ELECTRIC MOTORS & DRIVES

INDUSQUIP MARKETING

ELECTRIC MOTORS | AC DRIVES | DC MOTORS

Energy Saving

ELECTRIC MOTORS

- Low Voltage Motors
- Medium Voltage Motors
- DC Motors
- Geared Motors
- Remanufactured Motors
- Aluminium Motors
- Force Cooling
- Spares & Extras

AUTOMATION & CONTROL

- LV AC Variable Speed Drives
- MV AC Variable Speed Drives
- Programmable Logic Controller
- HMI Touch Screens
- INVT EMI Filters
- Servo Drive & Motors
- Input & Output Chokes- Reactors
- Spares & Extras

DIGITAL SOFT STARTERS

- Low Voltage Soft Starters
- Medium Voltage Soft Starters

SOLAR ENERGY

- INVT Single Phase Solar Inverters
- INVT Three Phase Solar Inverters
- INVT Solar Pump PV Inverters
- Solar Panels

Eskom DSM Project

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"We Get Things Moving"

Contents

GENERAL INFORMATION

Indusquip Marketing cc is the Sole importer of the **WEM, High Efficiency SABS approved** electric motors for **South Africa** and Sub-Saharan Africa.

Indusquip Marketing cc offer the complete range of **WEM** three phase electric motors from 0.12kW to 630kW in 400, 525, 550 and 1000 volts. **WEM** large Medium Voltage electric motors from 220kW to 5000kW are available in 2200, 3300, 6600 and 11000 volts on short delivery lead times.

Indusquip Marketing cc is the Sole Agent of **INVT Brand** of Variable Speed Drives from 0.4kW to 7000kW, Closed Loop, Sensorless Vector and V/F control available in 220, 400, 525, 690, 1140, 3300, 6600 and 11 000 volts in **South Africa** and **Sub-Saharan Africa**.

INVT is the largest AC Drive manufacturer in China for both Low voltage and Medium Voltage AC Drives / Inverters. Stock of **INVT AC Servo drives & motors, Programmable Logic Controllers (PLC), HMI Touch Screens, Solar Inverters, Solar Pump PV Inverters, EMI Filters, Braking Units**, **Resistors** and spares are also held in South Africa.

"We get things moving" is synonymous with Indusquip Marketing in being able to

MOTOR RANGE SPECIFICATIONS

High Efficiency Motors:

- Cast Iron range in frame sizes 63 to 400
- Rated output - 0.12kW to 630kW
- Efficiency ratings at 50%, 75% & 100% load point
- Power factor ratings at 50%, 75% & 100% load point
- Class B temperature rise at altitude of 1400 MASL
- Variable Speed Drive compatible
- Class H insulation system
- Vacuum impregnation
- IP66 protection
- Double sealing on both DE & NDE bearings
- SKF/NTN heavy duty bearings (Oversize bearing on range)
- Ball & Roller configuration frame size 225 and up
- Re-greasable bearings from frame 160 and above
- Oversized terminal box
- Terminal boxes rotatable by 90° intervals
- Detachable gland plates from frame 200 and above
- Fully processed high quality lamination steel
- Motors can be modified to non-spark specifications as per SANS IEC 60097-15

Aluminium Motors:

- Aluminium casting
- Rated output: 0.12 to 9.2kW
- Class F insulation system
- IP55 protection
- Energy Saving, High Efficiency
- Design adapt to a variety of applications
- 'ECOL' Series- Environmentally Friendly

HIGH EFFICIENCY - 3000 RPM

Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

PERFORMANCE DATA — **3000 RPM - 50 Hz (2 POLE)**

Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n % % of Full Load 50	75	100	Power Factor Cos % of Full Load 50	75	100	Noise Level dB (A) Sound Pressure Level	Allowable Locked Rotor Hot/Cold s/s	App. Wt. Kg
0.18	63	2720	0.50	5.5	0.63	2.2	2.2	61.2	65.0	65.0	0.72	0.77	0.80	63	18	12
0.25	63	2720	0.66		0.88			65.4	68.0	68.0	0.73	0.78	0.81	63	8	13
0.37	71	2740	0.94	6.1	1.29			66.2	70.0	70.0	0.73	0.80	0.81	66	12	14
0.55	71	2740	1.33		1.92		2.3	71.4	73.0	73.0	0.74	0.80	0.82	66	15	15
0.75	80	2830	1.79		2.53			75.3	75.0	75.0	0.74	0.81	0.83	69	11	17
1.1	80	2830	2.46	7.0	3.71			77.6	76.2	76.2	0.75	0.80	0.84	69	9	18
1.5	90S	2840	3.26		5.04			80.2	78.5	78.5	0.75	0.81	0.84	74	8	22
2.2	90L	2840	4.61		7.40			82.0	81.0	81.0	0.76	0.81	0.85	74	10	25
3	100L	2870	6.0	7.5	9.98			83.2	82.6	82.6	0.78	0.84	0.87	78	8	32
4	112M	2890	7.70		13.3			85.3	84.2	84.2	0.79	0.84	0.88	79	11	45
5.5	132S	2910	10.45		18.7			86.3	85.7	85.7	0.79	0.84	0.88	82	10	59
7.5	132S	2900	14.2		24.7			88.2	87.0	87.0	0.82	0.86	0.88	82	8	64
9.2	132M	2930	17.4		29.9			88.2	87.0	87.0	0.76	0.85	0.88	82	10	105
11	160M	2930	20.23		35.9			86.1	88.4	88.4	0.80	0.85	0.89	88	14	109
15	160M	2930	27.36		48.9			90.1	89.4	89.4	0.80	0.85	0.89	88	12	121
18.5	160L	2930	33.0		60.3			88.6	90.0	90.0	0.82	0.86	0.90	88	12	136
22	180M	2940	38.95		71.5	2.0		90.7	90.5	90.5	0.82	0.87	0.90	87	11	180
30	200L	2950	53.0		97.1			91.8	91.4	91.4	0.82	0.87	0.90	94	15	246
37	200L	2950	66.4		120			91.9	92.0	92.0	0.82	0.88	0.90	94	15	256
45	225S/M	2970	78.2		145			92.5	92.5	92.5	0.82	0.88	0.90	86	17	328
55	250S/M	2970	96.0		176			92.7	93.0	93.0	0.83	0.88	0.90	87	17	433
75	250S/M	2970	127.3		241			93.3	93.6	93.6	0.84	0.88	0.90	88	14	488
90	280S/M	2970	152		289			94.2	93.9	93.9	0.84	0.88	0.90	88	34	632
110	280S/M	2980	185.3	7.1	354	1.8	2.2	93.5	94.0	94.0	0.82	0.87	0.91	88	32	970
132	315S/M	2980	221.4		425			94.2	94.5	94.5	0.82	0.87	0.91	92	31	1080
160	315S/M	2980	265.1		531			94.1	94.6	94.6	0.83	0.88	0.92	90	26	1210
185	315M/L	2980	307		593			94.1	94.6	94.6	0.83	0.88	0.92	90	24	1220
200	315M/L	2980	331		641			94.4	94.8	94.8	0.83	0.88	0.92	90	34	1240
220	355M/L	2980	363		705			93.4	95.2	95.2	0.83	0.87	0.92	92	34	1890
250	355M/L	2980	411.4		801	1.6		93.4	95.2	95.2	0.83	0.88	0.92	93	34	1970
280	355M/L	2980	461		897			94.2	95.4	95.4	0.83	0.88	0.92	92	32	1990
315	355M/L	2980	517		1010			94.2	95.4	95.4	0.83	0.88	0.92	92	19	2000

HIGH EFFICIENCY - 1500 RPM

Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

PERFORMANCE DATA — **1500 RPM - 50 Hz (4 POLE)**

Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n %			Power Factor Cos			Noise Level dB (A) Sound Pressure Level	Allow-able Time of Locked Rotor Hot/Cold s/s	App. Wt. Kg
								% of Full Load								
								50	75	100	50	75	100			
0.12	63	1310	0.42	4.4	0.87	2.1	2.2	50.0	57.0	57.0	0.64	0.69	0.72	57	18	14
0.18	63	1310	0.59		1.31			53.8	60.0	60.0	0.65	0.70	0.73	57	17	14
0.25	71	1330	0.75	5.2	1.80			61.5	65.0	65.0	0.66	0.71	0.74	60	21	15
0.37	71	1330	1.10		2.66			64.9	67.0	67.0	0.67	0.72	0.75	60	12	16
0.55	80	1390	1.49		3.78	2.4	2.3	68.1	71.0	71.0	0.67	0.72	0.75	63	10	18
0.75	80	1390	1.93	6	5.15	2.3		79.0	73.0	73.0	0.68	0.73	0.76	69	14	19
1.1	90S	1400	2.75		7.50			75.9	76.2	76.2	0.69	0.74	0.77	66	7	23
1.5	90L	1400	3.52		10.23			79.5	78.5	78.5	0.71	0.76	0.79	66	14	26
2.2	100L	1430	4.90	7	14.69			81.8	81.0	81.0	0.73	0.78	0.81	63	9	34
3	100L	1430	6.44		20.03			83.0	82.6	82.6	0.74	0.79	0.82	69	7	37
4	112M	1440	8.36		26.53			85.2	84.2	84.2	0.74	0.79	0.82	70	11	45
5.5	132S	1440	11.1		36.47			86.9	85.7	85.7	0.74	0.81	0.83	68	12	65
7.5	132M	1440	14.82		49.74			87.8	87.0	87.0	0.75	0.81	0.84	69	8	78
9.2	132M	1460	18.1		59.36			87.8	87.0	87.0	0.75	0.82	0.84	75	7	89
11	160M	1460	21.2		71.95	2.2		86.7	88.4	88.4	0.75	0.80	0.84	75	15	118
15	160L	1460	28.6	7.5	98.12			89.1	89.4	89.4	0.76	0.81	0.85	72	15	138
18.5	180M	1470	34.7		119.4			90.2	90.0	90.0	0.77	0.85	0.86	74	12	177
22	180L	1471	41.04		142.9			90.5	90.5	90.5	0.77	0.85	0.86	78	12	203
30	200L	1470	54.72	7.2	194.9			90.3	91.4	91.4	0.79	0.86	0.86	79	15	243
37	225S/M	1480	66.4		238.75			91.2	92.0	92.0	0.79	0.86	0.87	78	15	305
45	225S/M	1480	80.5		290.37			93.1	92.5	92.5	0.80	0.86	0.87	82	18	328
55	250S/M	1482	97.85		354.5			93.5	93.0	93.0	0.80	0.86	0.87	82	20	452
75	250S/M	1480	133		483.95			93.8	93.6	93.6	0.85	0.88	0.87	81	12	488
90	280S/M	1490	158.7		576.9			93.9	93.9	93.9	0.85	0.88	0.87	83	18	672
110	280S/M	1490	191	6.9	705.1	2.1	2.2	93.2	94.5	94.5	0.82	0.88	0.88	84	24	930
132	315S/M	1490	228		846.1			93.8	94.8	94.8	0.87	0.90	0.88	90	35	1130
160	315S/M	1490	273		1025.5			93.8	94.9	94.9	0.86	0.90	0.89	88	24	1180
185	315M/L	1490	314.5		1185.7			93.8	94.9	94.9	0.85	0.88	0.89	89	18	1215
200	315M/L	1490	341.05		1281.9			94.0	94.9	94.9	0.84	0.90	0.89	88	34	1260
220	355M/L	1485	365		1414.8			94.2	95.2	95.2	0.84	0.90	0.90	89	35	1530
250	355M/L	1485	421		1607.7			94.3	95.2	95.2	0.85	0.89	0.90	92	35	1810
280	355M/L	1485	471.2		1807.0			94.3	95.2	95.2	0.85	0.89	0.90	92	35	1860
315	355M/L	1485	528.2		2025.8			94.3	95.2	95.2	0.80	0.88	0.90	93	35	1910

HIGH EFFICIENCY - 1000 RPM

Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

PERFORMANCE DATA — **1000 RPM - 50 Hz (6 POLE)**

Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n % (% of Full Load) 50	75	100	Power Factor Cos (% of Full Load) 50	75	100	Noise Level dB (A) Sound Pressure Level	Allowable Locked Rotor Hot/Cold s/s	App. Wt. Kg
0.25	71	850	0.90	4.0	2.81	1.9	2.0	53.6	59.0	59.0	0.61	0.66	0.68	59	15	15
0.37	80	890	1.24	4.7	3.97			57.2	62.0	62.0	0.63	0.68	0.70	61	8	17
0.55	80	890	1.10		5.90		2.1	63.7	65.0	65.0	0.64	0.69	0.72	61	12	19
0.75	90S	910	2.20	5.5	8.84	2.0		66.5	69.0	69.0	0.64	0.69	0.72	64	13	23
1.1	90L	910	3.02		12.07			70.8	72.0	72.0	0.65	0.70	0.73	64	14	25
1.5	100L	940	3.74		15.24			74.8	76.0	76.0	0.67	0.72	0.75	68	13	33
2.2	112M	940	5.32	6.5	22.35			78.5	79.0	79.0	0.68	0.73	0.76	72	15	45
3	132S	960	7.03		29.84	2.1		80.6	81.0	81.0	0.68	0.73	0.76	76	15	63
4	132M	960	9.31		39.79			81.5	82.0	82.0	0.68	0.73	0.76	76	15	73
5.5	132M	960	12.3		54.71			84.3	84.0	84.0	0.69	0.74	0.77	76	15	84
7.5	160M	970	16.2		73.84	2.0		85.2	86.0	86.0	0.69	0.75	0.77	80	20	119
11	160L	970	23.0		108.39			87.0	87.5	87.5	0.70	0.75	0.78	73	15	147
15	180L	970	30.02	7.0	147.68			88.7	89.0	89.0	0.73	0.80	0.81	72	15	195
18.5	200L	970	36.7		182.14	2.1		90.0	90.0	90.0	0.73	0.78	0.81	74	35	235
22	200L	970	42.5		216.6			90.3	90.0	90.0	0.74	0.79	0.83	76	27	256
30	225S/M	980	56.3		292.23	2.0		91.5	91.5	91.5	0.75	0.80	0.84	74	20	306
37	250S/M	980	67.5		360.56	2.1		92.1	92.0	92.0	0.77	0.82	0.86	78	22	416
45	250S/M	980	81.7		438.52		2.0	92.2	92.5	92.5	0.77	0.82	0.86	75	17	536
55	280S/M	980	100		535.97			92.7	92.8	92.8	0.77	0.82	0.86	77	33	614
75	280S/M	990	134		723.48	2.0		92.2	93.5	93.5	0.77	0.82	0.86	80	30	990
90	315S/M	990	161		968.18			92.7	93.8	93.8	0.77	0.82	0.86	81	28	1180
110	315S/M	990	196	6.7	1061.1			93.1	94.0	94.0	0.77	0.82	0.86	84	28	1240
132	315M/L	990	232		1273.3			93.7	94.2	94.2	0.78	0.83	0.87	82	17	1300
160	355M/L	990	277.4		1543.4	1.9		93.4	94.5	94.5	0.79	0.84	0.88	85	12	1800
185	355M/L	990	320.2		1784.8			93.5	94.5	94.5	0.79	0.84	0.88	86	35	1850
200	355M/L	990	347		1929.3			93.5	94.5	94.5	0.79	0.84	0.88	86	35	1945
220	355M/L	990	381		2122.2			93.4	94.5	94.5	0.79	0.84	0.88	87	35	2040
250	355M/L	980	432.3		2411.6			93.4	94.5	94.5	0.79	0.84	0.88	88	21	2236

HIGH EFFICIENCY - 750 RPM

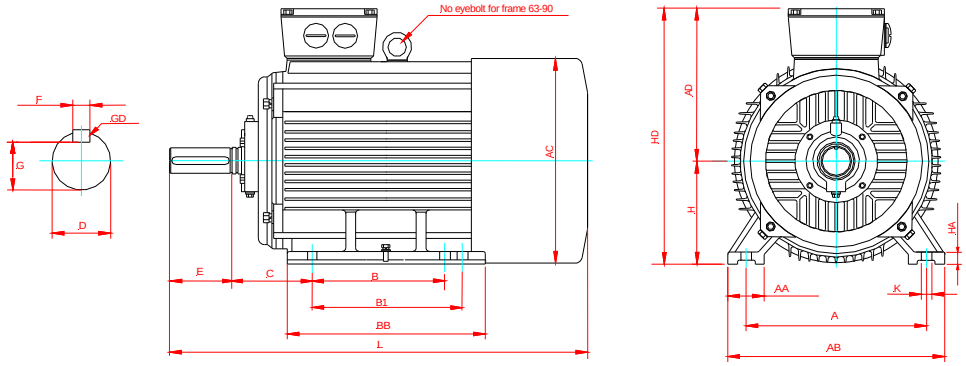
Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

PERFORMANCE DATA **750 RPM - 50 Hz (8 POLE)**

Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n %			Power Factor Cos			Noise Level dB (A) Sound Pressure Level	Allowable Time of Locked Rotor Hot/Cold s/s	App. Wt. Kg
								% of Full Load								
								50	75	100	50	75	100			
0.37	90S	660	1.42	4.0	5.35	1.8	1.9	54.7	62.0	62.0	0.54	0.59	0.61	64	32	23
0.55	90L	660	2.10		7.96		2.0	56.2	63.0	63.0	0.54	0.59	0.61	64	26	25
0.75	100L	690	2.10		10.38			66.8	71.0	71.0	0.60	0.65	0.67	67	32	33
1.1	100L	690	2.30	5.0	15.22			70.7	73.0	73.0	0.62	0.67	0.69	67	23	38
1.5	112M	680	4.30		21.07			73.4	75.0	75.0	0.62	0.67	0.69	69	28	50
2.2	132S	710	5.7	6.0	29.59			76.9	78.0	78.0	0.63	0.68	0.71	72	22	63
3	132M	710	7.5		40.35			78.2	79.0	79.0	0.65	0.70	0.73	72	20	79
4	160M	720	9.8		53.06	1.9		79.6	81.0	81.0	0.65	0.70	0.73	76	34	118
5.5	160M	720	13.0		72.95	2.0		82.9	83.0	83.0	0.66	0.71	0.74	76	24	119
7.5	160L	720	17.0		99.48			85.6	85.5	85.5	0.67	0.72	0.75	76	20	145
11	180L	730	24.0	6.6	143.9			82.7	87.5	87.5	0.68	0.73	0.76	78	12	184
15	200L	730	32.4		196.23			87.9	88.0	88.0	0.68	0.73	0.76	81	32	236
18.5	225M	730	38.6		242.1	1.9		90.0	90.0	90.0	0.68	0.73	0.76	80	18	292
22	225M	740	45.03		283.92			90.7	90.5	90.5	0.71	0.76	0.78	80	15	302
30	250S/M	740	60.8		387.16			90.6	91.0	91.0	0.71	0.76	0.79	82	15	396
37	250S/M	740	74.1		477.6			91.2	91.5	91.5	0.72	0.78	0.79	83	15	520
45	280S/M	710	89.3		605.3			91.5	92.0	92.0	0.72	0.77	0.79	82	30	533
55	280S/M	740	105.5		709.8	1.8		91.3	92.8	92.8	0.73	0.78	0.81	88	24	1000
75	315S/M	740	143.5		967.9			91.4	93.0	93.0	0.73	0.78	0.81	88	18	1250
90	315M/L	740	169.1		1161.5			92.3	93.8	93.8	0.74	0.79	0.82	88	28	1310
110	315M/L	740	206.2		1419.6			92.6	94.0	94.0	0.74	0.79	0.82	88	14	1350
132	355M/L	740	248	6.4	1703.5			92.1	93.7	93.7	0.77	0.82	0.82	85	30	1750
160	355M/L	740	299.3		2064.9			92.9	94.2	94.2	0.78	0.83	0.82	88	34	1880
185	355M/L	740	365		2387.5	1.9		93.3	94.5	94.5	0.78	0.83	0.83	86	34	1960
200	355M/L	740	369		2581.1	1.8		93.3	94.5	94.5	0.78	0.83	0.83	87	34	2060

HIGH EFFICIENCY MOTORS

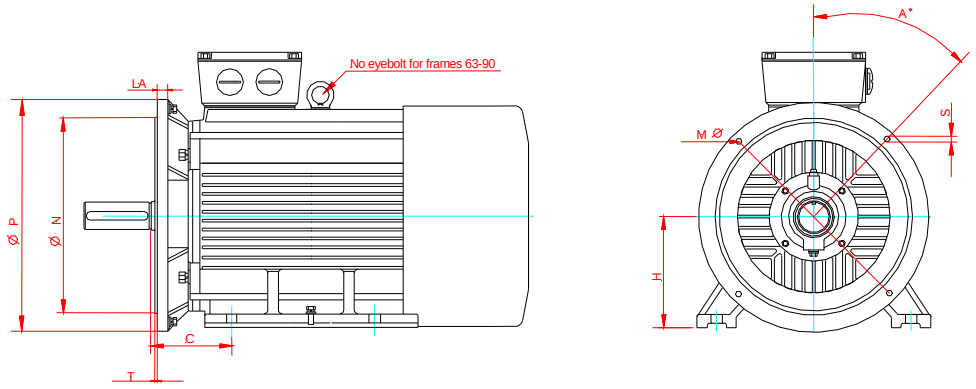
Foot Mounting B3 63-355 Frame



Dimensions (mm)																				
Frame	Pole	A	AA	AB	AC	AD	B	BB	B1	C	D	E	F	G	GD	H	HA	HD	K	L
63	2.4	100	30	135	130	117	80	115	N/A	40	11	23	4	8.5	4	63	8	180	7	230
71	2.4.6	112	32	150	145	124	90	125	N/A	45	14	30	5	11	5	71	8	195	7	255
80	2.4.6.8	125	37	165	165	140	100	135	N/A	50	19	40	6	15.5	6	80	10	220	10	295
90S	2.4.6.8	140	37	180	195	160	100	140	N/A	56	24	50	8	20	7	90	12	250	10	315
90L	2.4.6.8	140	37	180	195	160	125	165	N/A	56	24	50	8	20	7	90	12	250	10	340
100L	2.4.6.8	160	42	205	215	170	140	180	N/A	63	28	60	8	24	7	100	14	270	12	385
112M	2.4.6.8	190	52	230	240	188	140	185	N/A	70	28	60	8	24	7	112	15	300	12	400
132S	2.4.6.8	216	63	270	275	213	140	190	N/A	89	38	80	10	33	8	132	18	345	12	470
132M	2.4.6.8	216	63	270	275	213	178	230	N/A	89	38	80	10	33	8	132	18	345	12	510
160M	2.4.6.8	254	73	320	330	260	210	275	N/A	108	42	110	12	37	8	160	20	420	15	615
160L	2.4.6.8	254	73	320	330	260	254	320	N/A	108	42	110	12	37	8	160	20	420	15	670
180M	2.4.6.8	279	73	355	380	275	241	315	N/A	121	48	110	14	42.5	9	180	22	455	15	700
180L	2.4.6.8	279	73	355	380	275	279	355	N/A	121	48	110	14	42.5	9	180	22	455	15	740
200L	2.4.6.8	318	73	395	400	305	305	375	N/A	133	55	110	16	49	10	200	25	505	19	770
225S	2	356	83	435	470	335	286	375	N/A	149	55	110	16	49	10	225	28	560	19	816
225M	4.6.8	356	83	470	470	335	N/A	400	311	149	60	140	18	53	11	225	28	560	19	845
250S/M	2	406	88	490	510	365	311	450	349	168	60	140	18	53	11	250	30	615	24	910
250M	4.6.8	406	88	490	510	365	N/A	450	349	168	70	140	18	53	11	250	30	615	24	910
280S/M	2	457	93	550	547	400	368	540	419	190	65	140	18	58	11	280	35	680	24	985
280S/M	4.6.8	457	93	550	547	400	368	540	419	190	80	170	22	71	14	280	35	680	24	1035
315S/M	2	508	120	635	645	530	406	685	457	216	65	140	18	58	11	315	45	845	28	1185
315S/M	4.6.8.10	508	120	635	645	530	406	685	457	216	85	170	22	76	14	315	45	845	28	1215
315M/L	2	508	120	635	645	530	457	685	508	216	70	140	20	62.5	12	315	45	845	28	1295
315M/L	4.6.8.10	508	120	635	645	530	457	685	508	216	90	170	25	81	14	315	45	845	28	1325
355M/L	2	610	120	730	710	655	560	750	630	254	90	170	25	81	14	355	52	1010	28	1500
355M/L	4.6.8.10	610	120	730	710	655	560	750	630	254	100	210	28	90	16	355	52	1010	28	1530

HIGH EFFICIENCY MOTORS

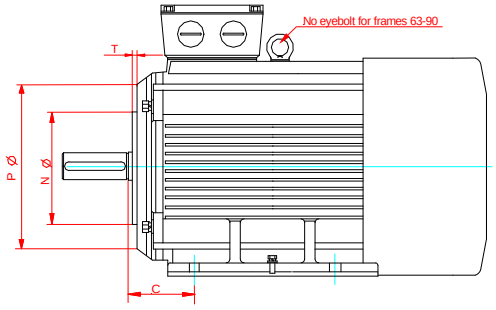
Foot Mounting B35 Flange

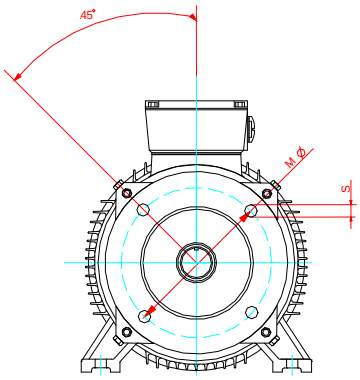


Dimensions (mm)										
Frame	C	H	LA	M Dia.	N Dia.	P Dia.	T	S	A Deg.	No. Of Holes
63	40	63	6	115	95	140	3.5	10	45	4
71	45	71	9	130	110	160	3.5	10	45	4
80	50	80	10	165	130	200	3.5	12	45	4
90S	56	90	10	165	130	200	3.5	12	45	4
90L	56	90	10	165	130	200	3.5	12	45	4
100L	63	100	11	215	180	250	4	15	45	4
112M	70	112	11	215	180	250	4	15	45	4
132S	89	132	12	265	230	300	4	15	45	4
132M	89	132	12	265	230	300	4	15	45	4
160M	108	160	18	300	250	350	5	19	45	4
160L	108	160	18	300	250	350	5	19	45	4
180M	121	180	18	300	250	350	5	19	45	4
180L	121	180	18	300	250	350	5	19	45	4
200L	133	200	18	350	300	400	5	19	45	4
225S	149	225	18	400	350	450	5	19	22.3	8
225M	149	225	18	400	350	450	5	19	22.3	8
250M	168	250	18	500	450	550	5	19	22.3	8
280S	190	280	18	500	450	550	5	19	22.3	8
280M	190	280	18	500	450	550	5	19	22.3	8
315S	216	315	18	600	550	660	6	24	22.3	8
315M	216	315	22	600	550	660	6	24	22.3	8
315L1	216	315	22	600	550	660	6	24	22.3	8
315L2	216	315	22	600	550	660	6	24	22.3	8
355M1/2/3	254	355	22	740	680	800	6	24	22.3	8
355L1/2	254	355	22	740	680	800	6	24	22.3	8

HIGH EFFICIENCY MOTORS

Foot Mounting B34 Flange



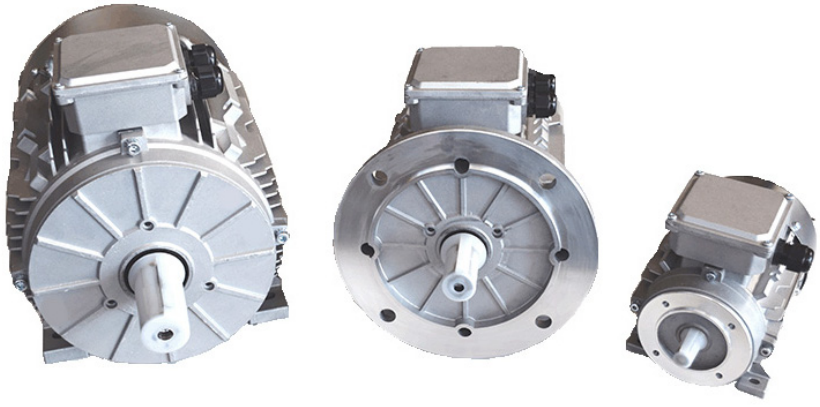


Dimensions (mm)							
Frame	**C**	**M** **Dia.**	**N** **Dia.**	**P** **Dia.**	**S**	**T**	**No. Of** **Holes**
63	40	75	60	90	M5	2.5	4
71	45	85	70	105	M6	2.5	4
80	50	100	80	120	M6	3	4
90S	56	115	95	140	M8	3	4
90L	56	115	95	140	M8	3.5	4
100L	63	130	110	160	M8	3.5	4
112M	70	130	110	160	M8	3.5	4
132S	89	165	130	200	M8	3.5	4
132M	89	165	130	200	M10	3.5	4

HIGH EFFICIENCY - 3000 RPM

Aluminium Squirrel Cage Electric Motors 230 / 400 Volt Three Phase

PERFORMANCE DATA								3000 RPM - 50 Hz (2 POLE)							
Rated Out-put kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n %			Power Factor/ Cos			Noise Level dB (A) Sound Pressure Level	App. Wt. Kg
								% of Full Load							
								50	75	100	50	75	100		
0.18	631	2710	0.55	6	0.634	2.2	2.4	51	58	63	0.52	0.66	0.75	61	3.7
0.25	632	2710	0.71	6	0.881	2.2	2.4	57	64	65	0.53	0.67	0.78	61	4.2
0.37	633	2710	1.05	6	1.304	2.2	2.4	61	65	65	0.52	0.68	0.78	62	4.7
0.37	711	2730	0.97	6	1.294	2.2	2.4	53	65	70	0.57	0.71	0.79	64	5.34
0.55	712	2760	1.42	6	1.903	2.2	2.4	64	70	71	0.55	0.69	0.79	64	6.14
0.75	713	2730	1.83	6	2.624	2.2	2.4	70	72.2	72	0.61	0.75	0.82	65	7.1
0.75	801	2860	1.85	6	2.495	2.2	2.5	66	71	72.1	0.59	0.73	0.81	67	8.9
1.1	802	2860	2.58	6.5	3.656	2.5	2.7	71	74.5	75	0.59	0.73	0.82	67	10.1
1.5	803	2860	3.42	7	4.981	2.6	2.6	74	77	77.2	0.59	0.74	0.82	70	11.2
1.5	90S	2870	3.46	7	4.971	2.3	2.7	74	77	77.2	0.58	0.73	0.81	72	12.3
2.2	90L1	2870	4.80	7.2	7.290	2.5	2.6	78	80.3	79.7	0.61	0.75	0.83	72	15.5
3	90L2	2880	6.40	8.2	9.874	2.8	2.8	79	81.5	81.5	0.61	0.75	0.83	74	17.4
3	100L1	2890	6.48	8	9.890	2.7	3	79	81.5	81.5	0.62	0.75	0.82	76	19.6
4	100L2	2890	8.37	8.2	13.20	3	3.2	81.5	83	83.1	0.62	0.75	0.83	77	23
4	112M	2900	7.98	9.3	13.20	2.7	3	82	83.5	83.1	0.73	0.83	0.87	77	27.4
5.5	112L1	2900	10.7	10	18.09	3	3.6	84	84.8	84.7	0.73	0.83	0.88	78	31.2
5.5	132S1	2900	10.9	8.3	18.15	2.6	3	84.5	85	84.7	0.73	0.83	0.86	80	41.3
7.5	132S2	2910	14.6	8.3	24.74	2.6	3	86	86.5	86	0.73	0.83	0.86	80	43
9.2	132M1	2910	17.2	10	30.19	3	3.6	85.5	87	87	0.78	0.86	0.89	81	48.4



HIGH EFFICIENCY - 1500 RPM

Aluminium Squirrel Cage Electric Motors 230 / 400 Volt Three Phase

PERFORMANCE DATA								1500 RPM - 50 Hz (4 POLE)							
Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n %			Power Factor Cos			Noise Level dB (A) Sound Pressure Level	App. Wt. Kg
								% of Full Load							
								50	75	100	50	75	100		
0.12	631	1350	0.47	6	0.849	2.2	2.4	47	55	57	0.54	0.63	0.64	52	3.7
0.18	632	1350	0.68	6	1.273	2.2	2.4	52	58.5	59	0.44	0.55	0.65	52	4.2
0.25	633	1350	0.91	6	1.769	2.2	2.4	57	61	60	0.45	0.55	0.66	54	5
0.25	711	1350	0.84	6	1.769	2.2	2.4	56	59	60	0.51	0.62	0.72	55	5.06
0.37	712	1370	1.11	6	2.579	2.2	2.4	58	64	65	0.51	0.64	0.74	55	5.96
0.55	713	1380	1.51	6	3.806	2.2	2.4	68	70.8	70	0.51	0.65	0.75	57	7.06
0.55	801	1400	1.64	5	3.689	2	2.3	64	69.5	71	0.45	0.58	0.68	58	8.3
0.75	802	1400	2.14	5	5.099	2	2.3	70	73	72.1	0.47	0.6	0.7	58	9.8
1.1	803	1400	2.94	5.5	7.575	2.2	2.4	76	77	75	0.51	0.64	0.72	60	11.2
1.1	90S	1400	2.94	5.5	7.468	2.1	2.3	75	77	75	0.51	0.64	0.72	61	12.3
1.5	90L1	1410	3.79	6	10.15	2.3	2.3	78	79	77.2	0.54	0.66	0.74	61	15.1
2.2	90L2	1410	5.38	6.5	14.74	2.5	2.6	81	81.5	79.7	0.54	0.67	0.74	63	17.78
2.2	100L1	1430	5.24	6.2	14.63	2.2	2.6	76.8	79.6	79.7	0.53	0.67	0.76	64	24.1
3	100L2	1430	6.90	7	19.96	2.4	2.7	81.5	82.5	81.5	0.57	0.7	0.77	64	24.5
4	100L3	1440	9.14	7.2	26.49	2.8	3.4	80.9	83	83.1	0.53	0.67	0.76	65	28.2
4	112M	1440	8.79	8	26.41	2.2	3.1	81.5	83.2	83.1	0.56	0.7	0.79	65	29.5
5.5	112L	1440	11.7	8.2	36.41	3	3.4	83.6	85	84.7	0.585	0.72	0.8	68	36.4
5.5	132S	1440	11.6	7.5	36.26	1.9	2.8	83.7	85.1	84.7	0.61	0.74	0.81	71	43.6
7.5	132M	1440	15.7	8.5	49.04	2.6	3.1	84.5	86	86	0.6	0.73	0.8	71	54.5
9.2	132L1	1450	19.1	9	60.32	3	3.2	84.8	86.2	86	0.62	0.74	0.81	74	57

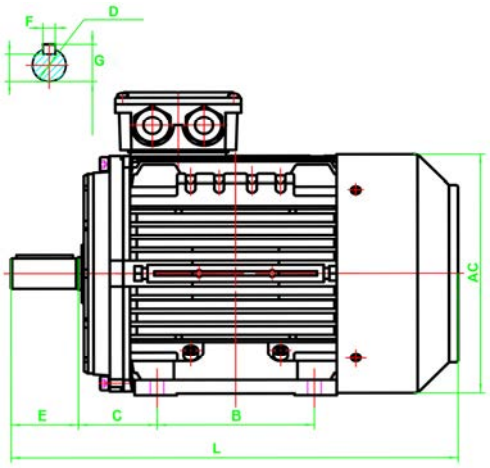
HIGH EFFICIENCY - 1000 RPM

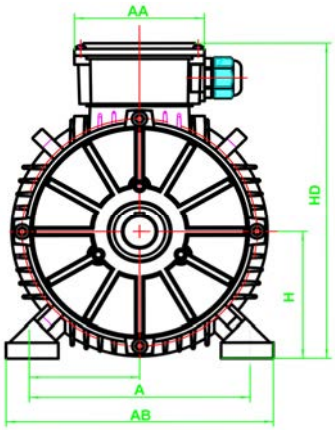
Aluminium Squirrel Cage Electric Motors 230 / 400 Volt Three Phase

PERFORMANCE DATA								1000 RPM - 50 Hz (6 POLE)							
Rated Output kW	Frame IEC	Rated Speed RPM	Full Load Current at 400V in A IFL	Locked Rotor Current II/In IST/IFL	Full Load Torque Tn Nm	Locked Rotor Torque TST/TFL	Break-down Torque TM/TFL	Efficiency n %			Power Factor Cos			Noise Level dB (A) Sound Pressure Level	App. Wt. Kg
								% of Full Load							
								50	75	100	50	75	100		
1.5	100L	940	4.06	4.6	15.22	1.74	2.26	73.5	76	75.2	0.48	0.62	0.71	60	18.7
2.2	112M	940	5.92	5	22.17	1.98	2.3	75	78	77.7	0.46	0.6	0.69	63	32.5
5.5	132M2	960	13.1	6.5	54.56	2.2	2.9	83.2	83.8	83.1	0.56	0.67	0.73	68	50.5

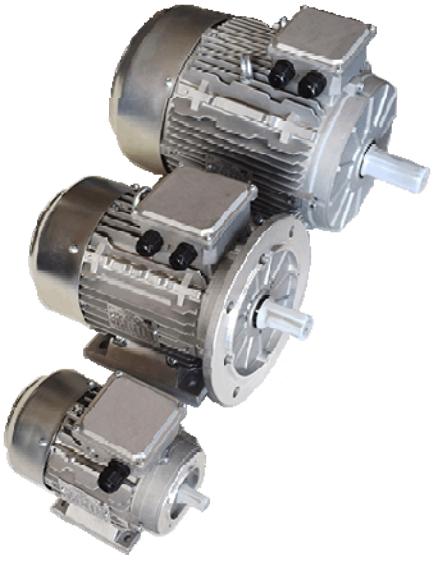
ALUMINIUM MOTORS

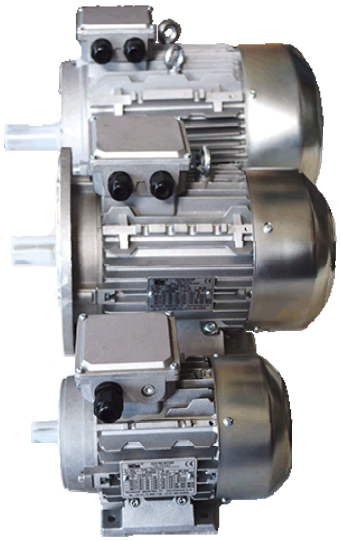
Foot Mounting B3 63-132 Frame





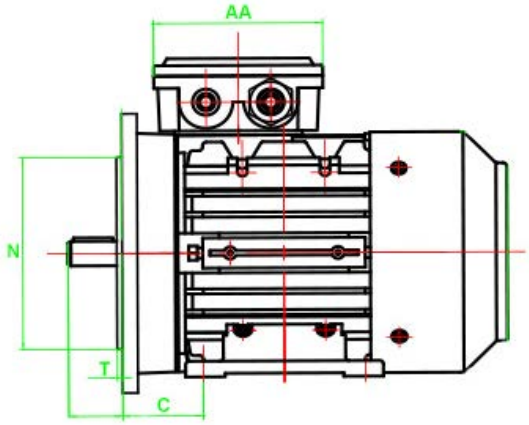
Dimensions (mm)													
Frame	A	AA	AB	AC	B	C	D	E	F	G	H	HD	L
63	100	94	124	ϕ112	80	40	11	23	4	12.5	63	168	215
71	112	94	140	ϕ138	90	45	ϕ14	30	5	16	71	184	245
80	125	105	160	ϕ158	100	50	ϕ19	40	6	21.5	80	210	277
90S	140	105	175	ϕ177	100	56	ϕ24	50	8	27	90	229	312
90L	140	105	175	ϕ177	125	56	ϕ24	50	8	27	90	229	337
100L	160	112	200	ϕ199	140	63	ϕ28	60	8	31	100	257	375
112M	190	112	230	ϕ220	140	70	ϕ28	60	8	31	112	280	397
132S	216	112	255	ϕ261	140	89	ϕ38	80	10	40	132	319	460
132M	216	112	255	ϕ261	178	89	ϕ38	80	10	41	132	319	498

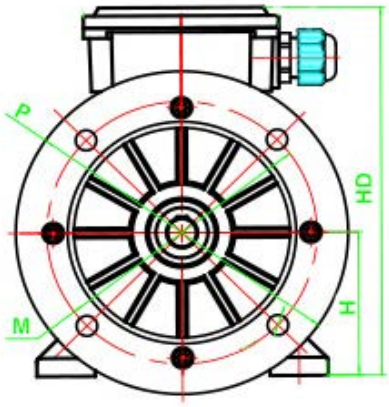




ALUMINIUM MOTORS

Foot Mounting B3 & B5 Flange

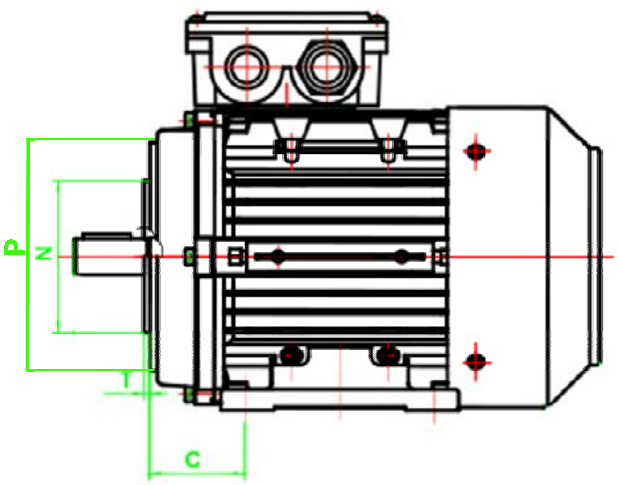


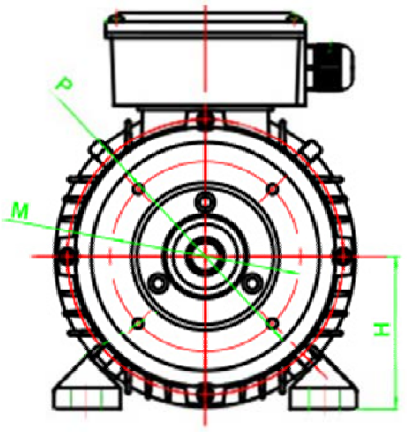


Dimensions (mm)								
Frame	AA	C	H	HD	M Dia.	N Dia.	P Dia.	T
63M	94	40	63	168	ϕ115	ϕ95	ϕ140	3
71M	94	45	71	184	ϕ130	ϕ110	ϕ160	3
80M	105	50	80	210	ϕ165	ϕ130	ϕ200	3.5
90S	105	56	90	229	ϕ165	ϕ130	ϕ200	3.5
90L	105	56	90	229	ϕ165	ϕ130	ϕ200	3.5
100L	112	63	100	257	ϕ215	ϕ180	ϕ250	4
112M	112	70	112	280	ϕ215	ϕ180	ϕ250	4
132S	112	89	132	319	ϕ265	ϕ230	ϕ300	4
132M	112	89	132	319	ϕ265	ϕ230	ϕ300	4

ALUMINIUM MOTORS

Foot Mounting B3 & B14 Flange





Dimensions (mm)						
Frame	C	H	M Dia.	N Dia.	P Dia.	T
63M	40	63	ϕ75	ϕ60	ϕ90	2.5
71M	45	71	ϕ85	ϕ70	ϕ105	2.5
80M	50	80	ϕ100	ϕ80	ϕ120	3
90S	56	90	ϕ115	ϕ95	ϕ140	3
90L	56	90	ϕ115	ϕ95	ϕ140	3
100L	63	100	ϕ130	ϕ110	ϕ160	3.5
112M	70	112	ϕ130	ϕ110	ϕ160	3.5
132S	89	132	ϕ165	ϕ130	ϕ200	3.5
132M	89	132	ϕ165	ϕ130	ϕ200	3.5

SABS APPROVED

BEARING SIZE CONFIGURATION

SABS APPROVED

Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

FULL LOAD OUTPUT		CAST IRON FRAME		BEARING SIZE	GREASE INTERVAL		BEARING SIZE	GREASE INTERVAL	
kW	Rpm	Frame	Shaft (mm)	DRIVE END	GRAMS	HOURS	NON-DRIVE END	GRAMS	HOURS
0.18	2720	63	11	6201ZZ	N/A	N/A	6201ZZ	N/A	N/A
	1310	63	11	6201ZZ	N/A	N/A	6201ZZ	N/A	N/A
0.25	2720	63	11	6201ZZ	N/A	N/A	6201ZZ	N/A	N/A
	1330	71	14	6202ZZ	N/A	N/A	6202ZZ	N/A	N/A
	850	71	19	6202ZZ	N/A	N/A	6202ZZ	N/A	N/A
0.37	2740	71	14	6202ZZ	N/A	N/A	6202ZZ	N/A	N/A
	1330	71	14	6202ZZ	N/A	N/A	6202ZZ	N/A	N/A
	890	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	660	90S	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
0.55	2740	71	14	6202ZZ	N/A	N/A	6202ZZ	N/A	N/A
	1390	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	890	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	660	90L	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
0.75	2830	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	1390	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	910	90S	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	690	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
1.1	2830	80	19	6204ZZ	N/A	N/A	6204ZZ	N/A	N/A
	1400	90S	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	910	90L	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	690	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
1.5	2840	90S	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	1400	90L	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	940	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
	680	112M	28	6306ZZ	N/A	N/A	6306ZZ	N/A	N/A
2.2	2840	90L	24	6205ZZ	N/A	N/A	6205ZZ	N/A	N/A
	1430	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
	940	112M	28	6306ZZ	N/A	N/A	6306ZZ	N/A	N/A
	710	132S	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
3	2870	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
	1430	100L	28	6206ZZ	N/A	N/A	6206ZZ	N/A	N/A
	960	132S	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	710	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
4	2890	112M	28	6306ZZ	N/A	N/A	6306ZZ	N/A	N/A
	1440	112M	28	6306ZZ	N/A	N/A	6306ZZ	N/A	N/A
	960	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	720	160M	42	6309 C3	30	3000	6309 C3	30	3000
5.5	2900	132S	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	1440	132S	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	960	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	720	160M	42	6309 C3	30	3000	6309 C3	30	3000
7.5	2900	132S	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	1440	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	970	160M	42	6309 C3	30	3000	6309 C3	30	3000
	720	160L	42	6309 C3	30	3000	6309 C3	30	3000

BEARING SIZE CONFIGURATION

Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

FULL LOAD OUTPUT		CAST IRON FRAME		BEARING SIZE	GREASE INTERVAL		BEARING SIZE	GREASE INTERVAL	
kW	Rpm	Frame	Shaft (mm)	DRIVE END	GRAMS	HOURS	NON-DRIVE END	GRAMS	HOURS
9.2	2930	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
	1460	132M	38	6308ZZ	N/A	N/A	6308ZZ	N/A	N/A
11	2930	160M	42	6309 C3	30	3000	6309 C3	30	3000
	1460	160M	42	6309 C3	30	3000	6309 C3	30	3000
	970	160L	42	6309 C3	30	3000	6309 C3	30	3000
	730	180L	48	6311 C3	30	3000	6311 C3	30	3000
15	2930	160M	42	6309 C3	30	3000	6309 C3	30	3000
	1460	160L	42	6309 C3	30	3000	6309 C3	30	3000
	970	180L	48	6311 C3	30	3000	6311 C3	30	3000
	730	200L	55	6312 C3	60	3000	6312 C3	60	3000
18.5	2930	160L	42	6209 C3	30	2000	6209 C3	30	2000
	1470	180M	48	6311 C3	30	3000	6311 C3	30	3000
	970	200L	55	6312 C3	60	3000	6312 C3	60	3000
	730	225M	60	NU313 C3	80	3000	6313 C3	80	3000
22	2940	180M	48	6311 C3	30	2000	6311 C3	30	2000
	1470	180L	48	6311 C3	30	3000	6311 C3	30	3000
	970	200L	55	6312 C3	60	3000	6312 C3	60	3000
	740	225S/M	60	NU313 C3	80	3000	6313 C3	80	3000
30	2950	200L	55	6312 C3	60	2000	6312 C3	60	2000
	1470	200L	55	6312 C3	60	3000	6312 C3	60	3000
	980	225S/M	60	NU313 C3	80	3000	6313 C3	80	3000
	740	250S/M	70	NU315 C3	100	3000	6315 C3	100	3000
37	2950	200L	55	6312 C3	60	2000	6312 C3	60	2000
	1480	225S/M	60	NU313 C3	80	2000	6313 C3	80	2000
	980	250S/M	70	NU315 C3	100	3000	6315 C3	100	3000
	740	250S/M	70	NU315 C3	100	3000	6315 C3	100	3000
45	2970	225S/M	55	NU313 C3	80	2000	6312 C3	80	2000
	1480	225S/M	60	NU313 C3	80	2000	6313 C3	80	2000
	980	250S/M	70	NU315 C3	100	3000	6315 C3	100	3000
	740	280S/M	80	NU317 C3	120	3000	6314 C3	120	3000
55	2970	250S/M	60	NU315 C3	100	2000	6315 C3	100	2000
	1480	250S/M	70	NU315 C3	100	2000	6315 C3	100	2000
	980	280S/M	80	NU317 C3	120	3000	6314 C3	120	3000
	740	280S/M	80	NU317 C3	120	3000	6314 C3	120	3000
75	2970	250S/M	60	NU315 C3	100	2000	6315 C3	100	2000
	1480	250S/M	70	NU315 C3	100	2000	6315 C3	100	2000
	990	280S/M	80	NU317 C3	120	3000	6315 C3	120	3000
	740	315S/M	85	NU319 C3	120	3000	6319 C3	120	3000
90	2970	280S/M	65	NU314 C3	80	2000	6314 C3	80	2000
	1490	280S/M	80	NU317 C3	120	1500	6314 C3	120	2000
	990	315S/M	85	NU319 C3	120	3000	6319 C3	120	3000
	740	315S/M	85	NU319 C3	120	3000	6319 C3	120	3000

BEARING SIZE CONFIGURATION

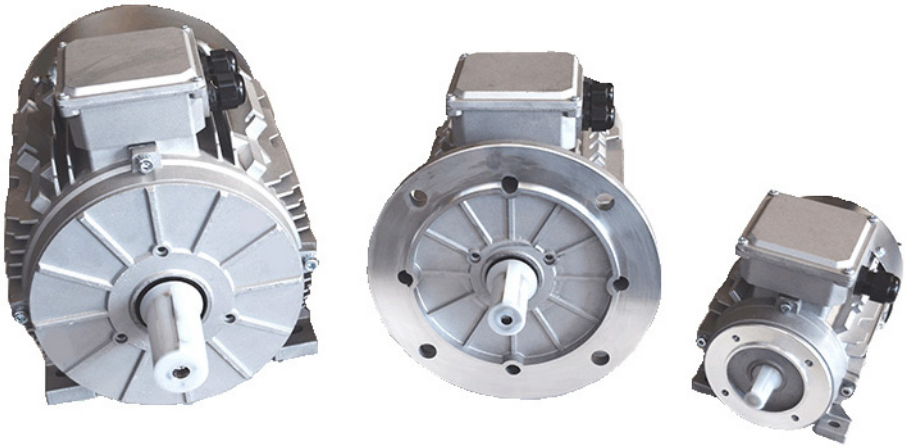
Cast Iron Squirrel Cage Electric Motors 400 / 525 Volt Three Phase

FULL LOAD OUTPUT		CAST IRON FRAME		BEARING SIZE	GREASE INTERVAL		BEARING SIZE	GREASE INTERVAL	
kW	Rpm	Frame	Shaft (mm)	DRIVE END	GRAMS	HOURS	NON-DRIVE END	GRAMS	HOURS
110	2980	280S/M	65	NU314 C3	80	2000	6314 C3	80	2000
	1490	280S/M	80	NU317 C3	120	1500	6314 C3	120	1500
	990	315S/M	85	NU319 C3	120	3000	6319 C3	120	3000
	740	315S/M	85	NU319 C3	120	3000	6319 C3	120	3000
132	2980	315S/M	65	NU317 C3	120	1500	6317 C3	120	1500
	1490	315S/M	85	NU319 C3	120	1500	6319 C3	120	1500
	990	315M/L	85	NU319 C3	120	3000	6319 C3	120	3000
	740	355M/L	100	NU322 C3	220	3000	6322 C3	220	3000
160	2980	315M/L	65	NU317 C3	120	1500	6317 C3	120	1500
	1490	315M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	990	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
	740	355M/L	100	NU322 C3	220	3000	6322 C3	220	3000
185	2980	315M/L	70	NU317 C3	120	1500	6317 C3	120	1500
	1490	315M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	990	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
	740	355M/L	100	NU322 C3	220	3000	6322 C3	220	3000
200	2980	315M/L	70	NU317 C3	120	1500	6317 C3	120	1500
	1490	315M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	990	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
	740	355M/L	100	NU322 C3	220	3000	6322 C3	220	3000
220	2980	355M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	315M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
	990	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
	740	355M/L	100	NU322 C3	220	3000	6322 C3	220	3000
250	2980	355M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	315M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	355M/L	90	NU322 C3	220	1000	6322 C3	220	1000
	990	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
275	2980	355M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
	980	355M/L	100	NU322 C3	220	2000	6322 C3	220	2000
315	2980	355M/L	90	NU319 C3	120	1500	6319 C3	120	1500
	1485	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
330	4P	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
350	4P	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
375	4P	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
400	4P	355M/L	100	NU322 C3	220	1000	6322 C3	220	1000
450	4P	400M/L	110	NU326 C3	300	1000	6326 C3	300	1000
500	4P	400M/L	110	NU326 C3	300	1000	6326 C3	300	1000
560	4P	400M/L	110	NU326 C3	300	1000	6326 C3	300	1000
630	4P	400M/L	110	NU326 C3	300	1000	6326 C3	300	1000

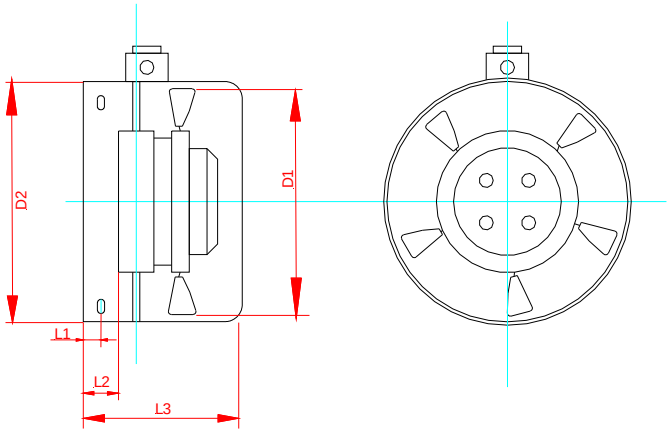
BEARING SIZE CONFIGURATION

Aluminium Squirrel Cage Electric Motors 230 / 400 Volt Three Phase

FULL LOAD OUTPUT		ALUMINIUM FRAME		BEARING SIZE	GREASE INTERVAL		BEARING SIZE	GREASE INTERVAL	
kW	Rpm	Frame	Shaft (mm)	DRIVE END	GRAMS	HOURS	NON-DRIVE END	GRAMS	HOURS
0.12	1310	63	11	6201-2RS	N/A	N/A	6201-2RS	N/A	N/A
0.18	2720	63	11	6201-2RS	N/A	N/A	6201-2RS	N/A	N/A
	1310	63	11	6201-2RS	N/A	N/A	6201-2RS	N/A	N/A
0.25	2720	63	11	6201-2RS	N/A	N/A	6201-2RS	N/A	N/A
	1330	71	14	6202-2RS	N/A	N/A	6202-2RS	N/A	N/A
0.37	2740	71	14	6202-2RS	N/A	N/A	6202-2RS	N/A	N/A
	1330	71	14	6202-2RS	N/A	N/A	6202-2RS	N/A	N/A
0.55	2740	71	14	6202-2RS	N/A	N/A	6202-2RS	N/A	N/A
	1390	80	19	6204-2RS	N/A	N/A	6204-2RS	N/A	N/A
0.75	2830	80	19	6204-2RS	N/A	N/A	6204-2RS	N/A	N/A
	1390	80	19	6204-2RS	N/A	N/A	6204-2RS	N/A	N/A
1.1	2830	80	19	6204-2RS	N/A	N/A	6204-2RS	N/A	N/A
	1400	90S	24	6205-2RS	N/A	N/A	6205-2RS	N/A	N/A
1.5	2840	90S	24	6205-2RS	N/A	N/A	6205-2RS	N/A	N/A
	1400	90L	24	6205-2RS	N/A	N/A	6205-2RS	N/A	N/A
2.2	2840	90L	24	6205-2RS	N/A	N/A	6205-2RS	N/A	N/A
	1430	100L	28	6206-2RS	N/A	N/A	6206-2RS	N/A	N/A
3	2870	100L	28	6206-2RS	N/A	N/A	6206-2RS	N/A	N/A
	1430	100L	28	6206-2RS	N/A	N/A	6206-2RS	N/A	N/A
4	2890	112M	28	6306-2RS	N/A	N/A	6306-2RS	N/A	N/A
	1440	112M	28	6306-2RS	N/A	N/A	6306-2RS	N/A	N/A
5.5	2900	132S	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A
	1440	132S	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A
7.5	2900	132S	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A
	1440	132M	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A
9.2	2900	132M	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A
	1440	132M	38	6308-2RS	N/A	N/A	6308-2RS	N/A	N/A



FORCE COOLING FANS

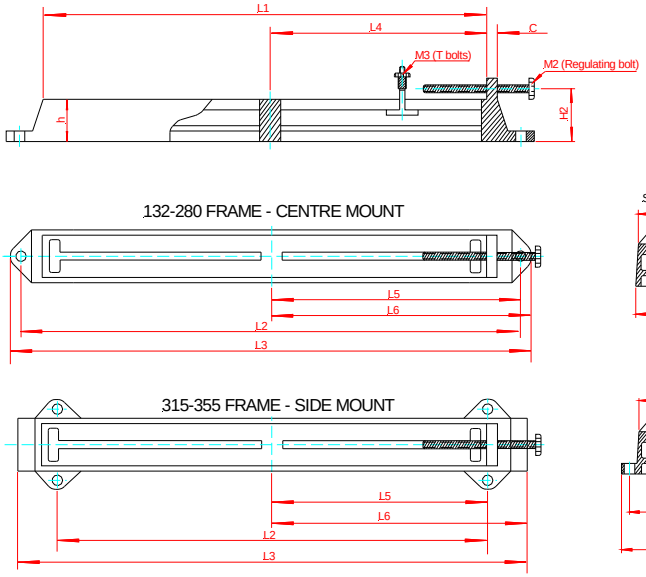


Mounting Dimensions										
Fan Cowl Type	D1	D2	L1	L2	L3	Power (W)	Speed RPM	Blast Volume m^3/h	Full Pressure Pa	Noise dB (a)
G71A	130	140	10	70	144	30	2300	200	65	60
G80A	150	155	15	85	170	30	2300	330	70	62
G90A	170	175	10	84	175	52	2800	200	80	65
G100A	186	197	15	100	190	52	2800	660	82	67
G112A	200	220	20	120	210	52	2800	900	90	70
G132A	250	258	22	122	220	40	1300	780	50	70
G160A	300	315	20	150	260	80	1350	1300	50	70
G180A	330	356	40	180	290	80	1350	1300	55	70
G200A	380	393	40	215	350	150	1350	2400	100	70
G225A	400	446	45	220	360	200	1350	4200	150	74
G250A	460	482	55	230	368	200	1350	4200	150	77
G280A	520	548	70	250	460	320	1250	5000	150	77
G315A	580	614	75	320	525	370	1250	6200	180	80
G355A	680	720	115	378	610	500	900/1350	4700/6500	80/180	75/82
G400A	720	860	200	480	760	600	900	4850	80	77

Note: Motors available in 380V and 525V.

* All 71 frame units are 220V, 1ø

MOTOR SLIDE RAILS



Slide Rail	Frame	L1	L2	L3	L4	L5	L6	C	h	H2	B1	B2	M2	M3	b	Total Weight
SHT-1	132	400	460	490	200	240	255	20	36	44	38	42	M12x140	M10	~	10kg
SHT-2	160	520	580	620	260	300	320	20	45	55	45	50	M12x180	M12	~	16kg
SHT-2	180	520	580	620	260	300	320	20	45	55	45	50	M12x180	M12	~	16kg
SHT-3	200	640	725	785	320	375	405	25	60	74	65	75	M16x220	M16	~	30kg
SHT-3	225	640	725	785	320	375	405	25	60	74	65	75	M16x220	M16	~	30kg
SHT-4	250	820	950	1010	410	490	520	30	70	88	90	105	M20x260	M20	~	68kg
SHT-4	280	820	950	1010	410	490	520	30	70	88	90	105	M20x260	M20	~	68kg
SHT-5	315	940	745	1035	470	372.5	535	35	85	105	110	260	M24x300	M24	190	110kg
SHT-5	355	940	745	1035	470	372.5	535	35	85	105	110	260	M24x300	M24	190	110kg

Total weight includes 2 slide rails, 2 regulating bolts, 4 T bolts. Anchor bolts are provided by clients.

MEDIUM & HIGH VOLTAGE MOTORS

Y2 Series Compact TEFC Motors
Kilowatt range: 185kW - 2500kW
Frame size: 355 - 560
Speed: 2, 4, 6 & 8 Poles
Voltage: 3.3kV, 6,6kV & 11kV (±10%)
Enclosure: TEFC / IP55
Cooling: IC01, IC411 & IC611
Mounting: Foot or Flange - Vertical or Horizontal

Y/YKS Series
Kilowatt range: 220kW - 20 000kW
Frame size: 450 - 1000
Speed: 2, 4, 6, 8, 10 & 12 Poles
Voltage: 3.3kV, 6.6kV & 11kV (±10%)
Enclosure: IP23, IP55 CACA
Cooling: IC01 & IC611
Mounting: Foot or Flange - Vertical or Horizontal

Y Series (Large)
Kilowatt range: 630kW - 20 000kW
Frame size: 710 - 1000
Speed: 2, 4, 6, 8, 10 & 12 Poles
Voltage: 3.3kV, 6.6kV & 11kV (±10%)
Enclosure: IP23
Cooling: IC01
Mounting: Foot or Flange - Vertical or Horizontal

YKS Series (Large)
Kilowatt range: 630kW - 20 000kW
Frame size: 710 - 1000
Speed: 2, 4, 6, 8, 10 & 12 Poles
Voltage: 3.3kV, 6.6kV & 11kV (±10%)
Enclosure: IP55, CACA
Cooling: IC01, IC411 & IC611
Mounting: Foot or Flange - Vertical or Horizontal

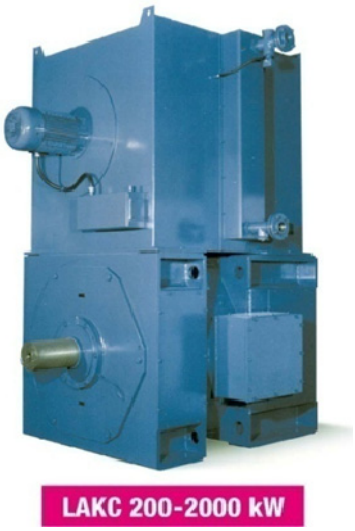
DC MOTORS

Sole Agents for T-T Electric DC Motors in Sub-Saharan Africa.

Basic Design Characteristics

- Suitable for operation with adjustable DC voltages from thyristor converters (230V, 400V, 500V)
- Fully laminated stator, main poles and interpoles
- Fully compensated machines ensuring good communication also in the field weakening range
- Convertible motors from TEFV (Totally Enclosed Force Ventilation) to TENV (Totally Enclosed Non Ventilated)
- Removable and replaceable shaft with two tapered extensions
- DE & NDE heavy duty roller bearings
- Easily removable bearing housings
- Insulation class H with temperature rise limit to 110°C for longer life expectancy
- High dynamic response, with a current change rate of 250 times the nominal current per second
- A large number of options and accessories ensuring high flexibility
- Max armature voltage 500V

T-T Electric



MOTOR SPARES

- ⇒ End shields - NDE & DE
- ⇒ Flanges B5 (all sizes)
- ⇒ Flanges B14 (up to 132 frame size)
- ⇒ Bearing Covers Inner
- ⇒ Bearing Covers Outer
- ⇒ Fan Cowls - Standard & Force Cooling
- ⇒ Cooling Fans - 2 Pole, 4 Pole, 6 Pole & 8 Pole
- ⇒ Terminal Blocks
- ⇒ Terminal Boxes
- ⇒ Terminal Box Covers
- ⇒ Aluminium Fans
- ⇒ Aluminium Flanges - B5 & B14

MEDIUM & HIGH VOLTAGE DIGITAL SOFT STARTERS

Power range:
160 - 6000kW

Input voltage range:
1.1kV, 3.3kv, 6.6kV, 11kV

Eliminates high inrush current & high mechanical torque on start-up

User friendly, straight forward set-up and operation

The LCD displays motor current, fault description as well as statistical data

Applications:

- Pumps
- Compressors
- Fans
- Blowers
- Conveyors
- Monorail systems
- Centrifuges
- Chillers
- Elevators

GD 10 SINGLE PHASE & THREE PHASE AC VARIABLE SPEED DRIVE

Features

- Single Phase range : 0.2kW - 2.2kW, **220V**
- Three Phase range: 0.75kW - 2.2kW, **400V**
- Variable speed motor control
- Mini design feature
- 1x Analogue Input ; 1x Analogue Output
- 5 Digital inputs , 1 Y terminal output & 1 x Relay output
- V/F Control
- Standard MODBUS Communication
- Built in braking unit
- DC Braking, flux braking & resistor dynamic braking

Typical Applications: Packaging Machinery, Food Machinery, Textile Machinery, Centrifuge, Engraving Machines, Cutting Machines, Pumps, Fans, Conveyor, Home Industry, Variable speed motor control and Energy saving.

GD 100 SINGLE PHASE AC VARIABLE SPEED DRIVE

Features

- Power range : 4kW
- Model: GD100
- Variable speed control
- Input voltage range : **220V**
- 2x Analogue Input
- 4DI, 1HDI Digital Input
- 2x Analogue Output
- 2x Relay Output
- Standard MODBUS Communication
- Built-in Braking Unit

Typical Applications: Machine Tools, Textile, Ceramic, Plastic, Home Industries, Pumps, Fans, Winch, Mixers, Chemical and Energy saving.

GD 35 CLOSE LOOP VECTOR CONTROL AC VARIABLE SPEED DRIVE

Features

- Power Range: 1.5kW - 75kW
- Input Voltage Range: **400V ±15%**
- High performance
- Variable speed motor control
- Built in braking unit up to 30kW
- Closed-loop vector control - **0Hz = 200% Starting torque**
- High accuracy position control
- Powerful motor torque, speed and position control
- Compatible with multiple motors - Spindle ; Servo ; Variable freq motor ; Synchronous & standard Asynchronous motors.
- PG Card built in - Encoder card.

Typical Applications

- CNC Machine - Lathe
- Machine Tools - High speed spindle
- Servo motors
- Hoist - Elevator - Crane
- Wire extrusion & winding
- Metal & Woodworking Machinery
- Printing
- Paper & Pulp
- Pumps & fans
- Fabrics Machines
- Variable speed motor control

GD 200 SERIES GENERAL PURPOSE INVERTER

Power range:
1.5—500kW

Input voltage range:
400V ±15%

V/f control technology—DSP Control

Accurate motor auto-tuning providing excellent motor drive performance

Standard built in C3 filter—Enhanced EMC performance - EMC Filter to EN61800-3 specification

Supports Common DC Bus and DC input supply

Manufactured in accordance with IEC Standards ; TUV & CE Approval

Resistor ; DC and Magnetic flux braking

Bookcase panel mounting with Independent air-cooling design—for wall, flange and floor mounting.

Applications:

- Pumps
- Fans
- Crushers
- Plastic Extruders
- Simple water supply
- HVAC

GD 300 SERIES HIGH PERFORMANCE VECTOR CONTROL INVERTER

Power range:
1.5—500kW

Input voltage range:
400V ±15%

Open Loop Vector control & V/f

Accurate motor auto-tuning providing excellent motor drive performance

Advanced open-loop vector control : 0.25Hz/150% Starting torque & 1:200 speed ratio

Suitable for various motor types : Asynchronous , Permanent magnet synchronous , variable frequency and Direct drive motors

Communication : MODBUS, PROFIBUS, CAN and Ethernet with Powerful PC Software

Manufactured in accordance with IEC Standards ; TUV & CE Approval

Applications:

- Pumps
- Cranes
- Crushers
- Mills
- Conveyors
- Machine tools
- CNC

GD 300 SERIES HIGH PERFORMANCE VECTOR CONTROL INVERTER

Power range:
1.5—500kW

Input voltage range:
525V ±15%

Open Loop Vector control & V/f

Accurate motor auto-tuning providing excellent motor drive performance

Advanced open-loop vector control : 0.25Hz/150% Starting torque & 1:200 speed ratio

Suitable for various motor types : Asynchronous , Permanent magnet synchronous , variable frequency and Direct drive motors

Communication : MODBUS, PROFIBUS, CAN and Ethernet with Powerful PC Software

Manufactured in accordance with IEC Standards ; TUV & CE Approval

Applications:

- Pumps
- Cranes
- Crushers
- Mills
- Conveyors
- Machine tools
- CNC

GD800

GD800 series products are developed for sophisticated application markets, which need high overload capacity, high reliability and continuous operations.

Main Features

- Control units and power units apply optical communication: Electrical Isolation, Strong EMC performance and reliability, long-distance communication and convenient distributed installation of control units and main drive circuit.
- LCL PWM filter unit: Effectively reduce the harmonics
- Wide range of power:
  380V : 4kW - 9.6MW
  660V: 22kW - 12MW
- Safe protections: STO, SS1, SLS and SBC protection
- Fuse protection: Fault isolation
- Motor temperature detection:
  Real-time monitoring of the motor temperature, to protect the safe operation of the motor, and optimise the control performance of the motor.

GD800 Products

GD800-11 (Two Quadrant Inverter Unit)
Single drive
380V: 4kW - 400kW
660V: 22kW - 500kW

GD800-26 (Cabinet Four Quadrant Inverter)
Single drive
380V: 75kW - 1200kW
660V: 75kW - 1500kW

GD800-51 (Convertor Unit)
Multi-drive
380V: 37kW - 400kW
660V: 75kW - 500kW

GD800-61 (Diode Rectification unit)
Multi-drive
380V: 400kW
660V: 500kW

GD800-01 (LCL PWM Filter Unit)
Multi-drive
380V: 250kW - 400kW
660V: 315kW - 500kW

GD800 Control Units

GD 5000 MEDIUM VOLTAGE AC VARIABLE SPEED DRIVE

GD5000 series is a High Performance, Medium voltage inverter.

Features

- Power Range: 200kW - 3350kW
- Input Voltage Range: 3.3kV, 6.6kV, 11kV
- Control mode: **Open loop Vector** & SVPWM Control
- Compatible with Synchronous or Asynchronous motors
- Auto-tuning capability
- Magnetic flux braking
- Low harmonic design with Dry type phase shift transformer
- Total harmonics distortion (THD): < 2%
- High power factor ≥ 97%
- High efficiency, ≥ 96 & better energy saving effect
- Various bypass options- manual or automatic
- Standard Modbus with Profibus- DP & Ethernet optional
- Master-slave operations (Up to 8 motors master-slave; single VSD driving multiple motors)
- Optic fibre technology to isolate high voltage and low voltage components
- 10" INVT HMI screen with excellent computer management
- Power cells - modular design and each unit interchangeable
- Perfect sine wave output current, eliminates torque vibration, prevents motor from over-heating
- Comprehensive protection function, monitor for power units

Typical Applications

- Iron
- Gas
- Steel
- Oil
- Petrochemical
- Power
- Mining
- Water
- Chemical
- Cement
- Mill Drives
- Fans, pumps, compressors
- Belt conveyors
- Turbines, dynamometers
- Energy Saving

CHH SERIES 3.3KV/6.6KV/11KV HIGH VOLTAGE INVERTER

Power range:
315 - 7100kW

Control mode:
Multi-level PWM modulation

High speed DSP control with phase shift transformer

High power factor, ≥ 96%

High efficiency, ≥ 98 & better energy saving effect

Optic fibre technology to isolate high voltage and low voltage components

Total harmonics distortion (THD): < 2%

Perfect sine wave output current, eliminates torque vibration, prevents motor from over-heating

Comprehensive protection function, monitor for power units

On-line operation by-pass function of power module

Applications:

- Iron
- Steel
- Petrochemical
- Power
- Water
- Chemical
- Mining
- Gas
- Oil

CHA100 SERIES FOUR-QUADRANT SPECIFIC INVERTER FOR HOIST & CRANE APPLICATIONS

Power range:
75 - 1200kW

Input voltage range:
400V & 525V ±15%

High starting torque: 200% rated torque at 0Hz (VC) - Excellent Closed Loop Vector

Sine wave regenerative unit, Energy efficient , Active front end

Separate control of rectifier and converter

Supports PROFIBUS-DP , MODBUS and Ethernet simultaneously

Master-slave function can control equal power and speed synchronization on multi-motor drives

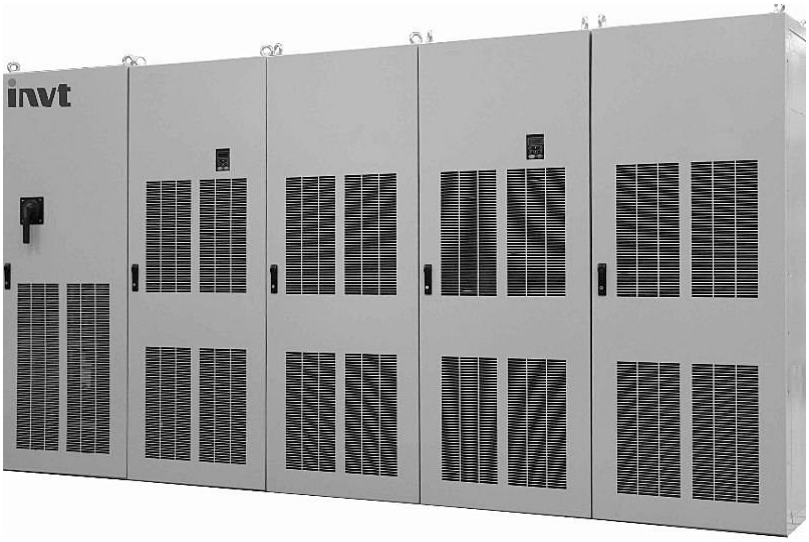
Specialist Inverter for Crane, Winder and Lifting industry—functions allow for reliable & safe use

External port can be used on different applications

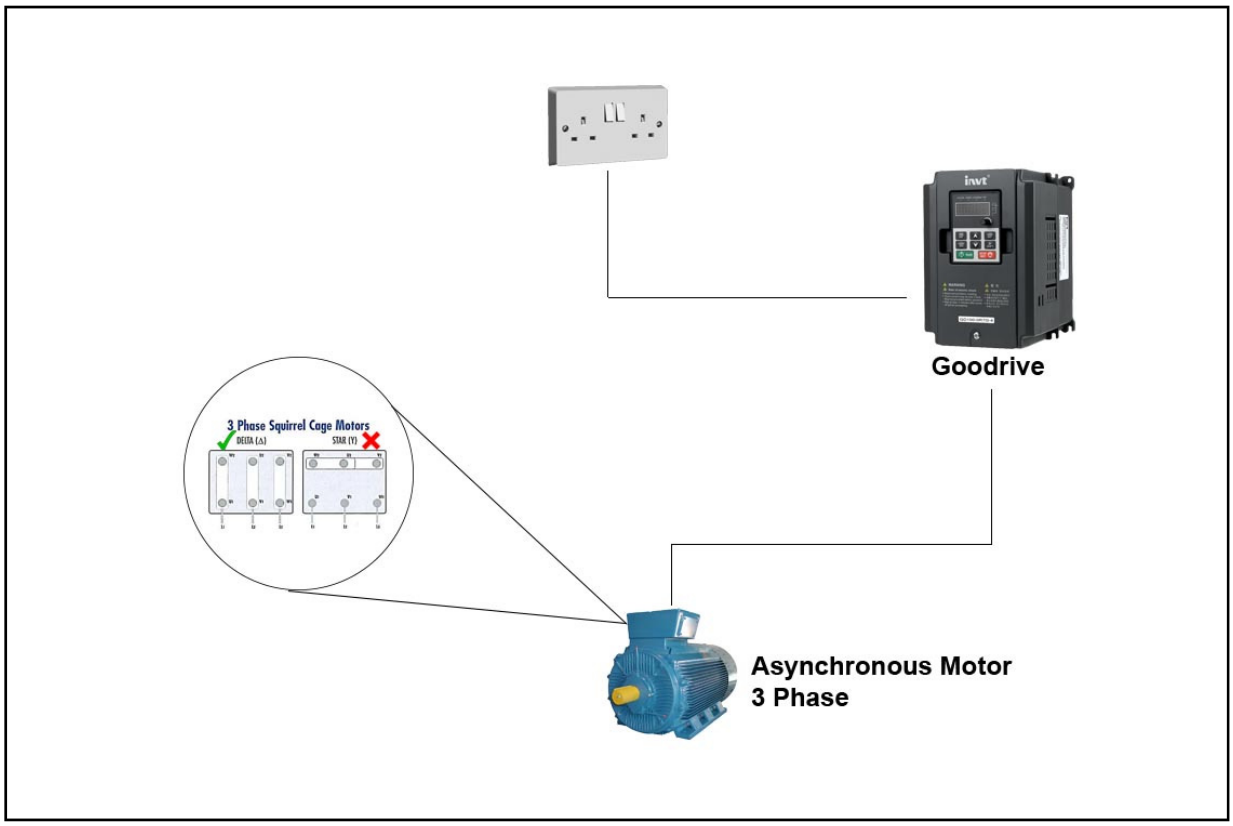
Double protection of system and unit module, sequential control when power on, gate control and automatic fault recording

Applications:

- Cranes
- Mine hoist
- Centrifuges
- Rolling mills—multi motor
- Conveyors
- Paper mill - multi motor
- Mining Equipment



Single Phase Drives



Our INVT Single Phase 220V Ac Inverters are capable of running 3 phase motors of 0,18kW or less
and up to 4kW from a standard single phase wall supply.

Using a 220V Single Phase VSD it is possible to produce 220V 3 phase and therefore one can run a
Motor rated 220/380V up to 5,5kW (Variable Torque).

Applications:

- ◊ Lathes
- ◊ Fans
- ◊ Pumps
- ◊ Compressors
- ◊ Vehicle Inspection Lifts

PLC / HMI / SERVO

PLC:
IVC1 Series PLC's are mini high performance PLC 's. Small structure and powerful function. They can be widely used in the mechanical manufacturing industry such as textile, machine tools, cables, food & drink, packaging, plastic & steel, building manufacturing, air conditioners, elevators and printing. Various I/O Extension Modules with up to 128 extended I/O points are available.

HMI:
VT Series HMI for interface of industrial automation with the advantage of various display modes, high capacity, flexible configuration and simple operation. Available with USB data ports and 4x screen sizes namely 5.6", 7", 10.4" & 15".

SERVO MOTORS & DRIVES:
Power: 200W—5.5kW
Rated current: 1.8A—14A
Strong overload capacity
Maximum speed is 5000rpm

SOLAR INVERTERS GRID TIED

iMars Solar Energy Inverters
Single Phase & Three Phase

High Performance
- Maximum Efficiency 97.60%
- Advanced MPPT algorithms, maximum tracking efficiency up to 99.99%

Safe
- IP65 rated and Anti-theft design, suitable for any kind of outdoor environments
- Built-in a high-accuracy clock: records real-time information accurately
- With system-level thermal simulation technologies, to make sure of product's reliability & lifetime.

Sample
- With large LCD interface, easy to view & configure
- Integrated DC Switch (Lockable-off)

Communication
- Strong networking, flexible to support RS485, Ethernet, WIFI, GPRS & other communication modes.

Single Phase Solar Inverter Models:
- From 1.5kW - 6kW, For Households 220V Supply

Three Phase Solar Inverter Models:
- From 6kW - 30kW, Industrial Type 400V Supply

SOLAR PUMP PV INVERTERS

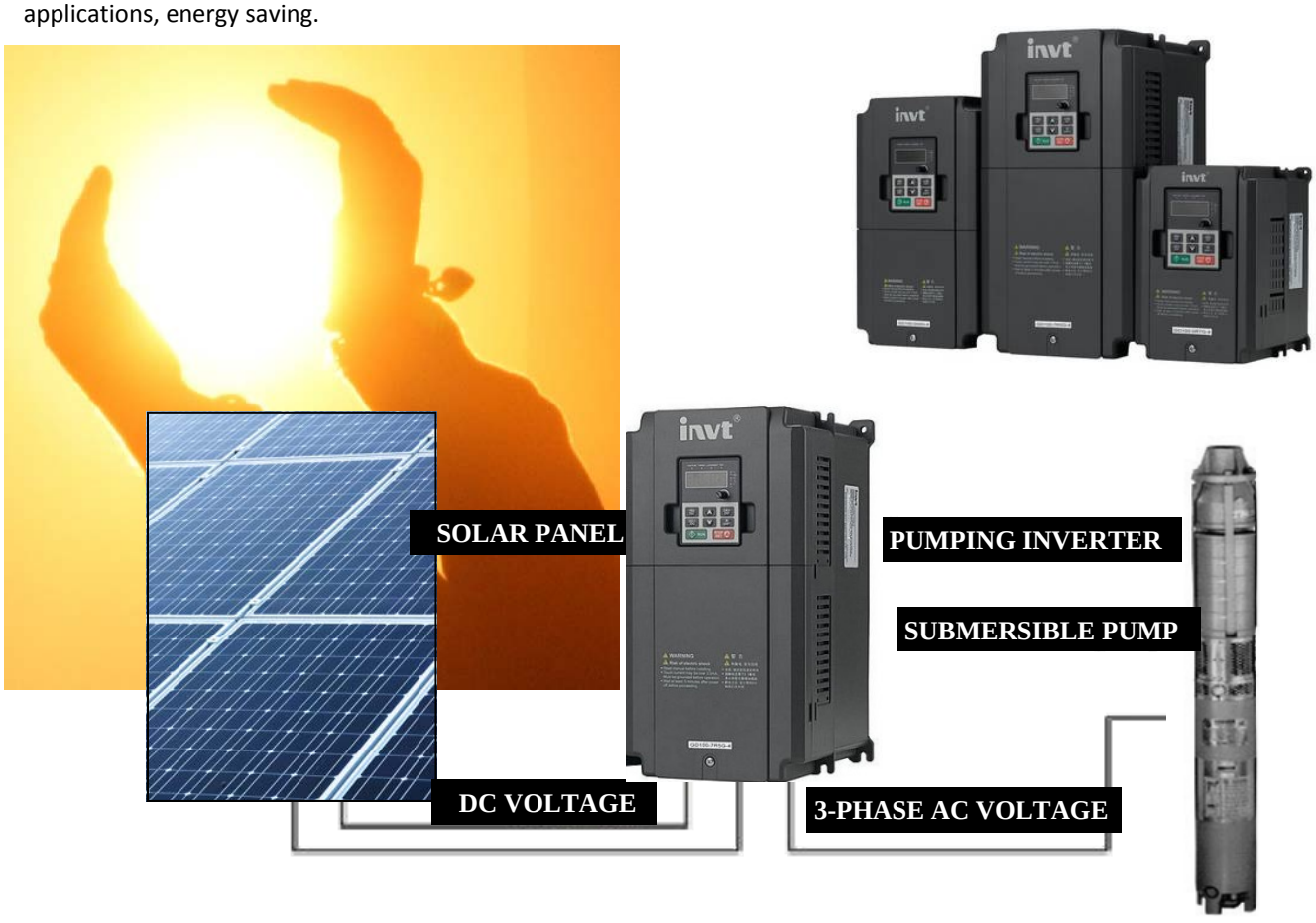
The INVT GD100-01 Inverter is well positioned in an environmentally friendly and economical PV market. The product has been specifically designed for Solar Panel driven pumping systems with no need for expensive battery backup. The direct current (DC) generated by Solar Panels is a direct input into the Inverter which is then converted into three phase alternating voltage (AC) to drive various pumps directly. The Inverter will adjust output frequency in real time in accordance with sunlight intensity changes.

Features

- Maximising power generation efficiency of solar modules with the use of advanced MPPT control technology
- Adjusts water flow of pumps intelligently & quickly on the basis of sunlight intensity
- Automatic hibernation and wake up control
- Hibernate at high water level and wake up at low water level
- Hibernate at sunset and wake up at sunrise or strong sunlight
- Under load and fault protection of water level sensor to avoid pump running dry
- TI DSP Technology and Infineon PIM design with functions of over current, over voltage and over temperature protection with built in C3 filter, achieving a reliable, automatic and unattended running pump solution.

Application

Boreholes, irrigation, municipal water, agriculture, forestry, remote areas, residential and commercial applications, energy saving.



SOLAR PANELS

Features

- Modules are certified to withstand high wind loads (2400 Pascal)
- Elegant cell and module appearance
- Excellent performance in low-light irradiance environment
- High salt mist and ammonia resistance
- High Efficiency crystalline silicon cells
- High transmission low iron tempered glass, strong mechanical resistance
- Standard waterproof junction box, with bypass diode

	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	250Wp	184Wp	300Wp	221Wp
Maximum Power Voltage (Vmp)	30.6V	28.3V	38.0V	35.0V
Maximum Power Current (Imp)	8.17A	6.51A	7.90A	6.32A
Open-circuit Voltage (Voc)	37.6V	34.7V	46.4V	42.7V
Short-circuit Current (Isc)	8.70A	7.02A	8.67A	6.69A
Operating Temperature (°C)	-40°C ~ +85°C		-40°C ~ +85°C	
Maximum system voltage	1000VDC (IEC)		1000VDC (IEC)	
Maximum series fuse rating	15A		15A	
Power tolerance	±3% / -0 ~ +3%		±3% / -0 ~ +3%	
Temperature coefficients of Pmax	-0.41%/°C		-0.41%/°C	
Temperature coefficients of Voc	-0.30%/°C		-0.30%/°C	
Temperature coefficients of Isc	0.05%/°C		0.05%/°C	
Nominal operating cell temperature (NOCT)	45±2°C		45±2°C	

UPS Power System

	HR11 Series Rack online UPS					HT11 Series Tower Online		
Description	□Online Double-conversion UPS with full DSP control technology □19 inch standard rack design, self-adjusting output frequency, smart battery management system and network management □Perfect choice for computers, IT equipment etc. □ Automatic fan speed adjustment □Display: LED+LCD					□Full protection of overvoltage, circuit short and over temperature □Network/fax/modem surge protection □ Auto fan speed adjust □ Lighting and surge protection □Display: LED+LCD □Output Voltage: 220V/ 230V/ 240V □ Single phase in. Single phase out.		
Capacity	**1KVA**	**2KVA**	**3KVA**	**6KVA**	**10KVA**	**1KVA**	**2KVA**	**3KVA**
Input Voltage Range	110 VAC ~ 288VAC					110 VAC ~ 288VAC		
	100% load @ > 176VAC; 80% load@>154VAC					100% load @ > 176VAC; 80% load@>154VAC		
	70% load @ > 132VAC; 50% load@>110VAC					70% load @ > 132VAC; 50% load@>110VAC		
Input PF	≥0.97			≥0.99		≥0.97		
Input Frequency Range	40-70Hz					40-70Hz		
Output PF	0.9					0.9		
Voltage Regulation	±1%					±1%		
Battery Volts	36VDC	72VDC	96VDC	192VDC		36VDC	72VDC	96VDC
Efficiency	87%	91%	90%	92%		87%	91%	90%
Overload Capability	*Inverter mode:* 105% ~ 130%: to bypass 1 min 150%: to bypass after 30 sec. *Battery mode:* 105% ~ 130%: Shutdown after 10 sec >150%: Shutdown after 5 sec			*Inverter mode:* 110%: to bypass after 10 min 130%: to bypass after 1min 150%: to bypass after 30 sec, Shutdown after 1 min *Battery mode:*110%:Shutdown after 10 mins, 125%: Shutdown after 10 sec >125%: Shutdown after 1 sec		*Inverter mode:* 105%~130%: to bypass after 1 min; 150%: to bypass after 30 sec *Battery mode*: 105%~130%: Shutdown after 10 sec; 150%: Shutdown after 5 Sec.		
Interface	RS232, SNMP					RS232, EPO		
W*D*H (mm)	440*430*86 440*430*86	440*480*173 440*480*86	440*480*173 440*480*86	438*680*218 438*680*130	438*680*218 438*680*130	145*354*228	190*374*336	190*428*336
Net Weight (kg)	13.5 / 8	28 / 9.5	33 / 10.5	62 / 18.5	70.5 / 21.5	12 / 6	21 / 10.5	25.6 / 11.5

RM600/30X SERIES MODULAR ONLINE UPS

- ◊ High power density of 600KVA in one single cabinet.
- ◊ Full DSP control of high stability, reliability and safety.
- ◊ Green and energy saving: AC/AC efficiency>95%,input power factor>0.99 while input THDi<3%
- ◊ Smart Sleeping mode for energy saving and prolong the life time of the system.
- ◊ Monitor runtime of critical components, such as fans and capacitors, settable alarm for service period.
- ◊ Independent LCD display for each power module with self-starting function.
- ◊ Friendly human machine interface with colourful touch screen of 10.4 inches.
- ◊ 3 Phases + Neutral + Ground
- ◊ IP Class: IP20

Capacity	25 - 600KVA	15 - 400KVA
Power Module Type	PM30X/PM25X	PML20X/PML15X
Input Voltage	380V/400V/415V (line to line)	200V/208V/220V (line to line)
Voltage Range	304~478Vac (line to line), full load 228V~304Vac (line to line), load decrease linearly according to the min phase voltage	166~261Vac (line to line), full load 125V~166Vac (line to line), load decrease linearly according to the min phase voltage
Input Frequency	50/60Hz	
Input Power Factor	≥0.99	
THDi	THDi<3% @ 100% Linear load	
Frequency	40Hz~70Hz	
Voltage Regulation	1.5%	
Output Voltage	380V/ 400V/ 415V	200V/ 208V/ 220V
Output Power Factor	0.9	0.8
THDu	THD<1% (Linear load), THD<6% (None linear load)	
Battery Voltage	±240VDC	±120VDC
Crest Ratio	3:1	
System Efficiency	Normal mode: 95%; ECO mode: 99%; Battery mode: 95%	Normal mode: 93%; ECO mode: 98%; Battery mode: 93%
Overload Capability	110% for 1 hour; 125% for 10 min; 150% for 1 min; >150% for 200 mins	
Interface	RS232,RS485, Dry contacts, USB	
Operation/ Storage Temperature	0~40°C / -40~70°C	
Relative Humidity	0~95% (non-condensing)	
Noise	72dB @ 100% Load, 68dB @ 45% load (1 meter way)	
W*D*H (mm)	Cabinet: 2000*1050*2000 Power module: 460*790*134	
Net Weight (kg)	Cabinet: 660kg Power module: 34 / 32	

BATTERIES

Battery model	Voltage (V)	Capacity (Ah)	Dimension(±1mm) Length mm	Width mm	Height mm	Total height mm	Weight ±5% kg
MF4-12	12	4	195	47	71	76	1.52
MF7-12	12	7	151	65	94	100	2.12
MF9-12	12	9	151	65	96	100	2.5
MF12-12	12	12	151	98	95	101	3.4
MF17-12	12	17	181	77	167	171	5.2
MF24-12	12	24	166	175	125	129	7.6
MF38-12	12	38	197	165	170	170	12.4
MF65-12	12	65	350	167	179	179	19.6
MF100-12	12	100	328	171	214	220	30.5
MF120-12	12	120	410	176	227	227	33.5
MF150-12	12	150	482	170	242	242	44.5
MF200-12	12	200	522	238	218	222	60
MF250-12	12	250	520	269	220	224	69.5
MF4-6	6	4	70	47	101	107	0.65
MF7-6	6	7	151	34	94	100	1.08
MF9-6	6	9	98	56	117	117	1.35
MF12-6	6	12	151	50	94	100	1.7
MF100-6	6	100	195	170	207	213	16.5
MF150-6	6	150	260	180	247	251	23.5
MF200-6	6	200	250	125	362	366	31
MF300-6	6	300	295	178	345	350	47
MF100-2	2	100	171	72	206	211	6.3
MF150-2	2	150	172	102	205	227	8.1
MF200-2	2	200	173	111	330	364	13.5
MF250-2	2	250	173	111	330	364	15.5
MF300-2	2	300	171	151	330	364	18.5
MF350-2	2	350	171	151	330	364	21
MF400-2	2	400	210	176	330	367	25.5
MF450-2	2	450	210	176	330	367	28
MF500-2	2	500	241	175	330	365	32
MF600-2	2	600	302	175	330	367	37
MF800-2	2	800	410	175	330	367	52
MF1000-2	2	1000	475	175	330	367	61
MF1200-2	2	1200	475	175	330	367	71
MF1500-2	2	1500	400	350	345	382	92
MF2000-2	2	2000	490	350	345	382	119
MF2500-2	2	2500	490	350	345	382	140
MF3000-2	2	3000	710	350	345	382	184

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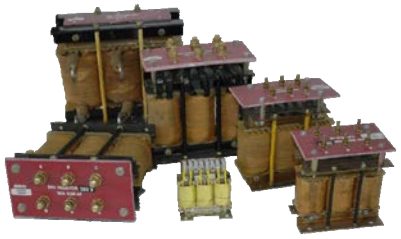
TÜV SÜD CE

CHOKES / RESISTORS / BRAKING UNITS / FILTERS

Chokes:
Reduce supply harmonic distortion and protect against harmful supply disturbances. Chokes are used to protect power input circuits against voltage spikes and surges.
Complete range available ex-stock for all VSD's



Resistors:
Resistors must be used in conjunction with built-in or external braking units to dissipate re-generative power, created by quick deceleration or stopping of high inertia loads.
Large range available ex stock.
From aluminium housing to forced cooled units

Braking Units:
High braking capability. Wide voltage range.
Comprehensive protection function.
Applications: Elevators, Cranes,
High inertia loads or short deceleration times.

EMI Power Filters:
Input and Output Filters
3A - 1200A
220V, 380V, 400V, 690V, 1140V

MOTOR STARTER PANELS

We provide electrical panel building services to meet client's specific needs.

We are able to assist in designing the correct panel to suit your application.

Applications:

- ◊ Pumps
- ◊ Fans
- ◊ Conveyors
- ◊ Mixers
- ◊ Plastic Extruders
- ◊ Mills
- ◊ Press
- ◊ Wire-drawing
- ◊ Machine Tools
- ◊ Crushers
- ◊ Winders
- ◊ Elevators
- ◊ DC Motor replacements
- ◊ Cranes - hoisting, cross travel, long travel

MISCELLANEOUS ELECTRICAL FORMULAS (1)

Ohms Law:

Ohms = Volts / Amperes
Amperes = Volts / Ohms
Volts = Amperes x Ohms

Power - AC Circuits:

$$\text{Efficiency} = \frac{746 \times \text{Output Horsepower}}{\text{Input Watts}}$$

$$\text{Three Phase Kilowatts} = \frac{\text{Volts} \times \text{Amperes} \times \text{Power Factor} \times 1.732}{1000}$$

Three Phase Volt Amperes = Volts x Amperes x 1.732

$$\text{Three Phase Amperes} = \frac{746 \times \text{Horsepower}}{1.732 \times \text{Volts} \times \text{Efficiency} \times \text{Power Factor}}$$

$$\text{Three Phase Efficiency} = \frac{746 \times \text{Horsepower}}{\text{Volts} \times \text{Amperes} \times \text{Power Factor} \times 1.732}$$

$$\text{Three Phase Power Factor} = \frac{\text{Input Watts}}{\text{Volts} \times \text{Amperes} \times 1.732}$$

$$\text{Single Phase Kilowatts} = \frac{\text{Volts} \times \text{Amperes} \times \text{Power Factor}}{1000}$$

$$\text{Single Phase Amperes} = \frac{746 \times \text{Horsepower}}{\text{Volts} \times \text{Efficiency} \times \text{Power Factor}}$$

$$\text{Single Phase Efficiency} = \frac{746 \times \text{Horsepower}}{\text{Volts} \times \text{Amperes} \times \text{Power Factor}}$$

$$\text{Single Phase Power Factor} = \frac{\text{Input Watts}}{\text{Volts} \times \text{Amperes}}$$

$$\text{Horsepower (3 Phase)} = \frac{\text{Volts} \times \text{Amperes} \times 1.732 \times \text{Efficiency} \times \text{Power Factor}}{746}$$

$$\text{Horsepower (1 Phase)} = \frac{\text{Volts} \times \text{Ampere} \times \text{Efficiency} \times \text{Power Factor}}{746}$$

Power - DC Circuits:

Watts = Volts x Amperes

$$\text{Amperes} = \frac{\text{Watts}}{\text{Volts}}$$

$$\text{Horsepower} = \frac{\text{Volts} \times \text{Amperes} \times \text{Efficiency}}{746}$$

MISCELLANEOUS ELECTRICAL FORMULAS (2)

Motor Application Formulas:

$$\text{Torque (lb-ft.)} = \frac{\text{Horsepower} \times 5250}{\text{RPM}}$$

$$\text{Horsepower} = \frac{\text{Torque (lb-ft)} \times \text{RPM}}{5250}$$

Time for motor to reach operating speed (seconds)

$$\text{Seconds} = \frac{WK^2 \times \text{speed change}}{308 \times \text{Ave. Accelerating Torque}}$$

WK^2 = Inertia of Rotor + Inertia of Load $(LB\text{-}FT)^2$

$$\text{Average Accelerating Torque} = \frac{\frac{(FLT+BDT)}{2} + BDT + LRT}{3}$$

FLT = Full Load Torque, BDT = Breakdown Torque, LRT = Locked Rotor Torque

$$\text{Load } WK^2 \text{ (at motor shaft)} = \frac{WK^2 \text{ (Load)} \times \text{Load RPM}^2}{\text{Motor RPM}^2}$$

$$\text{Shaft Stress (pds. per sq. inch)} = \frac{HP \times 321{,}000}{RPM \times \text{Shaft Diam.}^3}$$

For Pumps:

$$\text{Horsepower} = \frac{GPM \times \text{Head in Feet} \times \text{Specific Gravity}}{3960 \times \text{Efficiency of pump}}$$

For Fans and Blowers:

$$\text{Horsepower} = \frac{CFM \times \text{Pressure (pounds/sq. ft.)}}{33000 \times \text{Efficiency}}$$

Speed:

$$\text{Synchronous RPM} = \frac{\text{Hertz} \times 120}{\text{Poles}}$$

$$\text{Percent Slip} = \frac{\text{Synchronous RPM - Full Load RPM}}{\text{Synchronous RPM}} \times 100$$

MISCELLANEOUS ELECTRICAL FORMULAE (3)

Active kW = kVA x PF or $\frac{\text{line amps x line volts x 1,732 x PF}}{1000}$

Rated kW = kVA x PF x eff or $\frac{\text{line amps x line volts x 1,732 x PF x eff}}{1000}$ or HP x 0,74

Rated Hp = $\frac{\text{active kW x eff}}{0,746}$ or $\frac{\text{line amps x line volts x 1,732 x PF x eff}}{746}$

Apparent kVA = $\frac{\text{rated kW}}{\text{eff x PF}}$ or $\frac{\text{HP x 0,746}}{\text{eff x PF}}$ or $\frac{\text{line amps x line volts x 1,732}}{1000}$

Line amps = $\frac{\text{rated kW x 1000}}{\text{Line volts x 1,732 x PF x eff}}$ or $\frac{\text{rated HP x 746}}{\text{line volts x 1,732 x PF x eff}}$

Rated torque (Nm) = $\frac{\text{9,55 x rated kW x 1000}}{\text{rated speed of motor (r/min)}}$

Rated kW = $\frac{\text{rated torque (Nm) x rated speed of motor (r/min)}}{\text{9,55 x 1000}}$

Rated slip % = $\frac{\text{synchronous speed minus rated speed}}{\text{synchronous speed}}$ x 100

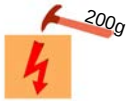
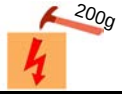
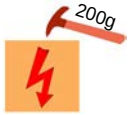
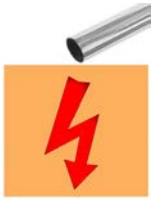
Starting time (s) = $\frac{\text{total inertia kg m}^2\text{ (WR}^2\text{) x working speed (r/min)}}{\text{9,55 x mean acceleration torque (Nm)}}$

Synchronous speed (r/min) = $\frac{\text{frequency (Hz) x 60}}{\text{number of pairs of poles}}$

PF: Power Factor
Eff: Efficiency
Rated kW: Mechanical power delivered by motor shaft
Rated kW: Input power

DEFINITION OF DEGREES OF PROTECTION

- Degrees of protection provided by the enclosures housing low and medium voltage equipment (up to 1000V ~ and 1500V⎓) are defined by the French standards NF EN 60529 (IP) and NF EN 50102 (IK)
- The degree of protection is indicated by the IP code, which comprises the letters IP followed by the two characteristic numerals. IP = code indicating degree of protection provided by the enclosure against access to dangerous parts,
- penetration of solid foreign bodies and penetration of liquids.
- The degree of protection against external mechanical impact is indicated by the IK code, which comprises the letters IK followed by two characteristic numerals. IK= code indicating degree of protection provided by the enclosure against external mechanical impact.

IP		IK
First characteristic numeral Protection against solid bodies	**Second characteristic numeral** Protection against liquids	Mechanical Protection
0 No protection	**0** No protection	**0** No protection
1 Protected against solid bodies larger than 50mm (eg. Accidental contact with hand) 	**1** Protected against vertically falling water droplets (condensation) 	**1** ˇ 7.5cm Impact energy 0.150 joule 
	2 Protected against water droplets deflected at up to 15° from verti- 	**2** ˇ 10cm Impact energy 0.200 joule 
2 Protected against solid bodies larger than 12mm (eg. Finger contact) 	**3** Protected against water spray at up to 60° from vertical 	**3** ˇ 17.5cm Impact energy 0.350 joules 
3 Protected against solid bodies larger than 2.5mm (eg. Tools, wires) 	**4** Protected against water spray from all directions 	**4** ˇ 25cm Impact energy 0.500 joules 
	5 Protected against Low pressure water jets from all directions 	**5** ˇ 35cm Impact energy 0.700 joules 
4 Protected against solid bodies larger than 1mm (eg. Fine tools, small wires) 		**6** ˇ 20cm Impact energy 1.00 joules 
5 Protected against Dust (no harmful deposits) 	**6** Protected against String water jets and waves 	**7** ˇ 40cm Impact energy 2.00 joules 
	7 Protected against Effects of temporary 	**8** ˇ 29.5cm Impact energy 5.00 joules 
6 Totally dust tight 		**9** ˇ 20cm Impact energy 10.00 joules 
	8 Protected against Effects of prolonged Immersion 	**10** ˇ 40cm Impact energy 20.00 joules 

USEFUL FACTS & FORMULAE

Earth Wire Table

Earth Wire	Kg per 1000m	Earth Wire	Kg per 1000m
1,5mm²	13,9	35,0mm²	323,1
2,5mm²	23,2	50,0mm²	461,6
4,0mm²	36,8	70,0mm²	646,2
6,0mm²	44,2	95,0mm²	877,8
10,0mm²	92,0	120,0mm²	1109,0
16,0mm²	147,2	150,0mm²	1386,0
25,0mm²	230,8	185,0mm²	1710,0

Useful Facts

- 1 HP = 746 Watts
- 1 kW = 1.341 HP
- 1 metre = 39,37”
- 1” = 25,4mm
- 1kg = 2,2lb
- 1lb = 0,4545kg

Useful 3-Phase Formulae

1) Voltage Drop = 1.73 x IR
Where I = Line Current per phase
R = Resistance of one core only
NB: For large 3-core cables carrying high alternating currents, the increased AC resistance due to skin effect must be allowed for.

2) kW = kVA x Power Factor

$$kW = \frac{\text{line amps x line volts x 1.73 x power factor}}{1000}$$

$$kW = \frac{HP \times 746}{1000 \times \text{efficiency}}$$

3) $$kVA = \frac{kW}{\text{Power factor}}$$

$$kVA = \frac{\text{line amps x line volts x 1.73}}{1000}$$

$$kVA = \frac{HP \times 746}{1000 \times \text{efficiency} \times \text{power factor}}$$

4) $$\text{line amps} = \frac{kW \times 1000}{\text{line volts} \times 1.73 \times \text{power factor}}$$

$$\text{line amps} = \frac{kVA \times 1000}{\text{line volts} \times 1.73}$$

$$\text{line amps} = \frac{kW \times 1000}{\text{line volts} \times 1.73 \times \text{power factor} \times \text{efficiency}}$$

VOLT DROP MEASUREMENT TABLE (1)

Cable - 2 Core								
Size	Air		Duct		Ground		Wire in Conduit	
Metric mm	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M
1mm	13	40	16	40	19	40	13	40
1.5mm	17	27	20	27	25	27	17	27
2.5mm	23	16	28	16	34	16	23	16
4mm	31	10	38	10	45	10	31	10
6mm	40	6.9	48	6.9	58	6.9	40	6.9
10mm	55	4.3	66	4.3	78	4.3	55	4.3
16mm	72	2.6	88	2.6	105	2.6	72	2.6
25mm	96	1.7	115	1.7	140	1.7	96	1.7
35mm	120	1.3	140	1.3	170	1.2	120	1.3
50mm	150	0.88	175	0.88	210	0.83	150	0.93
70mm	180	0.65	220	0.65	235	0.59	180	0.71
95mm	220	0.48	265	0.48	285	0.44	220	0.56
120mm	255	0.40	305	0.40	330	0.35	255	0.48
150mm	290	0.33	350	0.33	380	0.28	290	0.42
185mm	335	0.29	400	0.29	430	0.24	335	0.39
240mm	390	0.25	465	0.25	465	0.19	390	0.35
300mm	450	0.23	540	0.23	540	0.16	450	0.33

VOLT DROP MEASUREMENT TABLE (2)

Cable - 3/4 Core								
Size	Air		Duct		Ground		Wire in Conduit	
Metric mm	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M	Amp	Volt Drop MV/A/M
1mm	11	35	13	35	17	35	12	35
1.5mm	14	23	17	23	22	23	16	23
2.5mm	19	14	23	14	31	14	21	14
4mm	26	9	31	9	41	9	28	9
6mm	33	6	40	6	52	6	36	6
10mm	46	3.5	55	3.5	66	3.5	50	3.5
16mm	61	2.2	72	2.2	88	2.2	66	2.2
25mm	81	1.4	96	1.4	115	1.4	87	1.4
35mm	99	1	120	1	140	1	110	1.1
50mm	125	0.15	150	0.15	160	0.70	135	0.78
70mm	155	0.52	180	0.52	200	0.47	165	0.59
95mm	185	0.40	220	0.40	240	0.34	200	0.47
120mm	215	0.34	255	0.34	280	0.28	230	0.40
150mm	250	0.28	290	0.28	320	0.23	265	0.34
185mm	280	0.25	335	0.25	365	0.19	300	0.30
240mm	330	0.22	390	0.22	425	0.16	355	0.27
300mm	380	0.19	450	0.19	450	0.13	410	0.25

Example: Formula required to calculate volt drop in a cable

Cable Size: 25mm x 4 core in ground
Length of Cable: 80 meters
Full Load of Cable: 100 Amps

$$\frac{\text{(Milli Volt/amps/meter) x (actual amps used) x length in meters}}{1000}$$

$$\text{Calculation} = \frac{1.4 \times 100 \times 80}{1000}$$

= 11.2 Volt Drop

TABLES & FORMULAS

Contactor Utilisation Categories (IEC 947.4)			
Category AC1	Applies to all types of AC load with a power factor of less than 0.95 (Cos p ≥ 0.95) i.e. non-inductive or slightly inductive loads. Applications examples: heating, distribution.	Category AC2	This category applies to the starting, plugging, inching and switching off of slip-ring motors. On closing, the contactor makes the starting current, which is approx. 2.5 times the rated current of the motor. On opening, the contactor breaks the starting current at a voltage tat is less than or equal to that of the mains supply voltage.
Category AC3	Applies to squirrel cage motors with switching off during normal running. On closing, the contactor makes the starting current which is between 5 and 7 times the rated current of the motor. On opening, the contactor breaks the rated motor current: at this point the voltage at the contactor pole terminals is approx. 20% of the mains supply voltage. Breaking is light. Application examples: all standard squirrel cage motors, lifts, escalators, conveyors, bucket elevators, compressors, pumps, mixers, air conditioning units, etc.	Category AC4	This category applies to with plugging and inching (jogging) of squirrel cage motors. On closing, the contactor makes a current which may be as high as 5 or 7 times the rated motor current. On opening, the contactor breaks the same current at a voltage which is higher the lower motor speed. This voltage can be the same as the mains voltage. Breaking is severe. Examples: printing machines, wire drawing machines, cranes and hoists, metallurgy.

Electrical Formula			
Desired Data	AC Single Phase	AC Three Phase	Direct Current
Kilowatt Output:	$\frac{V \times I \times \%Eff \times P.F}{1000}$	$\frac{V \times I \times 1.73 \times \%Eff \times P.F}{1000}$	$\frac{1 \times V \times \%Eff}{1000}$
kVA:	$\frac{V \times I}{1000}$	$\frac{V \times I \times 1.73}{1000}$	
Horsepower Output:	$\frac{V \times I \times \%Eff \times P.F}{746}$	$\frac{V \times I \times 1.73 \times \%Eff \times P.F}{746}$	$\frac{C \times I \times \%Eff}{746}$
Amperes when horsepower is known:	$\frac{HP \times 746}{V \times \%Eff \times P.F}$	$\frac{HP \times 746}{1.73 \times V \times \%Eff \times P.F}$	$\frac{HP \times 746}{V \times \%Eff}$
Amperes when kilowatts is known:	$\frac{kW \times 1000}{V \times \%Eff \times P.F}$	$\frac{kW \times 1000}{1.72 \times V \times \%Eff \times P.F}$	$\frac{kW \times 1000}{V \times \%Eff}$
Amperes when kVA is known:	$\frac{kVA \times 1000}{V}$	$\frac{kVA \times 1000}{1.73 \times V}$	
V = Volts	I = Amperes	%Eff = Percent Efficiency	P.F = Power Factor

METRIC CONVERSION TABLE

Length and Distance	Surface Area
Inches x 25,4 = millimetres	Square inches x 6.5 = square centimetres
Feet x 30,48 = centimetres	Square feet x 0.09 = square metres
Yards x 0.9 meters	Square yards x 0.83 = square metres
Miles x 1.6 = kilometres	Square miles x 2.6 = square kilometres

Volume and Capacity	Weight and Mass
Ounces (fluid) x 30 = millilitres	Ounces x 28 = grams
Pints x 0.47 = litres	Pounds x 0.45 = kilograms
Quarts x 0.95 = litres	Tons x 0.9 = metric tons
Gallons x 3.8 = litres	

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SABS

Permit to Apply Certification Mark

Subject to the provisions of the Standards Act, 2008 (Act 8 of 2008), the relevant regulations made thereunder and the permit conditions contained in the under mentioned schedules, this permit authorizes

JIANGSU QINGJIANG MOTOR MANUFACTURING CO LTD/INDUSQUIP MARKETING CC HUAIAN CITY, JIANGSU PROVINCE, PR OF CHINA

to apply the certification mark

SABS APPROVED

in respect of the mark specification:

SANS 1804-1:2007 & SANS 1804-2:2007
TO: INDUCTION MOTORS
PART 1: IEC REQUIREMENTS
PART 2: LOW-VOLTAGE THREE-PHASE STANDARD MOTORS

This permit, including schedules 1 to 3 which form an integral part thereof;
- is issued without alteration;
- is identified by the applicable permit number;
- is subject to any condition or limitation contained therein;
- is valid subject to ongoing compliance with permit conditions;
- bears the embossed SABS Commercial seal. In the absence of the seal, the permit and the schedules shall be invalid; and
- the permit may be authenticated by referring to the register of "Certified Clients" on the SABS Commercial website (www.sabs.co.za)

Permit Number	**7266/10783**
Effective Date	**02 April 2014**
Expiry Date	**12 March 2017**
Date of Original Registration	**22 April 2003**
Chief Executive Officer	B Mehlomakulu

SABS COMMERCIAL

SABS COMMERCIAL SOC Ltd.
1 Dr Lategan Rd, Groenkloof, Pretoria, Republic of South Africa

LOGISTA

Broad-Based Black Economic Empowerment Exempt Micro-Enterprise Verification Certificate WEM ELECTRIC MOTORS & DRIVES (PTY) LTD

Certificate No: B-BBEE63: EME L4/WEM005M
09/04/2014

Registration no:	2004/024109/07
VAT no:	4960/217/89/3
Address:	PO Box 17350 Sunward Park 1470

VERIFICATION STANDARD APPLIED: B-BBEE CODES OF GOOD PRACTICE AND RELEVANT SECTOR CODES

We confirm that we are the Auditors of the above mentioned Company appointed from 04 September 2006.

We have compiled the financial statements of WEM Electric Motors & Drives (Pty) Ltd for the period ended 28 February 2013. According to these financial statements the turnover is reflected as R10,000, which is less than R 5,000,000 and the company has 0% black ownership. Based on this information the B-BBEE status Level of the entity is Level 4.

Although the level of turnover for the year ended 28 February 2013 is closely related to the economic indicators, it may be more or less in future. Consequently, this Certificate does not serve as a guarantee that the income reflected will continue at the same levels.

Issue of the rating standard applied:	Section 9 of the B-BBEE Act 53 of 2003
Scorecard applied:	Exempt Micro Enterprise Scorecard
Size of the enterprise:	Exempt Micro Enterprise (<R5 million annual turnover)
Broad Based BEE Status Level:	***Level 4***
BEE procurement recognition level:	***100%***
Black Ownership:	0%
Black Women Ownership:	0%
Value Adding Supplier (Yes/No):	No

LJ van Heerden (IRBA Regnr: 503119)
Director
Chartered Accountant (S.A)
B-BBEE Approved Registered Auditor
09 April 2014
Pretoria

Date of issue: 09/04/2014
Expiry date: 08/04/2015
Period of validity: 12 Months

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Western Cape Agent

2015/04

"We Get Things Moving"

E&OE