-VOLTAGE CABLES, 6-30 kV

## Conversion factors for current carrying capacity for cables laid in ground; Load factor 0,7 and 1,0

### Fundamental conditions\*

|   |              |
|---|--------------|
| Ground temperature                                      | 20° C        |
| Thermal resistivity                                     | 1,0 K · m/ W |
| Distance between cables or systems                      | 7 cm         |
| Single core cables laid in trefoil touching arrangement |              |

### Load factor 0,7

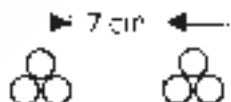
| Type of insulation       | Cable design               | Nominal voltage     | Number of cables or systems |      |      |      |      |
|--------------------------|----------------------------|---------------------|-----------------------------|------|------|------|------|
|                          |                            |                     | 2                           | 4    | 6    | 8    | 10   |
| PVC<br>Three-core cables | Multicore cables           | 0,6/ 1 to 3,6/ 6 kV | 0,86                        | 0,71 | 0,64 | 0,60 | 0,57 |
|                          |                            | to 6/ 10 kV         | 0,87                        | 0,71 | 0,63 | 0,59 | 0,54 |
|                          | Single core cables         | 0,6/ 1 to 3,6/ 6 kV | 0,85                        | 0,70 | 0,63 | 0,59 | 0,56 |
|                          | Single core cables         | to 6/ 10 kV         | 0,83                        | 0,66 | 0,57 | 0,53 | 0,49 |
| VPE<br>Three-core cables | Multicore cables<br>0,6/ 1 | 0,6/ 1 to 18/ 30 kV | 0,85                        | 0,70 | 0,63 | 0,59 | 0,56 |
|                          |                            | to 18/ 30 kV        | 0,85                        | 0,70 | 0,63 | 0,58 | 0,56 |

### Load factor 1,0

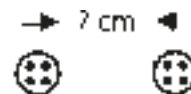
| Type of insulation | Cable design                           | Nominal voltage     | Number of cables or systems |      |      |      |      |      |
|--------------------|--|---------------------|-----------------------------|------|------|------|------|------|
|                    |  |                     | 1                           | 2    | 4    | 6    | 8    | 10   |
| PVC                | Multicore cables<br>Three-core cables  | 0,6/ 1 to 3,6/ 6 kV | 0,81                        | 0,66 | 0,52 | 0,46 | 0,43 | 0,40 |
|                    |  | to 6/ 10 kV         | 0,82                        | 0,67 | 0,51 | 0,45 | 0,41 | 0,37 |
|                    | Single core cables                     | 0,6/ 1 to 3,6/ 6 kV | 0,79                        | 0,65 | 0,51 | 0,46 | 0,42 | 0,40 |
|                    |  | to 6/ 10 kV         | 0,78                        | 0,62 | 0,47 | 0,40 | 0,36 | 0,33 |
| VPE                | Multicore cables<br>Single core cables | 0,6/ 1 to 18/ 30 kV | 0,83                        | 0,67 | 0,53 | 0,47 | 0,44 | 0,41 |
|                    |  | 0,6/ 1 to 18/ 30 kV | 0,81                        | 0,66 | 0,52 | 0,47 | 0,43 | 0,41 |

### Build-up of systems:

• for single core cables



• for multicore cables





# ■ CURRENT CARRYING CAPACITY FOR MV 90 / MV 105, ALUMINIUM, MEDIUM-VOLTAGE SINGLE CONDUCTOR

MV 90 / MV 105 Aluminium **2001V - 5000V**

| Conductor Size<br>AWG or KCMIL | (70) |      | (82) |     | (68) |     | (78) |     | (74) |     | (76) |     |
|--------------------------------|------|------|------|-----|------|-----|------|-----|------|-----|------|-----|
|                                | MV   |      | MV   |     | MV   |     | MV   |     | MV   |     | MV   |     |
|                                | 90   | 105  | 90   | 105 | 90   | 105 | 90   | 105 | 90   | 105 | 90   | 105 |
| 6                              | 85   | 95   | 110  | 115 | 70   | 77  | 66   | 71  | 58   | 65  | 53   | 59  |
| 4                              | 115  | 125  | 140  | 150 | 90   | 100 | 86   | 93  | 76   | 85  | 71   | 79  |
| 2                              | 150  | 165  | 180  | 195 | 125  | 135 | 115  | 125 | 100  | 115 | 96   | 105 |
| 1                              | 175  | 195  | 205  | 220 | 145  | 160 | 130  | 140 | 120  | 135 | 110  | 125 |
| 1/0                            | 200  | 225  | 230  | 250 | 170  | 185 | 150  | 160 | 140  | 155 | 130  | 145 |
| 2/0                            | 230  | 260  | 265  | 285 | 195  | 215 | 170  | 185 | 160  | 175 | 150  | 165 |
| 3/0                            | 270  | 300  | 300  | 320 | 225  | 250 | 195  | 210 | 190  | 210 | 170  | 190 |
| 4/0                            | 310  | 350  | 340  | 365 | 265  | 290 | 225  | 245 | 215  | 240 | 200  | 225 |
| 250                            | 345  | 385  | 370  | 395 | 295  | 325 | 250  | 270 | 250  | 280 | 220  | 245 |
| 350                            | 430  | 480  | 445  | 480 | 365  | 405 | 305  | 325 | 305  | 340 | 275  | 305 |
| 500                            | 545  | 605  | 540  | 580 | 460  | 520 | 370  | 400 | 380  | 425 | 340  | 380 |
| 750                            | 710  | 790  | 665  | 720 | 600  | 665 | 470  | 505 | 490  | 545 | 430  | 480 |
| 1000                           | 855  | 950  | 780  | 840 | 715  | 800 | 545  | 590 | 580  | 645 | 505  | 560 |
| 1250                           | 980  | 1095 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 1500                           | 1105 | 1230 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 1750                           | 1215 | 1355 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 2000                           | 1320 | 1475 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |

\*based on Conductor Temperatures of 90 °C (194 °F) and 105 °C (221 °F) and Ambient Air Temperature of 40 °C (104 °F)

MV 90 / MV 105 Aluminium **5001V - 35000V**

| Conductor Size<br>AWG or KCMIL | (70) |      | (82) |     | (68) |     | (78) |     | (74) |     | (76) |     |
|--------------------------------|------|------|------|-----|------|-----|------|-----|------|-----|------|-----|
|                                | MV   |      | MV   |     | MV   |     | MV   |     | MV   |     | MV   |     |
|                                | 90   | 105  | 90   | 105 | 90   | 105 | 90   | 105 | 90   | 105 | 90   | 105 |
| 6                              | 87   | 97   | 100  | 110 | 70   | 77  | 70   | 75  | 65   | 72  | 64   | 71  |
| 4                              | 115  | 130  | 130  | 140 | 90   | 100 | 91   | 98  | 84   | 94  | 84   | 94  |
| 2                              | 150  | 170  | 165  | 175 | 125  | 135 | 120  | 130 | 115  | 130 | 115  | 125 |
| 1                              | 175  | 195  | 185  | 200 | 145  | 160 | 135  | 145 | 130  | 150 | 130  | 145 |
| 1/0                            | 200  | 225  | 215  | 230 | 170  | 185 | 155  | 165 | 150  | 170 | 150  | 170 |
| 2/0                            | 230  | 260  | 245  | 260 | 195  | 215 | 175  | 190 | 175  | 200 | 170  | 190 |
| 3/0                            | 270  | 300  | 275  | 295 | 225  | 250 | 200  | 215 | 200  | 225 | 195  | 220 |
| 4/0                            | 310  | 345  | 315  | 340 | 265  | 290 | 230  | 245 | 230  | 260 | 225  | 255 |
| 250                            | 345  | 380  | 345  | 370 | 295  | 325 | 250  | 270 | 255  | 290 | 250  | 280 |
| 350                            | 430  | 475  | 415  | 450 | 365  | 405 | 305  | 330 | 310  | 350 | 305  | 340 |
| 500                            | 530  | 590  | 510  | 545 | 460  | 520 | 370  | 400 | 385  | 430 | 380  | 425 |
| 750                            | 685  | 765  | 635  | 680 | 600  | 665 | 455  | 490 | 485  | 540 | 470  | 520 |
| 1000                           | 825  | 920  | 740  | 795 | 715  | 800 | 525  | 565 | 565  | 640 | 550  | 615 |
| 1250                           | 950  | 1055 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 1500                           | 1060 | 1180 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 1750                           | 1165 | 1300 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |
| 2000                           | 1265 | 1410 | -    | -   | -    | -   | -    | -   | -    | -   | -    | -   |

\*based on Conductor Temperatures of 90 °C (194 °F) and 105 °C (221 °F) and Ambient Air Temperature of 40 °C (104 °F)

NEC table 310.60(C)(70) insulated single Aluminium conductor cables triplexed in Air

NEC Table 310.60(C)(82) Single Insulated Aluminium Conductors Directly Buried in Earth Temperature of 20°C (68°F)

NEC table 310.60(C)(68) Insulated Single Aluminium Conductor Cables Triplexed in Air Based

NEC Table 310.60(C)(78) Three Single-Insulated Aluminium Conductors in Underground Electrical Ducts (Conductors per Electrical Duct) based on Ambient Earth Temperature of 20°C (68°F)

NEC Table 310.60(C)(74) Insulated Triplexed or Three Single Conductor Aluminium Cables in Isolated Conduit in Air

NEC Table 310.60(C)(76) Insulated Three-Conductor Aluminium Cables in Isolated Conduit

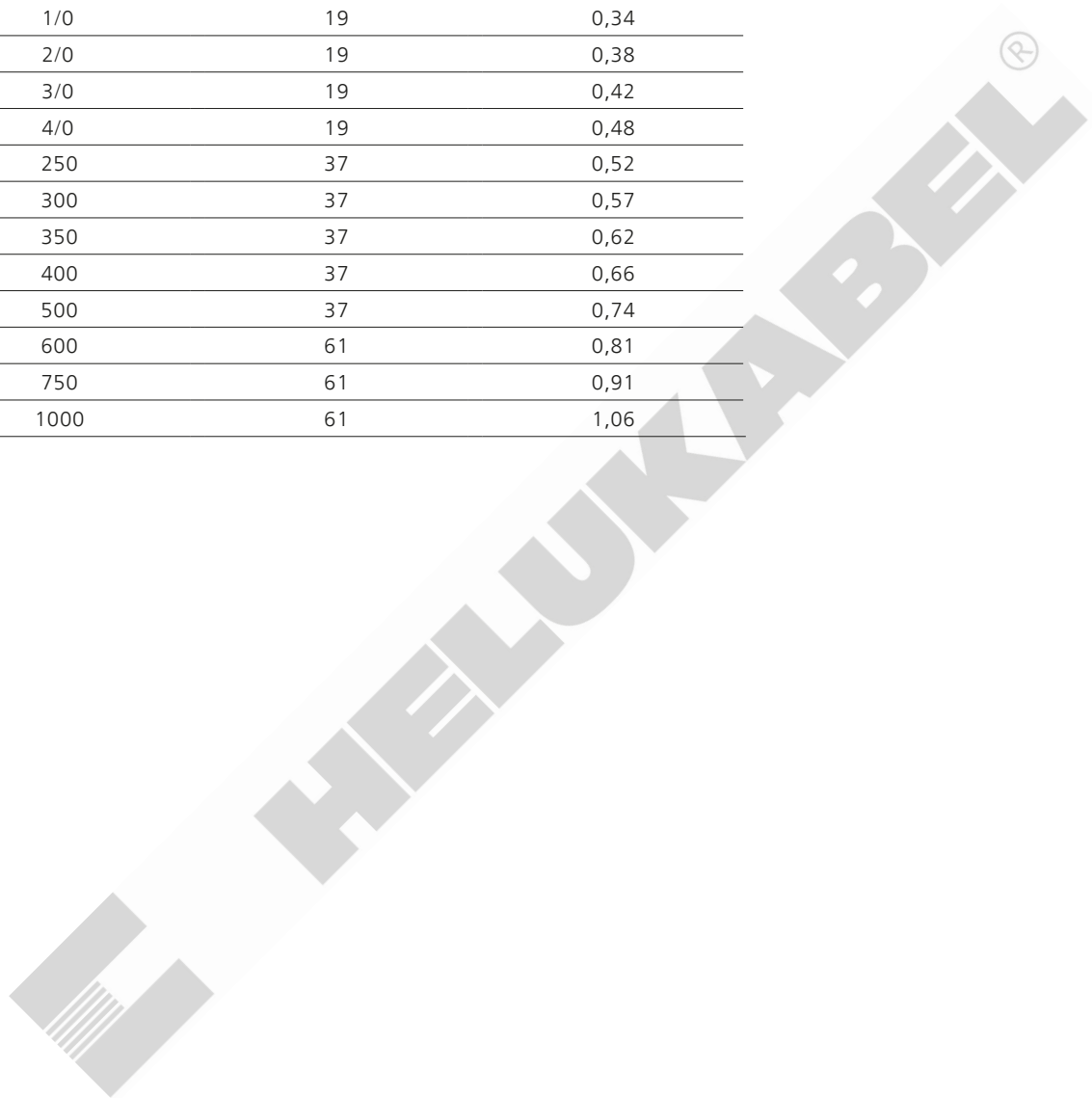
## ■ AMBIENT TEMPERATURE CORRECTION FACTORS MV-90/MV-105 ALUMINIUM, MEDIUM-VOLTAGE CABLES

| Ambient Temperature |               | Rating of Conductor |             |
|---------------------|---------------|---------------------|-------------|
| (°C)                | (°F)          | 90°C                | 105°C       |
| 11–15               | 51–59         | 1,22                | 1,18        |
| 16–20               | 60–68         | 1,18                | 1,14        |
| 21–25               | 69–77         | 1,14                | 1,11        |
| 26–30               | 78–86         | 1,10                | 1,07        |
| 31–35               | 87–95         | 1,05                | 1,04        |
| <b>36–40</b>        | <b>96–104</b> | <b>1,00</b>         | <b>1,00</b> |
| 41–45               | 105–113       | 0,95                | 0,96        |
| 46–50               | 114–122       | 0,89                | 0,92        |
| 51–55               | 123–131       | 0,84                | 0,88        |
| 56–60               | 132–140       | 0,77                | 0,83        |
| 61–65               | 141–149       | 0,71                | 0,78        |
| 66–70               | 150–158       | 0,63                | 0,73        |
| 71–75               | 159–167       | 0,55                | 0,68        |
| 76–80               | 168–176       | 0,45                | 0,62        |
| 81–85               | 177–185       | 0,32                | 0,55        |

Table 310.60(C)(4) Ambient Temperature Correction Factors

## ■ CONDUCTOR STRANDS / OUTER DIAMETER MV-90/MV-105 ALUMINIUM, MEDIUM VOLTAGE CABLES

| Conductor Size<br>AWG or KCMIL | Number of strands | conductor nom. OD/inch |
|--------------------------------|-------------------|------------------------|
| 6                              | 7                 | 0,17                   |
| 4                              | 7                 | 0,21                   |
| 2                              | 7                 | 0,27                   |
| 1                              | 19                | 0,3                    |
| 1/0                            | 19                | 0,34                   |
| 2/0                            | 19                | 0,38                   |
| 3/0                            | 19                | 0,42                   |
| 4/0                            | 19                | 0,48                   |
| 250                            | 37                | 0,52                   |
| 300                            | 37                | 0,57                   |
| 350                            | 37                | 0,62                   |
| 400                            | 37                | 0,66                   |
| 500                            | 37                | 0,74                   |
| 600                            | 61                | 0,81                   |
| 750                            | 61                | 0,91                   |
| 1000                           | 61                | 1,06                   |



# ■ CURRENT CARRYING CAPACITY FOR LOW-VOLTAGE ALUMINIUM CABLE, 600 V – 2 KV RHH RHW-2

| NEC table 310.15( B ) ...      | (17) | (16) |
|--------------------------------|------|------|
| Conductor Size<br>AWG or KCMIL | 90   | 105  |
| 6                              | 85   | 55   |
| 4                              | 115  | 75   |
| 3                              | 130  | 85   |
| 2                              | 150  | 100  |
| 1                              | 175  | 115  |
| 1/0                            | 205  | 135  |
| 2/0                            | 235  | 150  |
| 3/0                            | 270  | 175  |
| 4/0                            | 315  | 205  |
| 250                            | 355  | 230  |
| 300                            | 395  | 260  |
| 350                            | 445  | 280  |
| 400                            | 480  | 305  |
| 500                            | 545  | 350  |
| 600                            | 615  | 385  |
| 700                            | 670  | 425  |
| 750                            | 700  | 435  |
| 800                            | 725  | 445  |
| 900                            | 790  | 480  |
| 1000                           | 845  | 500  |
| 1250                           | 965  | 545  |
| 1500                           | 1070 | 585  |
| 1750                           | 1185 | 615  |
| 2000                           | 1295 | 630  |

NEC Table 310.15(B)(17) (formerly Table 310.17) Allowable Ampacities of Single Insulated

Conductors Rated Up to and Including 2000 V in Free Air, Based on Ambient Temperature of 30 °C (86 °F).

NEC Table 310.15(B)(16) (formerly Table 310.16) Allowable Ampacities of Insulated

Conductors Rated Up to and Including 2000 V, 60 °C Through 90 °C (140 °F Through 194 °F),

Not More Than Three Current-Carrying Conductors in Raceway, Cable, or Earth (Directly Buried), Based on Ambient Temperature of 30 °C (86 °F).

# ■ CURRENT CARRYING CAPACITY FOR HELUWIND® WK POWERLINE ALU, SINGLE CORE, FINELY STRANDED ALUMINIUM CONDUCTORS (LOW VOLTAGE)

Reduction factors for a deviating type of laying, as well as ambient temperatures and accumulation of the systems

Current carrying capacity values at 30 degrees ambient temperature, laid in air.

| Cross section       | Standard values Alu<br>90 degrees on conductor | Values Alu<br>105 degrees on conductor* |
|---------------------|--|---|
| 70 mm <sup>2</sup>  | 262 A  | 292 A                                   |
| 95 mm <sup>2</sup>  | 320 A  | 356 A                                   |
| 120 mm <sup>2</sup> | 384 A  | 423 A                                   |
| 150 mm <sup>2</sup> | 426 A  | 475 A                                   |
| 185 mm <sup>2</sup> | 493 A  | 549 A                                   |
| 240 mm <sup>2</sup> | 583 A  | 660 A                                   |
| 300 mm <sup>2</sup> | 666 A  | 776 A                                   |
| 400 mm <sup>2</sup> | 755 A  | 927 A                                   |

\* up to 3000 hours

## Correction factors for calculating the current carrying capacity

1. Correction due to type of laying can be taken from the technical part [catalogue Cables, Wires & Accessories](#).
2. Correction for the calculation of the current carrying capacity when laying in the triple bundle. Reduction according to the VDE table 0.77, at 30 degrees ambient temperature.
3. More corrections for the accumulation of one-wire cables or lines in troughs and on platforms can be taken from the technical part [catalogue Cables, Wires & Accessories](#).
4. Correction for the calculation of the current carrying capacity according to IEC 60364-5-523 Tap 52-D1 or VDE 02984-4 Table 15 for the ambient temperature.
5. Correction for 3 and 4 core cables 0,7

| Temperature | Conversion factor |
|-------------|-------------------|
| 30 degrees  | 1                 |
| 35 degrees  | 0,96              |
| 40 degrees  | 0,91              |
| 45 degrees  | 0,87              |
| 50 degrees  | 0,82              |

Subject to technical changes.

# ■ CURRENT CARRYING CAPACITY FOR HELUWIND® WK POWERLINE MS SINGLE, SINGLE CORE, FINELY STRANDED ALUMINIUM CONDUCTORS (MEDIUM VOLTAGE)

Current-carrying values, at 30 degrees ambient temperature,  
freely placed in the air.

| No. cores x<br>cross section<br>mm <sup>2</sup> | 3,6/6 (7,2) kV<br>A | 12/20 (24) kV<br>A | 18/30 (36) kV<br>A |
|---|---------------------|--------------------|--------------------|
| 50  | 211                 | 205                | 201                |
| 70  | 266                 | 258                | 252                |
| 95  | 321                 | 311                | 304                |
| 120   | 374                 | 362                | 352                |
| 150   | 432                 | 417                | 405                |
| 185   | 494                 | 476                | 461                |
| 240   | 588                 | 566                | 548                |
| 300   | 679                 | 654                | 633                |
| 400   | 802                 | 772                | 747                |

Short circuit current 1 sec.

| No. cores x<br>cross section<br>mm <sup>2</sup> | 3,6/30 KV<br>A |
|---|----------------|
| 50  | 4860           |
| 70  | 6789           |
| 95  | 9170           |
| 120   | 11550          |
| 150   | 14410          |
| 185   | 17750          |
| 240   | 22980          |
| 300   | 28680          |
| 400   | 38200          |



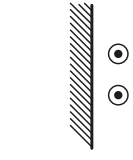

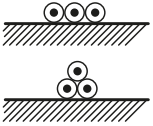
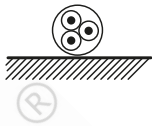
## ■ AWG/KCMIL– CONVERSION TABLE

| AWG/<br>kcmil<br>Size | Cross<br>Section<br>mm <sup>2</sup> | AWG/<br>kcmil<br>Size | Cross<br>Section<br>mm <sup>2</sup> | AWG/<br>kcmil<br>Size | Cross<br>Section<br>mm <sup>2</sup> | Cross<br>Section<br>mm <sup>2</sup> | AWG/<br>kcmil<br>Size |
|-----------------------|-------------------------------------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-----------------------|
| 30                    | 0,05                                | 10                    | 5,26                                | 400                   | 202,68                              | 95                                  | 187,48                |
| 29                    | 0,06                                | 9                     | 6,63                                | 444                   | 225,00                              | 120                                 | 236,80                |
| 28                    | 0,08                                | 8                     | 8,37                                | 450                   | 228,02                              | 240                                 | 473,65                |
| 27                    | 0,10                                | 7                     | 10,55                               | 500                   | 253,35                              | 300                                 | 592,06                |
| 26                    | 0,13                                | 6                     | 13,30                               | 535                   | 271,20                              | 400                                 | 789,09                |
| 25                    | 0,16                                | 5                     | 16,77                               | 600                   | 304,03                              | 500                                 | 986,76                |
| 24                    | 0,20                                | 4                     | 21,15                               | 646                   | 327,30                              | 600                                 | 1184,23               |
| 23                    | 0,26                                | 3                     | 26,67                               | 700                   | 354,70                              |                                     |                       |
| 22                    | 0,33                                | 2                     | 33,63                               | 750                   | 380,03                              |                                     |                       |
| 21                    | 0,41                                | 1                     | 42,40                               | 777                   | 393,80                              |                                     |                       |
| 20                    | 0,52                                | 1/0                   | 53,47                               | 800                   | 405,37                              |                                     |                       |
| 19                    | 0,65                                | 2/0                   | 67,42                               | 900                   | 456,04                              |                                     |                       |
| 18                    | 0,82                                | 3/0                   | 85,02                               | 929                   | 470,70                              |                                     |                       |
| 17                    | 1,04                                | 4/0                   | 107,21                              | 1000                  | 506,71                              |                                     |                       |
| 16                    | 1,31                                | 250                   | 126,68                              | 1111                  | 563,00                              |                                     |                       |
| 15                    | 1,65                                | 262                   | 132,80                              | 1250                  | 633,38                              |                                     |                       |
| 14                    | 2,08                                | 300                   | 152,01                              | 1500                  | 760,06                              |                                     |                       |
| 13                    | 2,62                                | 313                   | 158,60                              | 1750                  | 886,74                              |                                     |                       |
| 12                    | 3,31                                | 350                   | 177,35                              | 2000                  | 1.013,42                            |                                     |                       |
| 11                    | 4,17                                | 373                   | 189,00                              |                       |                                     |                                     |                       |

# ■ CURRENT RATINGS FOR HELUWIND® WK THERMFLEX 145

For permanent operating to the ambient temperature of 30° C. Conversion factors for the deviating site operation conditions – see tables below.

Sufficiently large or ventilated rooms in which the ambient temperature is not noticeably increased by the heat losses from the cables. Protection should be taken from the solar radiation etc.

| Installation                     |  |  |  |  |
|----------------------------------|---|---|--|---|
| Conversion factors for grouping  | -   | to table 1  | to table 2   | to table 3  |
| Cross-section in mm <sup>2</sup> | Current ratings in Ampere (A) up to 30° C ambient temperature                     |   |  |   |
| 0,25                             | 13  | 12  | 9  | 7   |
| 0,33                             | 17  | 15  | 11   | 9   |
| 0,50                             | 19  | 18  | 12   | 10  |
| 0,75                             | 24  | 23  | 17   | 13  |
| 1,0                              | 31  | 30  | 20   | 17  |
| 1,5                              | 39  | 36  | 25   | 20  |
| 2,5                              | 51  | 48  | 33   | 26  |
| 4                                | 68  | 65  | 45   | 36  |
| 6                                | 88  | 84  | 58   | 46  |
| 10                               | 121   | 116   | 80   | 64  |
| 16                               | 160   | 152   | 106  | 85  |
| 25                               | 211   | 200   | 140  | 111   |
| 35                               | 261   | 248   | 172  | 138   |
| 50                               | 320   | 304   | 211  | 169   |
| 70                               | 411   | 391   | 272  | 217   |
| 95                               | 502   | 476   | 331  | 265   |
| 120                              | 587   | 558   | 387  | 310   |
| 150                              | 680   | 646   | 449  | 359   |
| 185                              | 781   | 743   | 516  | 413   |
| 240                              | 931   | 884   | 614  | 492   |
| 300                              | 1070  | 1070  | 1070   | 1070  |

## Conversion factors for grouping

| Number of single core cables for 2-phase or 3-phase systems |        | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 12   |
|---|--------|------|------|------|------|------|------|------|------|------|------|------|
| Table 1   | Factor | 1,00 | 0,94 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 | 0,90 |
| Table 2   | Factor | 1,00 | 0,85 | 0,79 | 0,75 | 0,73 | 0,72 | 0,72 | 0,71 | 0,70 | -    | -    |
| Table 3   | Factor | 1,00 | 0,80 | 0,70 | 0,65 | 0,60 | 0,57 | 0,54 | 0,52 | 0,50 | 0,48 | 0,45 |

## Conversion factors for deviating ambient temperatures

| Temperature in °C | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 95   | 100  | 105  | 110  | 115  |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Factor            | 1,05 | 1,00 | 0,94 | 0,88 | 0,82 | 0,75 | 0,67 | 0,58 | 0,53 | 0,47 | 0,41 | 0,35 | 0,24 |

# ■ CURRENT RATINGS FOR UL- CSA-CABLES

## AMBIENT TEMPERATURE 30°C

**Abstract of NEC Tabelle 310-17**  
Allowable ampacity (in Ampere) of **conductors**,  
rated 0 – 2000 Volts, in free air.

| Conductor size        | Temperature Rating of Conductor |                  |                  |
|-----------------------|---------------------------------|------------------|------------------|
|                       | 60°C<br>(140 °F)                | 75°C<br>(167 °F) | 90°C<br>(194 °F) |
| AWG or<br>kcmil (MCM) |                                 |                  |                  |
| 18                    | -                               | -                | 18               |
| 16                    | -                               | -                | 24               |
| 14                    | 25                              | 30               | 35               |
| 12                    | 30                              | 35               | 40               |
| 10                    | 40                              | 50               | 55               |
| 8                     | 60                              | 70               | 80               |
| 6                     | 80                              | 95               | 105              |
| 4                     | 105                             | 125              | 140              |
| 3                     | 120                             | 145              | 165              |
| 2                     | 140                             | 170              | 190              |
| 1                     | 165                             | 195              | 220              |
| 1/0                   | 195                             | 230              | 260              |
| 2/0                   | 225                             | 265              | 300              |
| 3/0                   | 260                             | 310              | 350              |
| 4/0                   | 300                             | 360              | 405              |
| 250                   | 340                             | 405              | 455              |
| 300                   | 375                             | 445              | 505              |
| 350                   | 420                             | 505              | 570              |
| 400                   | 455                             | 545              | 615              |
| 500                   | 515                             | 620              | 700              |
| 600                   | 575                             | 690              | 780              |

**Abstract of NEC Tabelle 310-16**  
Allowable ampacity (in Ampere) of insulated conductors,  
rated 0 – 2000 Volts. **NOT MORE THAN three Conductors**  
**in raceway or cable ore Earth** (direct burial).

| Conductor size        | Temperature Rating of Conductor |                  |                  |
|-----------------------|---------------------------------|------------------|------------------|
|                       | 60°C<br>(140 °F)                | 75°C<br>(167 °F) | 90°C<br>(194 °F) |
| AWG or<br>kcmil (MCM) |                                 |                  |                  |
| 18                    | -                               | -                | 18               |
| 16                    | -                               | -                | 24               |
| 14*                   | 25                              | 30               | 35               |
| 12*                   | 30                              | 35               | 40               |
| 10*                   | 40                              | 50               | 55               |
| 8                     | 60                              | 70               | 80               |
| 6                     | 80                              | 95               | 105              |
| 4                     | 105                             | 125              | 140              |
| 3                     | 120                             | 145              | 165              |
| 2                     | 140                             | 170              | 190              |
| 1                     | 165                             | 195              | 220              |
| 1/0                   | 195                             | 230              | 260              |
| 2/0                   | 225                             | 265              | 300              |
| 3/0                   | 260                             | 310              | 350              |
| 4/0                   | 300                             | 360              | 405              |
| 250                   | 340                             | 405              | 455              |
| 300                   | 375                             | 445              | 505              |
| 350                   | 420                             | 505              | 570              |
| 400                   | 455                             | 545              | 615              |
| 500                   | 515                             | 620              | 700              |
| 600                   | 575                             | 690              | 780              |

\* Note Unless otherwise specifically permitted elsewhere in the NEC, the overcurrent protection for conductor types marked with an \* shall not exceed 15 amperes for AWG 14, 20 amperes for AWG 12 and 30 amperes for AWG 10, after any correction factors for ambient temperature and numbers of conductors have been applied.

### Correction factors for ambient temperatures other than 30 °C

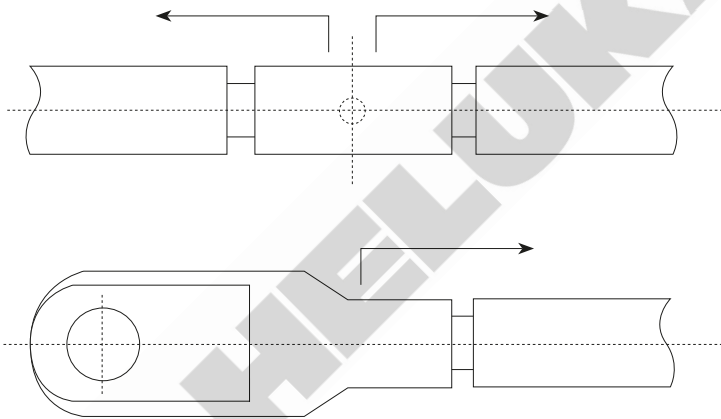
| Ambient temperature in °C | 60°C<br>(140 °F) | 75°C<br>(167 °F) | 90°C<br>(194 °F) |
|---------------------------|------------------|------------------|------------------|
| 21-25                     | 1,08             | 1,05             | 1,04             |
| 26-30                     | 1,00             | 1,00             | 1,00             |
| 31-35                     | 0,91             | 0,94             | 0,96             |
| 36-40                     | 0,82             | 0,88             | 0,91             |
| 41-45                     | 0,71             | 0,82             | 0,87             |
| 46-50                     | 0,58             | 0,75             | 0,82             |
| 51-55                     | 0,41             | 0,67             | 0,76             |
| 56-60                     | -                | 0,58             | 0,71             |
| 61-70                     | -                | 0,33             | 0,58             |
| 71-80                     | -                | -                | 0,41             |

### Correction factors for more than three current-carrying conductors in a raceway or cable.

| Number of current-carrying conductors | Correction factor |
|---------------------------------------|-------------------|
| 4 bis 6                               | 0,80              |
| 7 bis 9                               | 0,70              |
| 10 bis 20                             | 0,50              |
| 21 bis 30                             | 0,45              |
| 31 bis 40                             | 0,40              |
| 41 und mehr                           | 0,35              |

# ■ INSTRUCTIONS FOR ASSEMBLY OF CABLE LUGS AND JOINTS – GENERAL



















































1. The measurements of the cable lugs/joints as well as their cross-section assignment have to be taken from the catalogue.
2. The end of the cable has to be cut right-angled to the joint and to be stripped ca. 10 % corresponding to the length of the cable lug receptacle. (The receptacle elongates a bit during the compression)
3. The wire ends have to be cleaned thoroughly of dirt and oxide rests prior to the compression. Sector wires have to be rounded.
4. The wire is pushed as far as it will go in the cable lug receptacle, or rather to the middle of the joint.
5. Prior to the compression it has to be checked if the wire and the cable lug, or rather the joint, have the same cross-section marking and match according to the catalogue.
6. It has to be detected if the compression tool is ready for the montage with the right compression insert. This information is written in the catalogue of the producer or rather in the operating instructions of the compression tool, for each series and every cross-section.
7. The compression process, with cable lug and joint, happens from the end of the cable in the direction of the end of the receptacle (see sketch).



The number of compressions is based on the following tables.

# ■ COMPRESSION INSTRUCTION


Minimum number of necessary compressions when using HELU-S-RK tubular lugs and -joints HELU-S-SV (WM-compression)

| Cross-section in mm | Compression Number x Width | HWW 6/50<br>907612  | HWW 10/120<br>907613  | HMPi 20<br>907614   | HHPi 20<br>908286   | HAP 60-2<br>908494  |
|---------------------|----------------------------|---|---|---|---|---|
| 6                   | 1 x 5 mm                   |  |   |   |   |   |
|                     | 1 x 7 mm                   |   |   |    |    |    |
| 10                  | 1 x 5 mm                   |  |    |   |   |   |
|                     | 1 x 7 mm                   |   |   |    |    |    |
| 16                  | 2 x 5 mm                   |  |    |   |   |   |
|                     | 1 x 7 mm                   |   |   |    |    |    |
| 25                  | 2 x 5 mm                   |  |    |   |   |   |
|                     | 1 x 12 mm                  |   |   |    |    |    |
| 35                  | 2 x 5 mm                   |  |    |    |    |    |
|                     | 1 x 10 mm                  |   |   |   |   |   |
|                     | 1 x 12 mm                  |   |   |   |   |   |
| 50                  | 2 x 5 mm                   |  |    |    |    |    |
|                     | 1 x 12 mm                  |   |   |   |   |   |
| 70                  | 2 x 5 mm                   |   |  |  |  |  |
|                     | 1 x 12 mm                  |   |   |   |   |   |
| 95                  | 2 x 5 mm                   |   |  |  |  |  |
|                     | 1 x 12 mm                  |   |   |   |   |   |
| 120                 | 3 x 5 mm                   |   |  |  |  |  |
|                     | 2 x 7 mm                   |   |   |   |   |   |
|                     | 1 x 12 mm                  |   |   |   |   |   |
| 150                 | 3 x 5 mm                   |   |   |  |  |  |
|                     | 2 x 7 mm                   |   |   |   |   |   |
| 185                 | 3 x 5 mm                   |   |   |  |  |  |
|                     | 2 x 7 mm                   |   |   |   |   |   |
|                     | 2 x 10 mm                  |   |   |   |   |   |
| 240                 | 3 x 5 mm                   |   |   |  |  |  |
|                     | 3 x 7 mm                   |   |   |   |   |   |
|                     | 2 x 13 mm                  |   |   |   |   |   |
| 300                 | 4 x 5 mm                   |   |   |  |  |  |
|                     | 3 x 7 mm                   |   |   |   |   |   |
|                     | 2 x 13 mm                  |   |   |   |   |   |

Important : The „instructions for assembly of cable lugs and joints“ have to be followed when producing compressions.

Joints : Minimum number of necessary compressions per side.













































**Key:**




WM compression

# ■ COMPRESSION INSTRUCTION

Minimum number of necessary compressions when using CU-compression cable lugs of HELU-S-PK-CU-DIN and HELU-S-PV-CU-DIN series

| Cross-section in mm | Index | Compression Number x Width | HMPi 20 907614  | HHPi 20 908286  | HAP 60-2 908494   |
|---------------------|-------|----------------------------|---|---|---|
| 6                   | 5     | 1 x 5 mm                   |   |   |   |
|                     |       | 1 x 7 mm                   |                  |                |    |
| 10                  | 6     | 1 x 5 mm                   |   |   |   |
|                     |       | 1 x 7 mm                   |                  |                |    |
| 16                  | 8     | 2 x 5 mm                   |   |   |   |
|                     |       | 1 x 12 mm                  |                  |                |    |
| 25                  | 10    | 2 x 5 mm                   |   |   |   |
|                     |       | 1 x 12 mm                  |                  |                |    |
| 35                  | 12    | 2 x 5 mm                   |                  |                |   |
|                     |       | 1 x 10 mm                  |   |   |   |
|                     |       | 1 x 12 mm                  |   |   |    |
| 50                  | 14    | 3 x 5 mm                   |                  |                |   |
|                     |       | 1 x 12 mm                  |   |   |   |
| 70                  | 16    | 3 x 5 mm                   |                |              |   |
|                     |       | 1 x 12 mm                  |   |   |  |
| 95                  | 18    | 3 x 5 mm                   |                |              |   |
|                     |       | 4 x 5 mm                   |  * DB earthing |   |   |
|                     |       | 2 x 10 mm                  |   |   |  |
| 120                 | 20    | 3 x 5 mm                   |   |  * DB earthing |   |
|                     |       | 4 x 5 mm                   |                |              |   |
|                     |       | 2 x 10 mm                  |   |   |  |
| 150                 | 22    | 4 x 5 mm                   |                |              |  |
|                     |       | 2 x 10 mm                  |   |   |  |
| 185                 | 25    | 4 x 5 mm                   |                |              |  |
|                     |       | 2 x 10 mm                  |   |   |  |
| 240                 | 28    | 4 x 5 mm                   |                |              |  |
|                     |       | 2 x 13 mm                  |   |   |  |
| 300                 | 32    | 4 x 5 mm                   |                |              |   |
|                     |       | 4 x 7 mm                   |   |   |  |
|                     |       | 2 x 13 mm                  |   |   |   |

Important : The „instructions for assembly of cable lugs and joints“ have to be followed when producing compressions.  
 Joints : Minimum number of necessary compressions per side (hexagonal compression)

|   |
|---|
| <b>Key:</b><br><br>Hexagonal compression |
|---|



# ■ COMPRESSION INSTRUCTION

Minimum number of necessary compressions when using HELUKABEL-compression cable lugs and -joints  
 HELU-S-PK-AL-DIN / HEL U-S-PV-AL-DIN / HEL U-S-PK-AL-FG / HELU-S-PK-AL/CU / HEL U-S-PAB-AL-DIN /  
 HELU-S-PAB-AL/CU-DIN of Aluminium (on AL/CU f or compression of the aluminium-side)-series made of aluminium.

| Cross-section in mm | Index | Compression Number x Width         | HMPi 20 907614 | HPi 20 908286 | HAP 60-2 908494 | WK APW 18 909871 |  |
|---------------------|-------|------------------------------------|----------------|---------------|-----------------|------------------|--|
| 10                  | 10    | 2 x 5 mm<br>1 x 12 mm              |                |               |                 |                  |  |
| 16                  | 10    | 3 x 5 mm<br>1 x 12 mm              |                |               |                 |                  |  |
|                     | 12    | 3 x 5 mm<br>1 x 10 mm<br>1 x 12 mm |                |               |                 |                  |  |
| 25                  | 12    | 4 x 5 mm                           |                |               |                 |                  |  |
|                     |       | 1 x 10 mm<br>2 x 12 mm             |                |               |                 |                  |  |
| 35                  | 14    | 5 x 5 mm<br>2 x 12 mm              |                |               |                 |                  |  |
| 50                  | 16    | 5 x 5 mm<br>2 x 12 mm              |                |               |                 |                  |  |
| 70                  | 18    | 6 x 5 mm<br>3 x 10 mm              |                |               |                 |                  |  |
| 95                  | 22    | 6 x 5 mm<br>3 x 10 mm              |                |               |                 |                  |  |
| 120                 | 22    | 6 x 5 mm<br>3 x 10 mm              |                |               |                 |                  |  |
| 150                 | 25    | 6 x 5 mm<br>3 x 10 mm              |                |               |                 |                  |  |
| 185                 | 28    | 6 x 5 mm<br>3 x 13 mm              |                |               |                 |                  |  |
| 240                 | 32    | 6 x 5 mm                           |                |               |                 |                  |  |
|                     |       | 5 x 7 mm<br>3 x 13 mm              |                |               |                 |                  |  |
| 300                 | 34    | 3 x 13 mm                          |                |               |                 |                  |  |
| 400                 | 38    | 3 x 16 mm                          |                |               |                 |                  |  |
| 500                 | 44    | 3 x 16 mm                          |                |               |                 |                  |  |

Important : The „instructions for assembly of cable lugs and joints“ have to be followed when producing compressions.  
 Joints : Minimum number of necessary compressions per side.

- <sup>1</sup> Conductor cross-section ALU Powerline 240mm<sup>2</sup>
- <sup>2</sup> Conductor cross-section ALU Powerline 300mm<sup>2</sup>
- <sup>3</sup> Conductor cross-section ALU Powerline 400mm<sup>2</sup>

Page 334 Connection technology overview WK Powerline ALU

|             |                       |                |
|-------------|-----------------------|----------------|
| <b>Key:</b> |                       |                |
|             | Hexagonal compression | C8 compression |

# ■ CONNECTION TECHNOLOGY FOR HELUWIND® WK POWERLINE ALU Series

|  |   | Cross-section mm <sup>2</sup> |         |         |         |            |         |            |            |         |         |
|--|---|-------------------------------|---------|---------|---------|------------|---------|------------|------------|---------|---------|
|  |   | drilling                      | 50      | 70      | 95      | 120        | 150     | 185        | 240        | 300     | 400     |
| <b>HELU-S-PK-AL-DIN</b><br>               |    | 10                            | 907873  | 907875  | 907877  | 907880     | 906459  | -          | -          | -       | -       |
|  |   | 12                            | 907874  | 907876  | 907878  | 907881     | 906436  | 906463     | 906469     | 906472  | 906475  |
|  |   | 16                            | -       | -       | 907879  | 907882     | 906461  | 906464     | 906470     | 906473  | 906476  |
|  |   | 20                            | -       | -       | -       | -          | 906462  | 906465     | 906471     | 906474  | 906477  |
| <b>HELU-S-PK-AL-FG</b><br>                |    | 10                            | -       | -       | 906539  | 906541     | 906544  | 906547     | -          | -       | -       |
|  |   | 12                            | -       | -       | 906540  | 906542     | 906545  | 906548     | 906553     | 906556  | 906559  |
|  |   | 16                            | -       | -       | -       | 906543     | 906546  | 906549     | 906554     | 906557  | 906560  |
|  |   | 20                            | -       | -       | -       | -          | -       | -          | 906555     | 906558  | 906561  |
| <b>HELU-S-PK-AL-FG</b><br>                |    | 10                            | -       | -       | 906562  | 906564     | 906567  | 906570     | -          | -       | -       |
|  |   | 12                            | -       | -       | 906563  | 906565     | 906568  | 906571     | 906576     | 906579  | 906582  |
|  |   | 16                            | -       | -       | -       | 906566     | 906569  | 906572     | 906577     | 906580  | 906583  |
|  |   | 20                            | -       | -       | -       | -          | -       | -          | 906578     | 906581  | 906584  |
| <b>HELU-S-PK-AL/CU</b><br>                |    | 10                            | 907578  | 907581  | 907585  | 907589     | 906478  | 906479     | 906486     | 906490  | 906491  |
|  |   | 12                            | 907579  | 907582  | 907586  | 907590     | 906172  | 906480     | 906487     | 906212  | 906492  |
|  |   | 16                            | -       | 907583  | 907587  | 907591     | 906173  | 906481     | 906488     | 906174  | 906493  |
|  |   | 20                            | -       | -       | -       | -          | -       | 906482     | 906489     | 906175  | 906494  |
| <b>HELU-S-PV-AL-DIN</b><br>             |  |                               | -       | -       | 906515  | 906516     | 906406  | 906517     | 906519     | 906520  | 906521  |
| <b>HELU-S-PAB-AL-DIN</b><br>            |  |                               | 908301  | 908302  | 908303  | 908304     | 908305  | 908306     | 908308     | 908309  | 908310  |
| <b>HELU-S-PAB-AL/CU-DIN</b><br>         |   |                               | 908194  | 908195  | 908196  | 908197     | 908198  | 908199     | 908201     | 908202  | 908203  |
| <b>WK-SC-P shear bolt connector</b><br> |   |                               | -       | -       | -       | -          | -       | on request |            | -       |         |
| <b>WK-SC-T shear bolt connector</b><br> |   |                               | -       | -       | -       | on request |         | on request | on request |         |         |
| <b>WK-SL-T shear bolt cable lug</b><br> |   |                               | -       | -       | -       | on request |         | on request | on request |         |         |
| <b>HELU-S-PV-Al/CU</b><br>              |  | Alu/CU                        | 150/70  | 150/95  | 150/120 | 150/150    | 185/95  | 185/120    | 185/150    | 185/185 |         |
|  |   |                               | 906460  | 906495  | 906209  | 906496     | 906497  | 906498     | 906499     | 906500  |         |
|  |   | Alu/CU                        | 240/150 | 240/185 | 240/240 | 300/185    | 300/240 | 300/300    | 400/240    | 400/300 | 400/400 |
|  |   |                               | 906505  | 906506  | 906507  | 906509     | 906210  | 906510     | 907860     | 907861  | 907862  |

Dimensions and specifications may be changed without prior notice.

Tools for  -Crimp, see WK-APW 18, page 294.

# ■ PROCESSING INSTRUCTIONS FOR ALUMINIUM CABLE WITH ALUMINIUM AND ALUMINIUM/COPPER COMPRESSION CABLE LUGS AND PRESS CONNECTORS

Aluminium's material characteristics differ greatly from those of copper. Therefore, only use cable lugs and connectors made of aluminium or an aluminium/copper combination.

## Cable lugs

### Aluminium compression cable lugs

Material: Al 99.5, with pipe measurements pursuant to DIN 46329, insulated throughout the entire length pursuant to DIN 46239.

Optional: tin-plated thin layer, tin-plated thick layer.

Nominal cross section: 10 mm<sup>2</sup> - 500 mm<sup>2</sup> (custom-made products: up to 1000 mm<sup>2</sup>)

### Aluminium/copper compression cable lugs

Material: Al 99.5 and Cu pursuant to DIN EN 13601; Surface: bare.

Nominal cross section: 10 mm<sup>2</sup> - 500 mm<sup>2</sup> (custom-made products: up to 1000 mm<sup>2</sup>).

To obtain the optimum fill factor, it is important that the conductor's diameter and the inner cable lug diameter are ideally matched to one another. Small gaps and ideal friction are important for destroying the non-conductive oxide coating.

The markings on DIN cable lugs contain information on:

- Manufacturer ID
- Tool reference number
- Metric screw measurement of the bore hole for the connection bolts
- Nominal cross section of the wire in mm<sup>2</sup>
- RE/SE = Single-wire round conductor/sector-shaped conductor
- RM/SM = Multi-wire round conductor/sector-shaped conductor

Example:

12-150RM/SM-185SE stands for:

12: Metric screw measurement of the bore hole for the connection bolts

150: Nominal cross section of the wire in mm<sup>2</sup>

RM/SM: Multi-wire round conductor and sector-shaped conductor

185: Nominal cross section of the wire in mm<sup>2</sup>

SE: Single-wire sector-shaped conductor

K25: Tool reference number

## Press connector

### Aluminium press connector

Material: Al 99.5 with pipe measurements pursuant to DIN 46267, Part 2; Surface: bare.

Nominal cross section: 10 mm<sup>2</sup> - 500 mm<sup>2</sup> (custom-made products: up to 1000 mm<sup>2</sup>).

### Aluminium/copper press connectors

Material: Al 99.5 and Cu pursuant to DIN EN 13601; Surface: bare.

Nominal cross section: 10 mm<sup>2</sup> - 500 mm<sup>2</sup> (custom-made products: up to 1000 mm<sup>2</sup>).

### A. Aluminium conductor crimping die categories:

RE = Single-wire round conductor

SE = Single-wire sector-shaped conductor

RM = Multi-wire round conductor

SM = Multi-wire sector-shaped conductor

In general, it is recommended to use standardised 6-corner crimping dies pursuant to DIN 48083, part 4.

To ensure proper grouting, make sure that the press tool insert that is used always matches the tool reference number on the cable lug or connector. The reference number is mirror inverted on the press surface of the insert to ensure that the reference number remains visible for monitoring and documentation purposes after grouting.

### B. Aluminium conductor crimping die categories:

Fine-wire strand

(POWERLINE ALU Series)

The standard crimping technique is not recommended for a fine-wire aluminium conductor design. For the POWERLINE ALU series, we recommend our specially-developed C8 crimp that is tested according to IEC 61238-1 Cl. A. C8 crimp contours penetrate very deeply into the stranded bundle, equally tear up the individual strands, and make them conductive. With this process, the best values (low contact resistances) and mechanical extraction forces can be reached. The C8 crimp was also tested on multi-wire round conductors (RM).

# ■ PROCESSING INSTRUCTIONS FOR ALUMINIUM CABLE WITH ALUMINIUM AND ALUMINIUM/COPPER COMPRESSION CABLE LUGS AND PRESS CONNECTORS

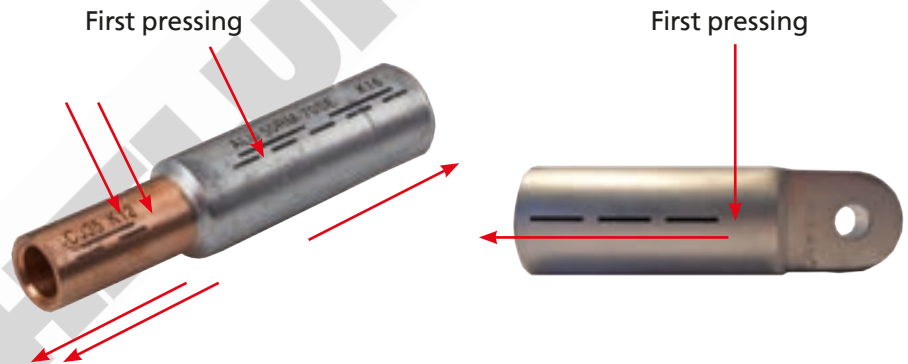
## Processing steps

for a secure and reliable connection

- 1) Dismantle the aluminium conductor
- 2) Remove the oxide coating from the conductor ends to create a clean contact surface. We recommend using a brass brush solely used for this purpose.
- 3) Immediately grease the conductor ends after removing the oxide coating to prevent re-oxidation.
- 4) Repeat steps 2) and 3) if the conductor can not be connected immediately.
- 5) Slide the entire cable lug/press connector insertion sleeve over the conductor. While doing so, the contact grease will ooze out from the sides, thereby creating an air-tight seal that prevents re-oxidation.
- 6) Perform C8 or 6-corner crimping, depending on the conductor.
- 7) The connector's side contact surface (current rail) should be treated as described in No. 2. Optional: Treat the contact surface with contact grease.
- 8) Tighten clamping point after approx. 200 operating hours.

## Pressing procedure

Crimp the cable lug and/or connector using the assigned tools while taking into account the pressing direction. All DIN compression cable lugs have markings for proper crimping. Refer to the manufacturer's specifications for information on the number of markings (crimps). The correct pressing direction runs in the direction of the conductor, since the conductor material tends to slide out during crimping.



## Insulation after crimping

To prevent corrosion and damage to aluminium conductors in compression cable lugs and/or press connectors, we generally recommend using insulated shrink tubes (warm/cold/rolling-shrink tubes). The shrink tubes used must match the application's dielectric strength. Furthermore, the shrink tube's wall thickness must be selected depending on the mechanical load during installation and operation. When vertically laying the cable or in areas with excessive condensation build-up, we recommend using a shrink tube with inside adhesive that prevents moisture from entering the crimped connection over the long run.

Examples:

- SK-D (thick-walled) under heavy load
- SK-M (medium-wall thickness)
- SK (thin-walled) under low mechanical load

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## NOTES

### Technical modifications

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The length marking, which cannot be calibrated, is an aid, e.g. for easy material allowance determination or for determination of the length remaining on the drum. Deviation of the line length shown by the marking is up to 1%. Incomplete length markings or length markings missing on sections, deviations of the cable length shown by the length marking do not substantiate any legal obligation whatsoever. Only use calibrated measurement devices to determine line length.

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The cables and wires described in the catalog are produced in accordance with national and international standards, as well as plant standards; application safety, as stipulated in the safety directives, standards, and statutory regulations, as amended, is provided. With the prerequisite of proper and professional installation and use, the possibility of product-specific dangers can be excluded. For each product this catalog describes general information for use. Independent of the above, the applicable DIN VDE specifications apply. However, installation and processing must only be executed by qualified electricians.

### VDE approval

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