Elektrim TECHTOP

Product Catalogue

EMM

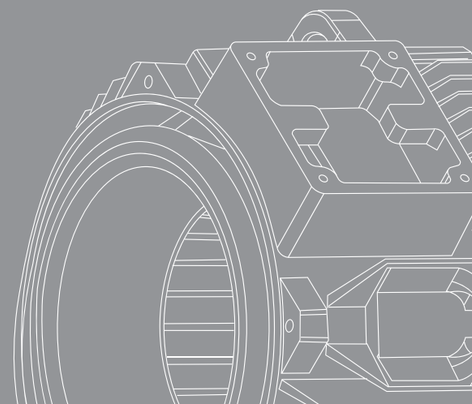
Elektrim TECHTOP

INTRODUCTION

Elektrim Techtop, a collaboration between two specialized veterans in the electric motor industry, serves to provide you only the highest quality electric motors, now on a global scale. Our partnership will enforce our vision for the industry and for our customers, ***Driving Our Globalized Brand with Localized Service***. Customer assurance and satisfaction serves as our top priority for you. To ensure this, we deliver the best after-sales policy in the industry, as well as having a professional technical personnel and experienced sales team.With our recent game-changing partnership, you are able to receive personalized service or get our products easily exchanged in all the 20-over countries we operate in. This gives you easy accessibility to all our services almost anywhere on the globe.

Previously known as Elektrim Motors & Machinery Pte Ltd, our company was founded in 1981 and has grown to be a leading powerhouse in the motor industry over the last 30 years. We have grown to have a strong regional network in over 10 Asian countries. Our main office which is located in Singapore, sits on an area of 90,000 square feet. It carries an inventory level of more than S$3 million worth of stocks to meet our customers' demands. With the inception of our Malaysia and Vietnam branch offices, coupled with our partnerships with loyal agents and distributors all across Asia, our customers' needs are always well attended to.

Our brand is the No. 1 specialized brand in providing electric motors to the Palm Oil and Quarry Mining industries. Our brand is well recognized and trusted in the industries of Rubber, Industrial Fan, Marine & Offshore Engineering, Agricultural, Buildings, Cement and especially among the OEM production. Our motto is to be ***The Driving Force behind Every Machine***. To achieve this, all our motors are enhanced in our factory and regulated to stringent Quality Checks before delivery to ensure that our customer satisfaction and needs are always met. We believe in crafting each individual Elektrim Motor with precision and care to ensure the highest quality motors for our customers.



USA

Techtop Industries Inc.
1268 Old Alpharetta Road
Alpharetta, GA 30005

CANADA

Techtop Canada Inc.
2795 Brighton Road #2
Oakville, ON, L6H 6J4

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40024 Cà Bianca BO, Italy

NETHERLANDS

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Arnheim, the Netherlands

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Pol. Ind. Can Roqueta
08202 SABADELL
Barcelona, Spain

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Droitwich WR9 0NR
United Kingdom

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63110 Rodgau, Germany

AUSTRALIA

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Rowville VIC 3178
Australia

SINGAPORE

Elektrim Techtop Motors Pte Ltd
80 Joo Koon Circle
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Email : enquiry@emm-motors.com

MALAYSIA

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Selangor Darul Ehsan, Malaysia
Tel : (603) 7847 6635 / 7847 6629 / 7847 6619
Fax: (603) 7847 1017
Email : elektrim@tm.net.my

VIETNAM

Elektrim Motors & Machinery (Vietnam) Pte Ltd
Head office: 8th Floor - Bao Minh Tower, 217 Nam Ky Khoi Nghia Street, Vo Thi Sau Ward, Dist 3, Ho Chi Minh city, Vietnam

Hanoi office: 4th Floor - Hoang Sam Building, 260-262 Ba Trieu Street, Le Dai Hanh ward, Hai Ba Trung Dist, Hanoi City, Vietnam
Tel : (84) 8 3932 0500 Fax: (84) 8 3932 0900
Email : info@elektrim.com.vn

INDONESIA

PT Interjaya Surya Megah
Jalan Rungkut Industri III/55
Surabaya, Indonesia

PT Jayatech Palmindo
Kawasan Industri Medan 2 (Kim 2)
Jalan Pulau Solor No. 18
Medan, Indonesia

PT Biotani Indonesia
Jalan Jenderal Sudirman Bukit Indah Sukajadi
Ruko Dermaga Blok RE-09
Batam, Indonesia

MYANMAR

Amos Myanmar Services Co. Ltd
No. 150/152 First Floor, 47 Street (Upper)
Botahtaung Township
Yangon, Myanmar

PHILLIPINES

P.T. Cerna Corporation
4173 Ponte Street Barangay
Sta. Cruz Makati City, Philippines

SRI LANKA

Elektrim Techtop Motors Pte Ltd
80 Joo Koon Circle
Singapore 629100

HONG KONG

Zenith International Enterprise Ltd.
Unit A2, 21/F, Fortune
Factory Building
40 Lee Chung Street
Chiwan, Hong Kong

CHINA

Shanghai Top Motor Co. Ltd
No. 303 Kangliu Road
Kangqiao Industrial Zone
Pudong, Shanghai

MIDDLE EAST

SMART Systems for Factories Operation & Maintenance Co.
Wasfi Al-Tel Street (Gardens)
Building No. 80, Office 401
Amman, Jordon

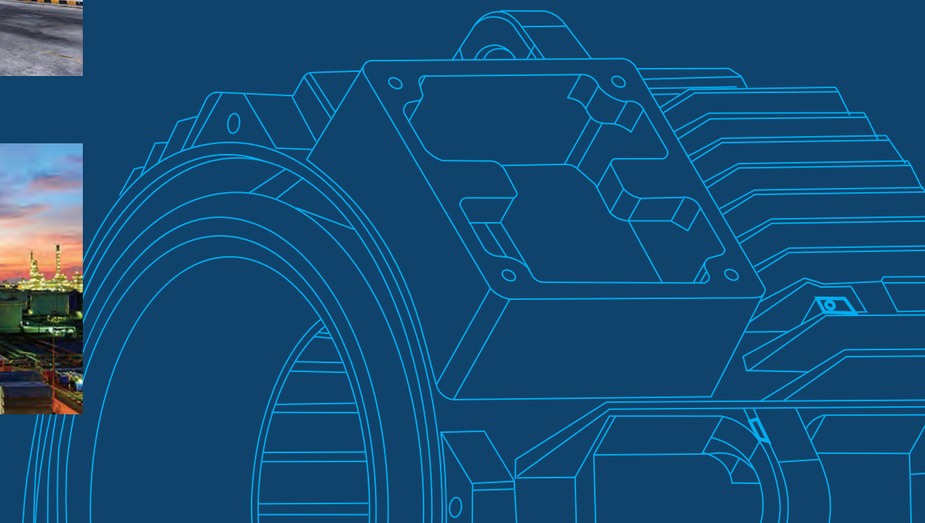
DUBAI

Global Power Engineering Co. Ltd
Showroom No. Ead 01-02-03
Dragon Mart, International City
P.O. Box 299805
Dubai, U.A.E

The Driving Force Behind Every Machine

Global Brand, Local Service

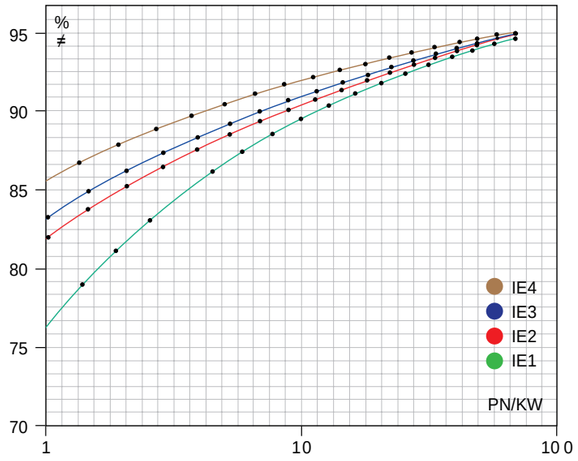
CONTENT



EU Efficiency Level Classification — General

With the aim to reduce the power requirement of electric motors and to the energy consumption in Europe, CEMEP and the European Union reached an agreement, by which 2- and 4-pole three phase AC motors are affected, i.e. standard motors, defined as totally enclosed fan cooled, squirrel cage low voltage motors with 400V, 50Hz and S1 in the rated output range of 1.1 to 90kW.

In the 1.1 to 90kW output range, the 2- and 4-pole standard three phase motors described in this documentation correspond with the EU efficiency classification EFF2. Designation takes place with the EFF2 logo on the nameplate.



2 Pole	IE1	IE2	IE3	IE4
kW	min- π%	min- π%	min- π%	min- π%
1.1	75.0	79.6	82.7	85.2
1.5	77.2	81.3	84.2	86.5
2.2	79.7	83.2	85.9	88.0
3.0	81.5	84.6	87.1	89.1
4.0	83.1	85.8	88.1	90.0
5.5	84.7	87.0	89.2	90.9
7.5	86.0	88.1	90.1	91.7
11.0	87.6	89.4	91.2	92.6
15.0	88.7	90.3	91.9	93.3
18.5	89.3	90.9	92.4	93.7
22.0	89.9	91.3	92.7	94.0
30.0	90.7	92.0	93.3	94.5
37.0	91.2	92.5	93.7	94.8
45.0	91.7	92.9	94.0	95.0
55.0	92.1	93.2	94.3	95.3
75.0	92.7	93.8	94.7	95.6
90.0	93.0	94.1	95.0	95.8

4 Pole	IE1	IE2	IE3	IE4
kW	min- π%	min- π%	min- π%	min- π%
1.1	75.0	81.4	84.1	87.2
1.5	77.2	82.8	85.3	88.2
2.2	79.7	84.3	86.7	89.5
3.0	81.5	85.5	87.7	90.4
4.0	83.1	86.6	88.6	91.1
5.5	84.7	87.7	89.6	91.9
7.5	86.0	88.7	90.4	92.6
11.0	87.6	89.8	91.4	93.3
15.0	88.7	90.6	92.1	93.9
18.5	89.3	91.2	92.6	94.2
22.0	89.9	91.6	93.0	94.5
30.0	90.7	92.3	93.6	94.9
37.0	91.2	92.7	93.9	95.2
45.0	91.7	93.1	94.2	95.4
55.0	92.1	93.5	94.6	95.7
75.0	92.7	94.0	95.0	96.0
90.0	93.0	94.2	95.2	96.1

Degrees of protection — General

Designation	First Numeral	Second Numeral
	Protection against contact and ingress of foreign bodies. Protection against hazardous "Live" parts and moving mechanical parts.	Protection against water
	5. Ingress of dust is not totally prevented, but dust shall not interfere with the satisfactory operation of equipment. A probe of 1mm diameter shall not penetrate the enclosure.	5. Water projected in jets against the enclosure form any direction will have no harmful effects.
	6. No ingress of dust	6. Water projected in power jets shall have no harmful effects.
IP55	Dust protected	Jetting water
IP56	Dust protected	Powerful Jetting
IP65	Dust tight	Jetting water
IP66	Dust tight	Powerful Jetting

Mounting arrangements — General

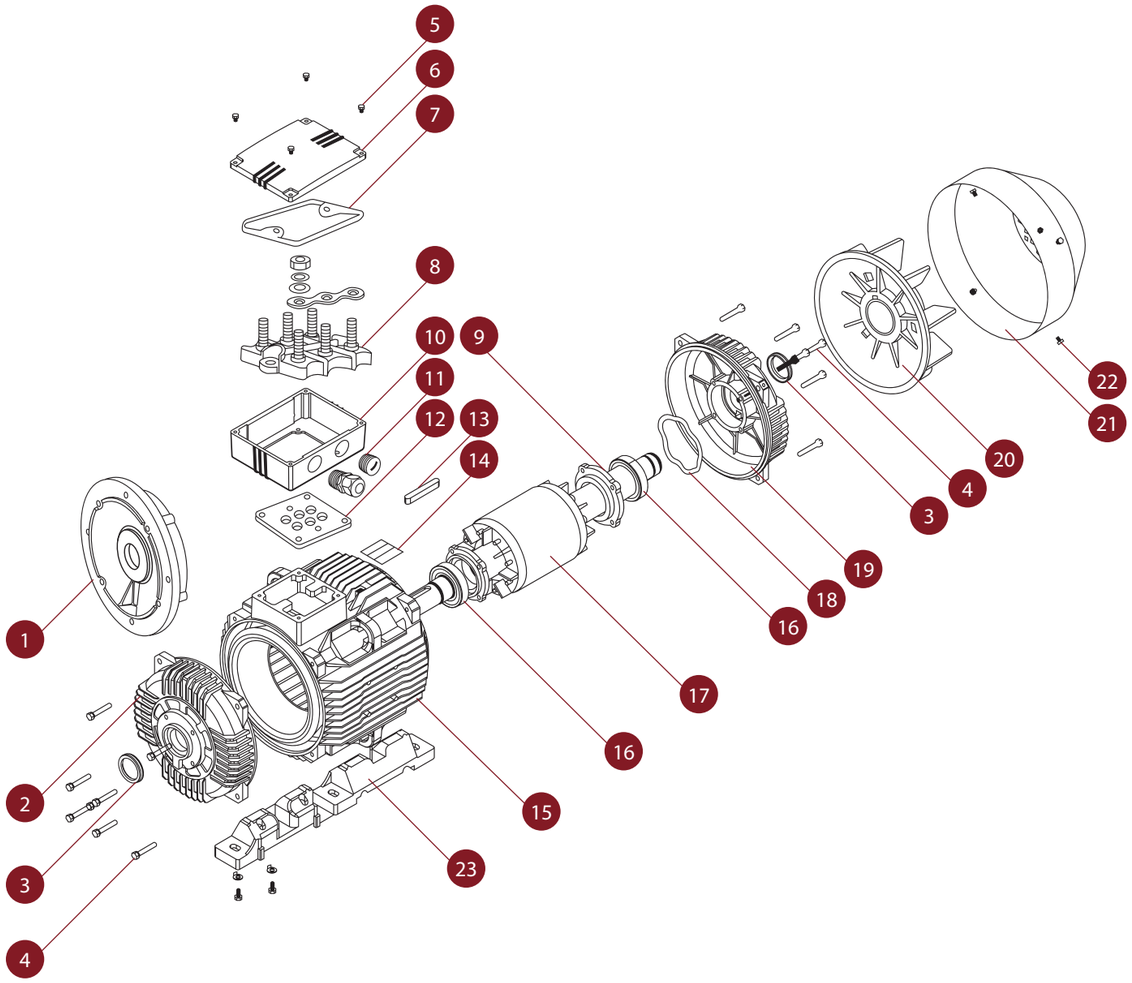
FOOT MTG HORIZ	FLANGE MTG	FOOT/FLANGE MTG	FOOT MTG VERT
B3 IM1001 H80 ~ 355	B5 IM3001 H80 ~ 280	B35 IM2001 H80 ~ 355	
B6 IM1051 H80 ~ 160	V1 IM3011 H80 ~ 355	V15 IM2011 H80 ~ 160	V5 IM1011 H80 ~ 160
B7 IM1061 H80 ~ 160	V3 IM3031 H80 ~ 160	V36 IM2031 H80 ~ 160	V6 IM1031 H80 ~ 160
B8 IM1071 H80 ~ 160			

Bearing Data — General

Frame	Drive End Bearing	Non-drive End Bearing	Quantity of Grease in Bearing Chamber (grams)	International Brand
EM 63	6201	6201	Life Bearing	
EM 71	6202	6202	Life Bearing	
EM 80	6204 ZZ C3	6204 ZZ C3	Life Bearing	
EM 90	6205 ZZ C3	6205 ZZ C3	Life Bearing	
EM 100	6206 ZZ C3	6206 ZZ C3	Life Bearing	
EM 112	6306 ZZ C3	6306 ZZ C3	Life Bearing	
EM 132	6308 ZZ C3	6308 ZZ C3	Life Bearing	
EM 160	6309 C3	6309 C3	12	SKF
EM 180	6311 C3	6311 C3	15	SKF
EM 200	6312 C3	6312 C3	20	SKF
EM 225	6313 C3	6313 C3	22	SKF
EM 250	6314 C3	6314 C3	23	SKF
EM 280 (2P)	6314 C3	6316 C3	30	SKF
EM 280 (4P - 8P)	6317 C3	6317 C3	30	SKF
EM 315 (2P)	6317 C3	6317 C3	30	SKF
EM 315 (4P - 8P)	6319 C3	6319 C3	45	SKF
EM 355 (2P)	6319 C3	6319 C3	30	SKF
EM 355 (4P - 8P)	6322 C3	6322 C3	60	SKF

Temperature — General

	Insulation Class	
	F	H
Max. permissible winding temperature (°C)	180°C	250°C
Max. ambient temperature (°C)	40°C	80°C
Min. ambient temperature (°C)	-10°C	-10°C
Max. hours of operation at max. temperature (Hrs)	Unlimited	2 Hrs
Max. permissible humidity (%)	100%	100%
Temperature rise safety margin (K)	25K	45K



1	Flange B5	7	Terminal box seal	13	Key	19	NDE shield
2	End shield B3	8	Terminal board complete with components	14	Name plate	20	Cooling fan
3	V-ring	9	Bearing cover	15	Frame	21	Fan cover
4	Screws for fixing end shield	10	Terminal box base	16	Bearings	22	Screws for fixing fan cover
5	Screws for fixing terminal box cover	11	Cable gland and plug	17	Rotor with shaft complete	23	Feet
6	Terminal box cover IP55	12	Terminal base seal	18	Spring washer		

• This catalogue is only a reference for users. The data may be changed, please contact us before ordering.
• Note type, rated output, synchronous speed, voltage and frequency, insulation class, mounting type etc. When ordering.
• For special requirement, please contact us, we may deliver following special type of motor :
1. Voltage: such as 420V 2. Frequency 60Hz 3. Double end shaft 4. Motor for tropical humid climate

Dimensional Drawing & Overall and Installation Dimension

TEFC

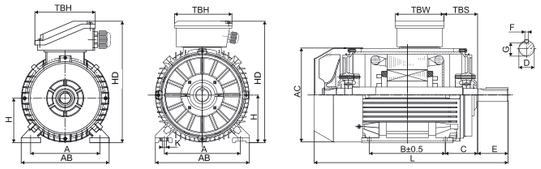


Figure 1 **IM B3**

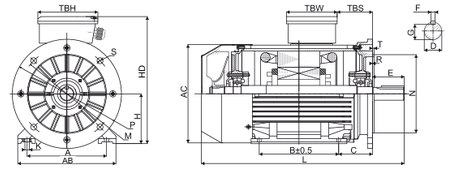


Figure 2 **IM B35**

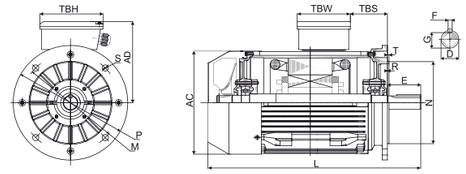


Figure 3 **IM B5**

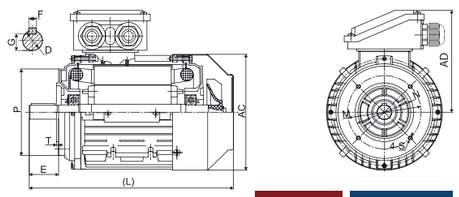


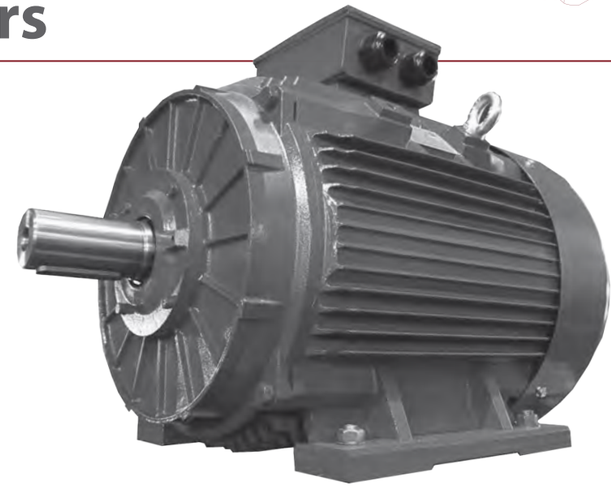
Figure 4 **IM B14**

Frame Size		B3 Foot Mounting					Shaft				General					
		H	A	B	C	K	D	E	F	G	AB	AD	HD	AC	L	KK
80		80	125	100	50	Φ9	Φ19	40	6	15.5	154	134	214	Φ158	290	1-M20X1.5
90S/L		90	140	100/125	56	Φ10	Φ24	50	8	20	178	141	231	Φ176	320/345	1-M20X1.5
100		100	160	140	63	Φ12	Φ28	60	8	24	203	151	251	Φ199	385	1-M20X1.5
112		112	190	140	70	Φ12	Φ28	60	8	24	231	180	292	Φ220	405	2-M25X1.5
132S/M		132	216	140/178	89	Φ12	Φ38	80	10	33	263	200	332	Φ259	467/505	2-M25X1.5
160M/L		160	254	210/254	108	Φ15	Φ42	110	12	37	316	244	404	Φ313	605/650	2-M32X1.5
180M/L		180	279	241/279	121	Φ15	Φ48	110	14	42.5	354	265	445	Φ360	687/725	2-M32X1.5
200L		200	318	305	133	Φ19	Φ55	110	16	49	393	300	500	Φ399	768.5	2-M40X1.5
225S	4,6,8	225	356	286	149	Φ19	Φ60	140	18	53	440	333	558	Φ459	810	2-M50X1.5
225M	2	225	356	311	149	Φ19	Φ55	110	16	49	440	333	558	Φ459	805	2-M50X1.5
	4,6,8	225	356	311	149	Φ19	Φ60	140	18	53	440	333	558	Φ459	835	
250M	2	250	406	349	168	Φ24	Φ60	140	18	53	484	366	616	Φ506	915	2-M50X1.5
	4,6,8	250	406	349	168	Φ24	Φ65	140	18	58	484	366	616	Φ506	915	
280S/M	2	280	457	368/419	190	Φ24	Φ65	140	18	58	560	395	675	Φ559	984/1035	2-M50X1.5
	4,6,8	280	457	368/419	190	Φ24	Φ75	140	20	67.5	560	395	675	Φ559	984/1035	
315S	2	315	508	406	216	Φ28	Φ65	140	18	58	628	510	825	Φ680	1205	2-M63X1.5
	4,6,8	315	508	406	216	Φ28	Φ80	170	22	71	628	510	825	Φ680	1235	
315M/L	2	315	508	457/508	216	Φ28	Φ65	140	18	58	628	510	825	Φ680	1355	2-M63X1.5
	4,6,8	315	508	457/508	216	Φ28	Φ80	170	22	71	628	510	825	Φ680	1385	
355M/L	2	355	610	560/630	254	Φ28	Φ75	140	20	67.5	740	655	1010	Φ820	1495	2-M63X1.5
	4,6,8	355	610	560/630	254	Φ28	Φ95	170	25	86	740	655	1010	Φ820	1525	
	4,6,8	355	610	560/630	254	Φ28	Φ100	210	28	90	740	655	1010	Φ820	1565	

Frame Size		B5 Flange Mounting					B14				
		N	M	P	S	T	N	M	P	S	T
80		Φ130	Φ165	Φ200	4-Φ12	3.5	Φ80	Φ100	Φ120	M6	3
90S/L		Φ130	Φ165	Φ200	4-Φ12	3.5	Φ95	Φ115	Φ140	M8	3
100		Φ180	Φ215	Φ250	4-Φ15	4	Φ110	Φ130	Φ160	M8	3.5
112		Φ180	Φ215	Φ250	4-Φ15	4	Φ110	Φ130	Φ160	M8	3.5
132S/M		Φ230	Φ265	Φ300	4-Φ15	4	Φ130	Φ165	Φ200	M10	3.5
160M/L		Φ250	Φ300	Φ350	4-Φ19	5	Φ180	215	Φ250	M12	5
180M/L		Φ250	Φ300	Φ350	4-Φ19	5					
200L		Φ300	Φ350	Φ400	4-Φ19	5					
225S	4,8	Φ350	Φ400	Φ450	8-Φ19	5					
225M	2	Φ350	Φ400	Φ450	8-Φ19	5					
	4,6,8	Φ350	Φ400	Φ450	8-Φ19	5					
250M	2	Φ450	Φ500	Φ550	8-Φ19	5					
	4,6,8	Φ450	Φ500	Φ550	8-Φ19	5					
280S/M	2	Φ450	Φ500	Φ550	8-Φ19	5					
	4,6,8	Φ450	Φ500	Φ550	8-Φ19	5					
315S/M/L	2	Φ550	Φ600	Φ660	8-Φ24	6					
	4,6,8	Φ550	Φ600	Φ660	8-Φ24	6					
355M/L	2	Φ680	Φ740	Φ800	8-Φ24	6					
	4,6,8	Φ680	Φ740	Φ800	8-Φ24	6					

Induction Motors

Three-Phase Asynchronous Motors Cast Iron / Aluminum Housing



EMM series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. It encompasses our latest design with many new features, are made of selected high quality materials and conform to the IEC Standard.

Some unique design features are our special conical pro ventilation fan cover, detachable feet for cast iron housing, and extended aluminium housing range up till frame size 200. EMM series motors comes with Protection IP55, Insulation Class F and NSK imported bearings as a standard issue. These series of motors can be used for general drives.

Efficiency Motors Technical Data (at **50Hz**)

IE1

2 Pole-3000 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	TMin/TN Times	TMax/TN Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-2	0.37	0.5	2830	1.02	0.97	0.93	70.0	0.79	1.3	2.2	1.5	2.4	0.001	64	13
EM71B-2	0.55	0.75	2830	1.39	1.32	1.27	74.1	0.81	1.9	2.5	1.7	2.6	0.001	64	14
EM80A-2	0.75	1	2830	1.90	1.81	1.74	72.1	0.83	2.52	2.2	1.8	2.3	0.001	67	16
EM80B-2	1.1	1.5	2830	2.65	2.52	2.43	75	0.84	3.7	2.2	1.8	2.3	0.001	67	17
EM90S-2	1.5	2	2840	3.51	3.34	3.22	77.2	0.84	5.04	2.2	1.8	2.3	0.002	72	20
EM90L-2	2.2	3	2840	4.93	4.69	4.52	79.7	0.85	7.4	2.2	1.8	2.3	0.002	72	25
EM100L-2	3	4	2870	6.43	6.11	5.89	81.5	0.87	10.09	2.2	1.8	2.3	0.004	76	30
EM112M-2	4	5.5	2890	8.31	7.90	7.61	83.1	0.88	13.17	2.2	1.8	2.3	0.016	77	38
EM132SA-2	5.5	7.5	2900	11.21	10.65	10.27	84.7	0.88	18.11	2.2	1.8	2.3	0.011	80	57
EM132SB-2	7.5	10	2900	15.06	14.30	13.79	86	0.88	24.7	2.2	1.8	2.3	0.015	80	60
EM160MA-2	11	15	2930	21.44	20.37	19.63	87.6	0.89	36.10	2.2	1.4	2.3	0.042	86	100
EM160MB-2	15	20	2930	28.87	27.43	26.44	88.7	0.98	49.23	2.2	1.4	2.3	0.054	86	100
EM160L-2	18.5	25	2930	34.97	33.23	32.02	89.3	0.9	60.71	2.2	1.4	2.3	0.064	86	125
EM180M-2	22	30	2940	41.31	39.25	37.83	89.9	0.9	71.95	2.2	1.4	2.3	0.081	89	175
EM200LA-2	30	40	2950	55.84	53.05	51.13	90.7	0.9	98.1	2.0	1.4	2.3	0.151	92	225
EM200LB-2	37	50	2950	68.49	65.07	62.71	91.2	0.9	121.0	2.0	1.4	2.3	0.174	92	245
EM225M-2	45	60	2970	82.85	78.70	75.86	91.7	0.9	146.7	2.0	1.4	2.3	0.242	92	280
EM250M-2	55	75	2970	100.82	95.78	92.31	92.1	0.9	179.3	2.0	1.4	2.3	0.389	93	380
EM280S-2	75	100	2970	138.59	129.76	125.07	92.7	0.9	244.5	2.0	1.4	2.3	0.699	94	510
EM280M-2	90	125	2970	161.58	153.50	147.95	93	0.91	293.3	2.0	1.4	2.3	0.795	94	580
EM315S-2	110	150	2980	196.95	187.01	180.25	93.3	0.91	357.3	1.8	1.3	2.2	1.412	96	850
EM315M-2	132	180	2980	235.72	223.93	215.94	93.5	0.91	428.8	1.8	1.3	2.2	1.550	96	945
EM315L-2	160	220	2980	284.80	270.56	260.78	93.8	0.91	518.8	1.8	1.3	2.2	1.712	99	1020
EM315LB-2	200	270	2980	351.38	333.82	321.75	94.1	0.92	648.6	1.8	1.3	2.2	1.906	99	1180
EM355M-2	250	340	2980	439.23	417.27	402.19	94.4	0.92	810.7	1.6	1.3	2.2	3.14	103	1740
EM355LB-2	315	430	2980	553.43	525.76	506.76	94.7	0.92	1021.5	1.6	1.3	2.2	3.85	103	1900

IE1

4 Pole-1500 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-4	0.25	0.37	1360	0.72	0.68	0.66	70	0.76	1.8	2.4	1.8	2.6	0.0006	55	12
EM71B-4	0.37	0.5	1360	1.02	0.97	0.93	71.3	0.77	2.6	2.4	1.7	2.5	0.0008	55	13
EM80A-4	0.55	0.75	1390	1.59	1.51	1.46	70	0.75	3.7	2.3	2.0	2.6	0.001	58	17
EM80B-4	0.75	1	1390	2.08	1.98	1.90	72.1	0.76	5.04	2.3	2.0	2.6	0.002	58	18
EM90S-4	1.1	1.5	1420	2.89	2.75	2.65	75	0.77	7.35	2.3	2.0	2.6	0.002	61	20
EM90L-4	1.5	2	1420	3.78	3.60	3.47	77.2	0.78	10.2	2.3	2.0	2.6	0.003	61	23
EM100LA-4	2.2	3	1430	5.18	4.92	4.74	79.7	0.81	14.69	2.2	2.0	2.6	0.007	64	30
EM100LB-4	3	4	1430	6.82	6.48	6.25	81.5	0.82	19.97	2.2	2.0	2.6	0.008	64	35
EM112M-4	4	5.5	1440	8.92	8.47	8.17	83.1	0.82	26.62	2.2	2.0	2.6	0.013	65	40
EM132S-4	5.5	7.5	1440	11.89	11.29	10.88	84.7	0.83	36.48	2.2	1.6	2.6	0.027	71	60
EM132M-4	7.5	10	1440	15.77	14.99	14.44	86	0.84	49.74	2.2	1.6	2.6	0.037	71	70
EM160M-4	11	15	1460	22.71	21.58	20.80	87.6	0.84	72.95	2.2	1.6	2.6	0.077	75	110
EM160L-4	15	20	1460	30.23	28.72	27.68	88.7	0.85	98.79	2.2	1.6	2.6	0.104	75	130
EM180M-4	18.5	25	1470	36.60	34.77	33.51	89.3	0.86	121.8	2.2	1.6	2.6	0.141	76	160
EM180L-4	22	30	1470	43.23	41.07	39.59	89.9	0.86	143.9	2.2	1.6	2.6	0.165	76	180
EM200L-4	30	40	1470	58.44	55.51	53.51	90.7	0.86	196.2	2.2	1.6	2.6	0.266	79	240
EM225S-4	37	50	1480	70.85	67.31	64.88	91.2	0.87	240.4	2.2	1.3	2.6	0.504	81	280
EM225M-4	45	60	1480	85.70	81.42	78.49	91.7	0.87	290.4	2.2	1.3	2.6	0.579	81	310
EM250M-4	55	75	1480	104.29	99.08	95.50	92.1	0.87	354.9	2.2	1.3	2.6	0.691	83	400
EM280S-4	75	100	1480	139.69	132.71	127.91	92.7	0.88	484.0	2.2	1.3	2.6	1.413	86	540
EM280M-4	90	125	1480	167.09	158.73	153.00	93	0.88	580.7	2.2	1.3	2.6	1.75	86	620
EM315S-4	110	150	1480	203.56	193.38	186.39	93.3	0.88	709.8	2.2	1.3	2.3	2.905	93	870
EM315M-4	132	180	1490	243.75	231.56	223.19	93.5	0.88	851.8	2.0	1.3	2.3	3.296	93	990
EM315L-4	160	220	1490	291.20	276.64	266.64	93.8	0.89	1032.4	2.0	1.3	2.3	3.733	97	1050
EM315LB-4	200	270	1490	363.23	345.07	332.60	94.1	0.90	1290.5	2.0	1.3	2.3	4.672	97	1250
EM355M-4	250	340	1490	448.99	426.54	411.12	94.3	0.90	1613.2	2.0	1.3	2.3	7.638	101	1750
EM355LB-4	315	430	1490	565.73	537.44	518.02	94.1	0.90	2032.6	2.0	1.3	2.3	9.085	101	1900

6 Pole-1000 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-6	0.18	0.25	890	0.72	0.69	0.66	56.6	0.70	3.93	1.9	1.8	2.2	0.001	52	13
EM71B-6	0.25	0.37	910	0.93	0.89	0.86	61.6	0.72	5.84	2.1	1.9	2.3	0.001	54	13
EM80A-6	0.37	0.5	900	1.35	1.28	1.23	59.7	0.70	3.93	2.0	1.8	2.2	0.002	54	15
EM80B-6	0.55	0.75	900	1.76	168	1.62	65.8	0.72	5.84	2.0	1.8	2.2	0.003	54	17
EM90S-6	0.75	1	910	2.26	2.15	2.07	70	0.72	7.66	2.0	1.8	2.2	0.003	57	20
EM90L-6	1.1	1.5	910	3.14	2.98	2.88	72.9	0.73	11.24	2.0	1.8	2.2	0.005	57	23
EM100L-6	1.5	2	940	4.04	3.84	3.70	75.2	0.75	15.24	2.0	1.8	2.2	0.008	61	30
EM112M-6	2.2	3	940	5.66	5.38	5.18	77.7	0.76	22.35	2.0	1.8	2.2	0.014	65	38
EM132S-6	3	4	960	7.53	7.15	6.89	79.7	0.76	30.48	2.0	1.8	2.2	0.029	69	65
EM132MA-6	4	5.5	960	9.82	9.33	9.00	81.4	0.76	40.21	2.0	1.8	2.5	0.036	69	63
EM132MB-6	5.5	7.5	960	13.06	12.41	11.96	83.1	0.77	55.29	2.0	1.8	2.5	0.049	69	70
EM160M-6	7.5	10	970	17.47	16.6	16.00	84.7	0.77	74.6	2.3	1.8	2.5	0.087	73	105
EM160L-6	11	15	970	24.8	23.56	22.71	86.4	0.78	109.4	2.3	1.5	2.5	0.110	73	120
EM180L-6	15	20	970	32.08	30.48	29.38	87.7	0.81	149.2	2.3	1.5	2.5	0.249	73	175
EM200LA-6	18.5	25	970	39.17	37.21	35.86	88.6	0.81	182.1	2.3	1.5	2.5	0.361	76	220
EM200LB-6	22	30	970	45.15	42.89	41.34	89.2	0.83	216.6	2.3	1.5	2.5	0.394	76	235
EM225M-6	30	40	980	60.16	57.15	55.09	90.2	0.84	293.8	2.3	1.5	2.5	0.556	76	300
EM250M-6	37	50	980	71.99	68.39	62.92	90.8	0.86	362.4	2.3	1.5	2.5	0.965	78	370
EM280S-6	45	60	980	86.98	82.63	79.65	91.4	0.86	438.5	2.3	1.5	2.5	1.681	80	480
EM280M-6	55	75	980	105.73	100.45	96.82	91.9	0.86	536.0	2.3	1.5	2.5	1.999	80	535
EM315S-6	75	100	990	143.09	135.94	131.03	92.6	0.86	730.9	2.0	1.3	2.3	3.260	85	790
EM315M-6	90	125	990	171.16	162.6	156.72	92.9	0.86	877.0	2.0	1.3	2.3	3.909	85	880
EM315LA-6	110	150	980	208.30	197.88	190.73	93.3	0.86	1071.9	2.0	1.3	2.3	4.543	85	997
EM315LB-6	132	180	990	246.55	234.23	225.76	93.5	0.87	1286.3	2.0	1.3	2.3	5.45	85	1100
EM355M-6	160	220	990	29451	279.79	269.67	93.8	0.88	1559.2	2.0	1.3	2.3	8.977	92	1400
EM335MB-6	200	270	990	367.36	348.99	336.37	94.8	0.88	1949.0	2.0	1.3	2.3	11.002	92	1750
EM355LA-6	250	340	990	459.20	436.24	420.47	95.1	0.88	2436.2	2.0	1.3	2.3	13.560	92	1950

8 Pole-750 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	TMin/TN Times	TMax/TN Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-8	0.18	0.25	680	0.88	0.84	0.8	51	0.61	3.5	1.5	1.3	1.7	0.002	52	17
EM80B-8	0.25	0.37	680	1.11	1.1	1.02	56	0.61	3.5	1.6	1.3	2	0.003	52	19
EM90S-8	0.37	0.5	680	1.42	1.35	1.30	63	0.63	5.2	1.6	1.3	1.8	0.003	56	23
EM90L-8	0.55	0.75	680	1.95	1.9	1.78	66	0.65	7.7	1.6	1.3	1.8	0.005	56	25
EM100LA-8	0.75	1	710	2.58	2.4	2.36	66	0.67	10.1	1.7	1.3	2.1	0.007	59	33
EM100LB-8	1.1	1.5	710	3.36	3.2	3.08	72	0.69	14.8	1.7	1.3	2.1	0.009	59	38
EM112M-8	1.5	2	710	4.53	4.3	4.15	74	0.68	20.2	1.8	1.2	2.1	0.016	61	50
EM132S-8	2.2	3	720	6.28	6.0	5.75	75	0.71	29.2	2.0	1.2	2	0.034	64	58
EM132M-8	3	4	730	8.11	7.7	7.43	77	0.73	39.8	2.0	1.2	2	0.045	64	68
EM160MA-8	4	5.5	730	10.41	9.9	9.53	80	0.73	52.3	1.9	1.2	2.1	0.076	68	113
EM160MB-8	5.5	7.5	720	13.52	12.8	12.38	83.5	0.74	73	2	1.2	2.2	0.091	68	123
EM160L-8	7.5	10	720	17.87	17.0	16.37	85.0	0.75	99.5	1.9	1.2	2.2	0.106	68	150
EM180L-8	11	15	730	24.99	23.7	22.88	88.0	0.76	143.9	2	1.2	2	0.257	70	178
EM200L-8	15	20	730	33.26	31.6	30.45	89.0	0.77	196.2	2	1.2	2	0.361	73	233
EM225S-8	18.5	25	730	41.09	39	37.63	90	0.76	242.0	1.9	1.0	2	0.491	73	283
EM225M-8	22	30	740	47.35	45	43.36	90.5	0.78	283.9	1.9	1.0	2	0.589	73	323
EM250M-8	30	40	740	63.4	60.2	58.06	91	0.79	387.2	1.9	1.0	2	1.020	75	400
EM280S-8	37	50	740	77.77	73.9	71.21	91.5	0.79	477.5	1.9	1.0	2	1.890	76	515
EM280M-8	45	60	740	94.07	89.4	86.14	92	0.79	580.7	1.9	1.0	2	2.260	76	566
EM315S-8	55	75	740	111.17	105.6	101.79	92.8	0.81	709.8	1.8	1.0	2	3.894	82	790
EM315M-8	75	100	740	151.27	143.7	138.51	93	0.81	967.9	1.8	1.0	2	5.268	82	970
EM315LA-8	90	125	740	177.78	168.9	162.79	93.8	0.82	1161.5	1.8	1.0	2	6.264	82	1060
EM315LB-8	110	150	740	216.82	206.0	198.54	94	0.82	1419.6	1.8	1.0	2	7.441	82	1170
EM355MA-8	132	180	740	261.02	248.0	239.01	93.7	0.82	1703.5	1.8	1.0	2	8.870	90	1560
EM355MB-8	160	220	740	314.7	299	288.17	94.2	0.82	2064.9	1.8	1.0	2	10.042	90	1650
EM355L-8	200	270	740	387.41	368.0	354.74	94.5	0.83	2581.1	1.8	1.0	2	12.281	90	1940

Efficiency Motors Technical Data (at **60Hz**) IE1

2 Pole-3500 rpm Synchronous Speed **60Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-2	0.44	0.6	3384	1.22	1.16	1.12	70.0	0.79	1.3	2.2	1.5	2.4	0.001	64	13
EM71B-2	0.66	0.9	3408	1.67	1.58	1.52	74.1	0.81	1.9	2.5	1.7	2.6	0.001	64	14
EM80A-2	0.9	1.2	3408	1.87	1.79	1.71	72.1	0.73	2.52	2.2	1.8	2.3	0.001	67	16
EM80B-2	1.32	1.8	3408	2.64	2.52	2.42	75	0.73	3.7	2.2	1.8	2.3	0.001	67	17
EM90S-2	1.8	2.4	3408	3.45	3.30	3.16	77.2	0.74	5.04	2.2	1.8	2.3	0.002	72	22
EM90L-2	2.64	3.6	3408	4.58	4.39	4.20	79.7	0.79	7.4	2.2	1.8	2.3	0.002	72	24
EM100L-2	3.6	4.8	3408	5.96	5.70	5.47	81.5	0.81	10.09	2.2	1.8	2.3	0.004	76	34
EM112M-2	4.8	6.6	3480	7.80	7.46	7.15	83.1	0.81	13.17	2.2	1.8	2.3	0.016	77	41
EM132SA-2	6.6	9	3480	10.14	9.70	9.30	84.7	0.84	18.11	2.2	1.8	2.3	0.011	80	61
EM132SB-2	9	12	3480	13.46	12.88	12.34	86	0.85	24.7	2.2	1.8	2.3	0.014	80	68
EM160MA-2	13.2	18	3492	18.94	18.12	17.36	87.6	0.87	36.10	2.2	1.4	2.3	0.042	86	113
EM160MB-2	18	24	3492	25.51	24.40	23.38	88.7	0.87	49.23	2.2	1.4	2.3	0.054	86	122
EM160L-2	22.2	30	3492	30.54	29.22	28.00	89.3	0.89	60.71	2.2	1.4	2.3	0.064	86	140
EM180M-2	26.4	36	3504	36.08	34.51	33.07	89.9	0.89	71.95	2.2	1.4	2.3	0.081	89	162
EM200LA-2	36	48	3504	48.77	46.65	44.70	90.7	0.89	98.1	2.0	1.4	2.3	0.151	92	239
EM200LB-2	44.4	60	3504	59.81	57.21	54.83	91.2	0.89	121.0	2.0	1.4	2.3	0.174	92	257
EM225M-2	54	72	3516	71.55	68.44	65.58	91.7	0.9	146.7	2.0	1.4	2.3	0.242	92	306
EM250M-2	66	90	3516	89.04	85.17	81.62	92.1	0.88	179.3	2.0	1.4	2.3	0.389	93	392
EM280S-2	90	120	3516	119.28	114.10	109.34	92.7	0.89	244.5	2.0	1.4	2.3	0.699	94	486
EM280M-2	108	150	3516	141.09	134.96	129.33	93	0.9	293.3	2.0	1.4	2.3	0.795	94	522
EM315S-2	132	180	3528	171.89	164.42	157.57	93.3	0.9	357.3	1.8	1.3	2.2	1.412	96	972
EM315M-2	158.4	216	3528	203.57	194.72	186.6	93.5	0.91	428.8	1.8	1.3	2.2	1.550	96	1058
EM315LA-2	192	264	3534	248.69	237.88	227.97	93.8	0.9	518.8	1.8	1.3	2.2	1.712	99	1170
EM315LB-2	240	324	3534	313.69	300.05	287.55	94	0.89	648.6	1.8	1.3	2.2	1.906	99	1170
EM355M-2	300	408	3534	387.75	370.90	355.44	94	0.9	810.7	1.6	1.3	2.2	3.14	103	1656
EM355L-2	378	516	3534	494.06	472.58	452.89	94	0.89	1021.5	1.6	1.3	2.2	3.85	103	1755

4 Pole-1800 rpm Synchronous Speed **60Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-4	0.3	0.44	1632	0.86	0.82	0.79	70	0.76	1.8	2.4	1.8	2.6	0.0006	55	12
EM71B-4	0.44	0.6	1632	1.22	1.16	1.12	71.3	0.77	2.6	2.4	1.7	2.5	0.0008	55	13
EM80A-4	0.66	0.9	1704	1.37	1.31	1.26	70	0.75	3.7	2.3	2.0	2.6	0.0014	58	15.3
EM80B-4	0.9	1.2	1704	1.82	1.74	1.67	72.1	0.75	5.04	2.3	2.0	2.6	0.002	58	16.2
EM90S-4	1.32	1.8	1716	2.57	2.45	2.35	75	0.75	7.35	2.3	2.0	2.6	0.002	61	21.6
EM90L-4	1.8	2.4	1716	3.35	3.21	3.08	77.2	0.76	10.2	2.3	2.0	2.6	0.003	61	23.4
EM100LA-4	2.64	3.6	1716	4.53	4.33	4.15	79.7	0.8	14.69	2.2	2.0	2.6	0.007	64	29.7
EM100LB-4	3.6	4.8	1722	6.04	5.78	5.53	81.5	0.8	19.97	2.2	2.0	2.6	0.008	64	33.3
EM112M-4	4.8	6.6	1722	7.70	7.37	7.06	83.1	0.82	26.62	2.2	2.0	2.6	0.013	65	42.3
EM132S-4	6.6	9	1728	10.27	9.82	9.41	84.7	0.83	36.48	2.2	1.6	2.6	0.027	71	63
EM132M-4	9	12	1728	13.46	12.88	12.34	86	0.85	49.74	2.2	1.6	2.6	0.037	71	72
EM160M-4	13.2	18	1728	19.38	18.54	17.77	87.6	0.85	72.95	2.2	1.6	2.6	0.077	75	115.2
EM160L-4	18	24	1740	25.51	24.40	23.38	88.7	0.87	98.79	2.2	1.6	2.6	0.104	75	133.2
EM180M-4	22.2	30	1740	30.89	29.55	28.32	89.3	0.88	121.8	2.2	1.6	2.6	0.141	76	157.5
EM180L-4	26.4	36	1752	36.91	35.30	33.83	89.9	0.87	143.9	2.2	1.6	2.6	0.165	76	166.5
EM200L-4	36	48	1752	48.77	46.65	44.70	90.7	0.89	196.2	2.2	1.6	2.6	0.266	79	247.5
EM225S-4	44.4	60	1764	59.81	57.21	54.83	91.2	0.89	240.4	2.2	1.3	2.6	0.504	81	290.7
EM225M-4	54	72	1776	73.17	69.99	67.07	91.7	0.88	290.4	2.2	1.3	2.6	0.579	81	310.5
EM250M-4	66	90	1776	88.04	84.22	80.71	92.1	0.89	354.9	2.2	1.3	2.6	0.691	83	380.7
EM280S-4	90	120	1776	120.64	115.39	110.59	92.7	0.88	484.0	2.2	1.3	2.6	1.413	86	516.6
EM280M-4	108	150	1776	141.09	134.96	129.33	93	0.90	580.7	2.2	1.3	2.6	1.75	86	567
EM-315S-4	132	180	1776	171.89	164.42	157.57	93.3	0.90	709.8	2.2	1.3	2.3	2.905	93	994.5
EM-315M-4	158.4	216	1776	205.83	196.88	188.68	93.5	0.90	851.8	2.0	1.3	2.3	3.296	93	1111.5
EM315LA-4	192	264	1776	279.78	267.61	256.46	93.8	0.80	1032.4	2.0	1.3	2.3	3.734	97	1197
EM315LB-4	240	324	1776	310.20	296.72	284.35	94	0.90	1290.5	2.0	1.3	2.3	4.672	97	1224
EM355M-4	300	408	1776	392.11	375.06	359.43	94	0.89	1613.2	2.0	1.3	2.3	7.638	101	1710
EM355L-4	378	516	1776	488.57	467.33	447.86	94	0.9	2032.6	2.0	1.3	2.3	9.085	101	1845

6 Pole-1200 rpm Synchronous Speed **60Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-6	0.22	0.3	1068	0.86	0.83	0.79	56.6	0.67	3.93	1.9	1.8	2.2	0.001	52	17
EM71B-6	0.3	0.44	1092	1.11	1.07	1.03	61.6	0.66	5.84	2.1	1.9	2.3	0.001	54	19
EM80A-6	0.44	0.6	1080	1.36	1.30	1.24	59.7	0.6	3.93	2.0	1.8	2.2	0.002	54	17
EM80B-6	0.66	0.9	1080	1.77	1.69	1.62	65.8	0.62	5.84	2.0	1.8	2.2	0.003	54	20
EM90S-6	0.9	1.2	1122	2.13	2.04	1.95	70	0.66	7.66	2.0	1.8	2.2	0.003	57	23
EM90L-6	1.32	1.8	1122	2.91	2.79	2.67	72.9	0.68	11.24	2.0	1.8	2.2	0.005	57	26
EM100L-6	1.8	2.4	1128	3.59	3.43	3.29	75.2	0.73	15.24	2.0	1.8	2.2	0.008	61	35
EM112M-6	2.64	3.6	1128	5.16	4.94	4.73	77.7	0.72	22.35	2.0	1.8	2.2	0.014	65	45
EM132S-6	3.6	4.8	1128	6.59	6.30	6.04	79.7	0.75	30.48	2.0	1.8	2.2	0.029	69	65
EM132MA-6	4.8	6.6	1140	8.71	8.33	7.99	81.4	0.74	40.21	2.0	1.8	2.5	0.036	69	70
EM132MB-6	6.6	9	1140	11.74	11.23	10.76	83.1	0.74	55.29	2.0	1.8	2.5	0.049	69	80
EM160M-6	9	12	1152	16.36	15.65	15.00	84.7	0.71	74.6	2.3	1.8	2.5	0.087	73	125
EM160L-6	13.2	18	1152	22.27	21.31	20.42	86.4	0.75	109.4	2.3	1.5	2.5	0.110	73	150
EM180L-6	18	24	1152	28.77	27.52	26.38	87.7	0.78	149.2	2.3	1.5	2.5	0.249	73	185
EM200LA-6	22.2	30	1164	34.25	32.76	31.39	88.6	0.80	182.1	2.3	1.5	2.5	0.361	76	260
EM200LB-6	26.4	36	1164	39.47	37.75	36.18	89.2	0.82	216.6	2.3	1.5	2.5	0.394	76	270
EM225M-6	36	48	1170	51.34	49.11	47.06	90.2	0.85	293.8	2.3	1.5	2.5	0.556	76	340
EM250M-6	44.4	60	1170	63.65	60.89	58.35	90.8	0.84	362.4	2.3	1.5	2.5	0.965	78	430
EM280S-6	54	72	1176	76.00	72.70	69.67	91.4	0.85	438.5	2.3	1.5	2.5	1.681	80	535
EM280M-6	66	90	1176	91.31	87.34	83.70	91.9	0.86	536.0	2.3	1.5	2.5	1.999	80	580
EM315S-6	90	120	1176	125.03	119.59	114.61	92.6	0.85	730.9	2.0	1.3	2.3	3.260	85	1060
EM315M-6	108	150	1176	149.55	143.05	137.09	92.9	0.85	877.0	2.0	1.3	2.3	3.909	85	1170
EM315LA-6	132	180	1176	182.00	174.09	166.84	93.3	0.85	1071.9	2.0	1.3	2.3	4.543	85	1220
EM315LB-6	158.4	216	1176	217.94	208.46	199.78	93.5	0.85	1286.3	2.0	1.3	2.3	5.45	85	1280
EM355MA-6	192	264	1176	263.32	251.87	241.38	93.8	0.85	1559.2	2.0	1.3	2.3	8.977	92	1800
EM335MB-6	240	324	1176	328.45	314.17	301.08	94	0.85	1949.0	2.0	1.3	2.3	11.002	92	1900
EM355L-6	300	408	1176	410.56	392.71	376.35	94	0.85	2436.2	2.0	1.3	2.3	13.560	92	2050

8 Pole-900 rpm Synchronous Speed **60Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	EFF %	Power Factor	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-8	0.22	0.3	816	0.76	0.73	0.70	51	0.61	3.5	1.5	1.3	1.7	0.002	52	17
EM80B-8	0.3	0.44	816	0.96	0.92	0.88	56	0.61	3.5	1.6	1.3	2	0.003	52	19
EM90S-8	0.44	0.6	816	1.22	1.17	1.12	63	0.63	5.2	1.6	1.3	1.8	0.003	56	23
EM90L-8	0.66	0.9	816	1.68	1.61	1.54	66	0.65	7.7	1.6	1.3	1.8	0.005	56	25
EM100LA-8	0.9	1.2	852	2.23	2.13	2.04	66	0.67	10.1	1.7	1.3	2.1	0.007	59	33
EM100LB-8	1.32	1.8	852	2.91	2.78	2.66	72	0.69	14.8	1.7	1.3	2.1	0.009	59	38
EM112M-8	1.8	2.4	852	3.91	3.74	3.59	74	0.68	20.2	1.8	1.2	2.1	0.016	61	50
EM132S-8	2.64	3.6	864	5.42	5.19	4.97	75	0.71	29.2	2.0	1.2	2	0.034	64	58
EM132M-8	3.6	4.8	864	7.00	6.70	6.42	77	0.73	39.8	2.0	1.2	2	0.045	64	68
EM160MA-8	4.8	6.6	876	8.99	8.60	8.24	80	0.73	52.3	1.9	1.2	2.1	0.076	68	113
EM160MB-8	6.6	9	864	11.68	11.17	10.71	83.5	0.74	73	2	1.2	2.2	0.091	68	123
EM160L-8	9	12	864	15.44	14.77	14.15	85.0	0.75	99.5	1.9	1.2	2.2	0.106	68	150
EM180L-8	13.2	18	876	21.58	20.64	19.78	88.0	0.76	143.9	2	1.2	2	0.257	70	178
EM200L-8	18	24	876	28.72	27.47	26.33	89.0	0.77	196.2	2	1.2	2	0.361	73	233
EM225S-8	22.2	30	876	35.49	33.95	32.53	90	0.76	242.0	1.9	1.0	2	0.491	73	283
EM225M-8	26.4	36	888	40.89	39.12	37.49	90.5	0.78	283.9	1.9	1.0	2	0.589	73	323
EM250M-8	36	48	888	54.76	52.38	50.19	91	0.79	387.2	1.9	1.0	2	1.020	75	400
EM280S-8	44.4	60	888	67.16	64.16	61.57	91.5	0.79	477.5	1.9	1.0	2	1.890	76	515
EM280M-8	54	72	888	81.24	77.71	74.47	92	0.79	580.7	1.9	1.0	2	2.260	76	566
EM315S-8	66	90	888	96.01	91.84	88.01	92.8	0.81	709.8	1.8	1.0	2	3.894	82	790
EM315M-8	90	120	888	130.64	124.96	119.75	93	0.81	967.9	1.8	1.0	2	5.268	82	970
EM315LA-8	108	150	888	153.54	146.86	140.74	93.8	0.82	1161.5	1.8	1.0	2	6.264	82	1060
EM315LB-8	132	180	888	187.26	179.12	171.65	94	0.82	1419.6	1.8	1.0	2	7.441	82	1170
EM355MA-8	158.4	216	888	225.43	215.63	206.64	93.7	0.82	1703.5	1.8	1.0	2	8.870	90	1560
EM355MB-8	192	264	888	271.80	259.98	249.15	94.2	0.82	2064.9	1.8	1.0	2	10.042	90	1650
EM355L-8	240	324	888	334.59	320.04	306.70	94.5	0.83	2581.1	1.8	1.0	2	12.281	90	1940

2 Pole - 3000 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM2-80A-2	0.75	1	2860	1.8	1.7	1.7	77.4	0.81	2.52	2.5	2.1	2.6	0.0008	65	17.5
EM2-80B-2	1.1	1.5	2860	2.6	2.4	2.3	79.6	0.82	3.65	2.5	1.8	2.6	0.0012	65	19.5
EM2-90S-2	1.5	2	2850	3.3	3.2	3.1	81.3	0.84	4.97	2.5	1.8	2.6	0.0018	70	28
EM2-90L-2	2.2	3	2855	4.7	4.5	4.3	83.2	0.85	7.3	2.5	1.4	2.6	0.0024	72	32
EM2-100L-2	3	4	2890	6.3	6.0	5.8	84.6	0.85	9.91	2.5	2.0	2.8	0.0041	75	38.5
EM2-112M-2	4	5.5	2895	8.3	7.9	7.6	85.8	0.85	13.13	2.5	1.8	2.8	0.0060	76	40
EM2-132SA-2	5.5	7.5	2910	11.0	10.5	10.1	87.0	0.87	18.05	2.4	1.8	2.8	0.0125	78	62
EM2-132SB-2	7.5	10	2910	14.9	14.1	13.6	88.1	0.87	24.53	2.5	1.8	2.8	0.0161	80	69
EM2-160MA-2	11	15	2940	21.5	20.4	19.7	89.4	0.87	35.85	2.5	1.4	2.8	0.0456	86	125
EM2-160MB-2	15	20	2940	29.0	27.6	26.6	90.3	0.87	48.72	2.5	1.3	2.8	0.0620	86	135
EM2-160L-2	18.5	25	2935	35.5	33.8	32.5	90.9	0.87	60.09	2.5	1.4	2.8	0.075	86	151
EM2-180M-2	22	30	2945	42.1	40.0	38.5	91.3	0.87	71.34	2.5	1.4	2.8	0.081	89	182
EM2-200LA-2	30	40	2960	56.9	54.1	52.1	92.0	0.87	97.3	2.0	1.3	2.5	0.143	92	262
EM2-200LB-2	37	50	2950	69.9	66.4	64.0	92.5	0.87	120.0	2.5	1.5	2.5	0.165	92	274
EM2-225M-2	45	60	2970	84.6	80.4	77.5	92.9	0.87	145.7	2.5	1.3	2.4	0.249	92	380
EM2-250M-2	55	75	2970	101.9	96.8	93.3	93.2	0.88	177.4	2.3	1.4	2.6	0.433	93	426
EM2-280S-2	75	100	2980	141.3	134.2	129.3	93.8	0.86	242.0	2.5	1.8	2.6	0.792	94	573
EM2-280M-2	90	125	2980	165.1	156.9	151.2	94.1	0.88	290.4	2.5	1.8	2.6	0.907	94	625
EM2-315S-2	110	150	2980	199.1	189.2	182.3	94.3	0.89	354.9	2.0	1.4	2.3	1.509	96	895
EM2-315M-2	132	180	2980	238.2	226.3	218.1	94.6	0.90	425.9	2.0	1.4	2.3	1.679	96	1009
EM2-315L-2	160	220	2980	284.9	270.7	260.9	94.8	0.90	516.2	2.0	1.4	2.3	1.873	99	1128
EM2-315LB-2	200	270	2980	355,4	337.6	325.4	95.0	0.90	645.3	1.8	1.3	2.3	2.133	99	1269
EM2-355M-2	250	340	2980	444.3	422.1	406.8	95.0	0.90	806.6	1.8	1.3	2.3	3.143	103	1627
EM2-355LB-2	315	430	2980	559.8	531.8	512.6	95.0	0.90	1016.3	1.8	1.3	2.3	3.853	103	1780

4 Pole - 1500 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM2-80A-4	0.55	0.75	1420	1.55	1.47	1.42	77.1	0.7	3.78	2.4	2.1	2.8	0.0015	57	17
EM2-80B-4	0.75	1	1420	1.9	1.8	1.85	79.6	0.74	5.04	2.5	2.1	2.6	0.0013	58	23
EM2-90S-4	1.1	1.5	1420	2.7	2.6	2.65	81.4	0.75	7.35	2.5	2.1	2.6	0.0031	60	27.5
EM2-90L-4	1.5	2	1430	3.7	3.5	3.41	82.8	0.75	10.02	2.5	2.0	2.6	0.0041	60	32
EM2-100LA-4	2.2	3	1440	5.0	4.8	4.54	84.3	0.79	14.69	2.2	2.0	2.6	0.0088	63	40.5
EM2-100LB-4	3	4	1445	6.7	6.4	6.10	85.5	0.79	19.97	2.2	2.0	3.0	0.0103	63	46.5
EM2-112M-4	4	5.5	1440	8.9	8.4	7.93	86.6	0.79	26.62	2.2	2.0	3.0	0.0137	63	50
EM2-132S-4	5.5	7.5	1450	11.9	11.3	10.51	87.7	0.80	36.48	2.2	1.8	3.0	0.0297	69	70
EM2-132M-4	7.5	10	1455	15.9	15.1	14.17	88.7	0.81	49.74	2.2	1.6	3.0	0.0398	69	85
EM2-160M-4	11	15	1465	23.0	21.8	20.53	89.8	0.81	72.95	2.5	1.6	2.5	0.0867	70	126
EM2-160L-4	15	20	1465	30.3	28.8	26.47	90.6	0.83	98.79	2.5	1.6	2.5	0.0113	73	147
EM2-180M-4	18.5	25	1470	36.7	34.9	32.81	91.2	084	121.8	2.5	1.6	2.8	0.1408	75	189
EM2-180L-4	22	30	1475	43.4	41.3	37.97	91.6	0.84	143.9	2.5	1.6	2.8	0.1654	76	208
EM2-200L-4	30	40	1475	58.1	55.2	51.38	92.3	0.85	196.2	2.5	2.1	3.0	0.2730	80	275
EM2-225S-4	37	50	1480	71.3	67.8	63.1	92.7	0.85	240.4	2.2	1.3	2.3	0.5044	81	344
EM2-225M-4	45	60	1485	86.4	82.1	75.56	93.1	0.85	290.4	2.2	1.3	2.3	0.5939	82	375
EM2-250M-4	55	75	1480	105.1	99.9	95.16	93.5	0.85	354.9	2.5	1.5	2.5	0.7095	83	433
EM2-280S-4	75	100	1485	139.3	132.4	123.33	94.2	0.87	484.00	2.5	2.0	2.5	1.5951	86	587
EM2-280M-4	90	125	1490	166.9	158.5	147.69	94.2	0.87	580.7	2.5	2.0	2.5	1.8918	86	676
EM2-315S-4	110	150	1490	203.3	193.1	184.02	94.5	0.87	709.8	2.0	1.3	2.8	3.0925	93	946
EM2-315M-4	132	180	1485	243.4	231.3	217.88	94.7	0.87	851.8	2.0	1.3	2.6	3.4834	93	1042
EM2-315L-4	160	220	1485	291.1	276.5	263.55	94.9	0.88	1032.4	2.0	1.3	2.6	3.9839	97	1130
EM2-315LB-4	200	270	1485	363.1	345.0	328.74	95.1	0.88	1290.5	2.0	1.3	2.3	4.6720	97	1243
EM2-355M-4	250	340	1490	448.8	426.3	410.92	95.1	0.89	1613.2	1.8	1.3	2.3	7.6382	101	1661
EM2-355LB-4	315	430	1490	565.5	537.2	512.01	95.1	0.89	2032.6	1.8	1.3	2.3	9.0855	101	1924

6 Pole - 1000 rpm Synchronous Speed **50Hz**

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Rated Torque Nm	TST/TN Times	Tmin/Tn Times	Tmax/Tn Times	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM2-80A-6	0.37	0.5	935	1.26	1.20	1.15	67.6	0.66	3.93	1.9	1.7	2.2	0.0017	56	17
EM2-80B-6	0.55	0.75	935	1.68	1.60	1.54	73.1	0.68	5.84	2	2	2.4	0.0023	56	19
EM2-90S-6	0.75	1	935	2.35	2.23	2.15	75.9	0.64	7.66	2.0	1.8	2.2	0.0036	57	27
EM2-90L-6	1.1	1.5	935	3.15	2.99	2.88	78.1	0.68	11.24	2.0	1.8	2.2	0.0054	57	31
EM2-100L-6	1.5	2	940	3.91	3.72	3.58	79.8	0.73	15.24	1.6	1.6	2.2	0.0088	61	39
EM2-112M-6	2.2	3	940	5.68	5.39	5.20	81.8	0.72	22.35	2.0	1.8	2.5	0.0147	65	50
EM2-132S-6	3	4	940	7.30	6.93	6.68	83.3	0.75	30.48	1.6	1.5	2.2	0.0304	69	63
EM2-132MA-6	4	5.5	950	9.71	9.22	8.89	84.6	0.74	40.21	2.0	1.6	2.5	0.0379	69	69
EM2-132MB-6	5.5	7.5	950	13.13	12.47	12.02	86	0.74	55.29	2.0	1.8	2.5	0.0489	69	84
EM2-160M-6	7.5	10	960	18.41	17.5	16.85	87.2	0.71	74.6	2.5	1.8	2.8	0.0873	73	121
EM2-160L-6	11	15	960	25.12	23.9	23.0	88.7	0.75	109.4	2.5	1.4	2.8	0.1207	73	153
EM2-180L-6	15	20	960	32.57	30.9	29.83	89.7	0.78	149.2	2.5	1.5	2.8	0.2569	73	194
EM2-200LA-6	18.5	25	970	38.87	36.9	35.59	90.4	0.80	182.1	2.0	1.4	2.8	0.3615	76	244
EM2-200LB-6	22	30	970	44.84	42.6	41.06	90.9	0.82	216.6	2.5	1.8	2.8	0.4274	76	273
EM2-225M-6	30	40	975	58.48	55.6	53.55	91.7	0.85	293.8	2.5	1.5	2.2	0.6706	76	312
EM2-250M-6	37	50	975	72.59	69.0	66.46	92.2	0.84	362.4	1.8	1.3	2.2	0.9924	78	413
EM2-280S-6	45	60	980	86.77	82.4	79.45	92.7	0.85	438.52	2.5	1.4	2.3	1.7855	80	557
EM2-280M-6	55	75	980	104.37	99.2	95.57	93.1	0.86	536.0	2.5	1.7	2.8	2.2079	80	611
EM2-315S-6	75	100	980	143.07	135.9	131.01	93.7	0.85	730.9	2.0	1.3	2.3	3.2597	85	847
EM2-315M-6	90	125	980	171.14	162.6	156.71	95	0.85	877.0	2.0	1.3	2.3	3.9093	85	1031
EM2-315LA-6	110	150	980	208.51	198.1	190.92	94.3	0.85	1071.9	2.0	1.3	2.3	5.5433	85	1182
EM2-315LB-6	132	180	980	249.41	236.9	228.38	94.6	0.85	1286.3	2.0	1.3	2.3	5.5396	85	1323
EM2-355MA-6	160	220	980	301.68	286.6	276.24	94.8	0.85	1559.2	2.0	1.3	2.3	8.9763	92	1582
EM2-335MB-6	200	270	980	376.31	357.5	344.57	95	0.85	1949.0	2.0	1.3	2.3	11.0018	92	1664
EM2-355L-6	250	340	980	470.38	446.9	430.71	95	0.85	2436.2	2.0	1.3	2.3	13.5601	92	1757

2 Pole - 3000 rpm Synchronous Speed **50Hz**

Motor Type	Power (kW)	Full Load Speed (r/min)	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
EM3-80A-2	0.75	2855	1.7	1.7	1.6	80.7	0.81	2.49	2.5	2.1	2.8
EM3-80B-2	1.1	2860	2.5	2.3	2.3	82.7	0.82	3.65	2.5	1.8	2.8
EM3-90S-2	1.5	2865	3.2	3.1	3.0	84.2	0.84	4.97	2.5	1.8	2.8
EM3-90L-2	2.2	2870	4.6	4.3	4.2	85.9	0.85	7.30	2.5	1.8	2.8
EM3-100L-2	3	2890	6.2	5.8	5.6	87.1	0.85	9.88	2.5	2.0	2.8
EM3-112M-2	4	2900	8.1	7.7	7.4	88.1	0.85	13.13	2.5	2.0	2.8
EM3-132SA-2	5.5	2910	10.8	10.2	9.9	89.2	0.87	18.05	2.5	2.0	3.0
EM3-132SB-2	7.5	2910	14.5	13.8	13.3	90.1	0.87	24.53	2.5	1.5	3.0
EM3-160MA-2	11	2930	21.1	20.0	19.3	91.2	0.87	35.85	2.5	1.4	3.0
EM3-160MB-2	15	2930	28.5	27.1	26.1	91.9	0.87	48.72	2.5	1.4	3.0
EM3-160L-2	18.5	2935	35.0	33.2	32.0	92.4	0.87	60.09	2.5	1.4	3.0
EM3-180M-2	22	2940	41.4	39.4	38.0	92.7	0.87	71.34	2.5	1.4	3.0
EM3-200LA-2	30	2950	56.2	53.3	51.4	93.3	0.87	97.3	2.5	1.5	2.5
EM3-200LB-2	37	2950	69.0	65.5	63.1	93.7	0.87	120.0	2.5	1.5	2.5
EM3-225M-2	45	2970	83.6	79.4	76.6	94	0.87	145.7	2.5	1.4	2.5
EM3-250M-2	55	2975	100.7	95.7	92.2	94.3	0.88	177.4	2.5	1.8	2.6
EM3-280S-2	75	2975	139.9	132.9	128.1	94.7	0.86	242.0	2.5	1.8	2.6
EM3-280M-2	90	2975	163.6	155.4	149.8	95	0.88	290.4	2.5	1.8	2.6
EM3-315S-2	110	2980	197.3	187.4	180.6	95.2	0.89	354.9	2.0	1.4	2.3
EM3-315M-2	132	2980	236.2	224.4	216.3	95.4	0.89	425.9	2.0	1.4	2.3
EM3-315L-2	160	2980	282.5	268.4	258.7	95.6	0.9	516.2	2.0	1.4	2.3
EM3-315LB-2	200	2980	352.4	3348	322.7	95.8	0.9	645.3	2.0	1.4	2.3
EM3-355M-2	250	2980	440.6	418.5	403.4	95.8	0.9	806.6	2.0	1.5	2.3
EM3-355LB-2	315	2980	555.1	527.3	508.3	95.8	0.9	1016.3	2.0	1.5	2.3

4 pole - 1500 rpm Synchronous Speed **50Hz**

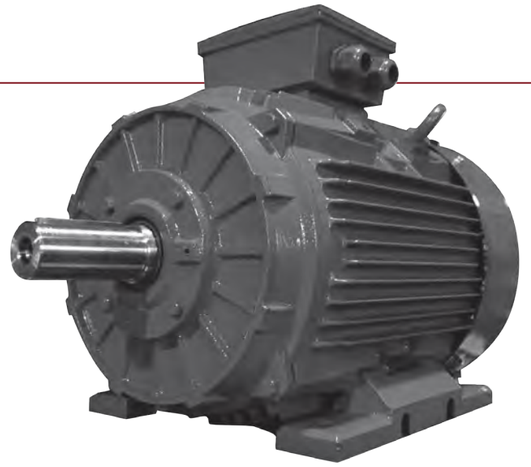
Motor Type	Power (kW)	Full Load Speed (r/min)	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
EM3-80B-4	0.75	1420	1.87	1.77	1.71	82.5	0.74	5.04	2.8	2.2	2.8
EM3-90S-4	1.1	1425	2.65	2.52	2.43	84.1	0.75	7.35	2.8	2.2	2.8
EM3-90L-4	1.5	1425	3.56	3.38	3.26	85.3	0.75	10.02	2.8	2.2	3.0
EM3-100LA-4	2.2	1440	4.88	4.64	4.47	86.7	0.79	14.69	2.8	2.2	3.0
EM3-100LB-4	3	1440	6.58	6.25	6.02	87.7	0.79	19.97	2.5	2.2	3.0
EM3-112M-4	4	1440	8.68	8.25	7.95	88.6	0.79	26.53	2.5	2.2	3.0
EM3-132S-4	5.5	1450	11.66	11.08	10.68	89.6	0.80	36.48	2.5	1.8	3.0
EM3-132M-4	7.5	1450	15.56	14.78	14.25	90.4	0.81	49.74	2.5	1.6	3.0
EM3-160M-4	11	1465	22.58	21.45	20.67	91.4	0.81	72.45	2.5	1.3	3.0
EM3-160L-4	15	1470	29.81	28.32	27.30	92.1	0.83	98.8	2.5	1.3	2.8
EM3-180M-4	18.5	1470	36.14	34.33	33.09	92.6	0.84	121.0	2.5	1.8	3.0
EM3-180L-4	22	1475	42.39	40.65	39.18	93	0.84	143.9	2.5	1.8	3.0
EM3-200L-4	30	1475	57.29	54.43	52.46	93.6	0.85	194.9	2.5	1.8	2.8
EM3-225S-4	37	1480	70.43	66.91	64.49	93.9	0.85	240.4	2.5	1.4	2.5
EM3-225M-4	45	1485	85.39	81.12	78.19	94.2	0.85	292.3	2.5	1.5	2.5
EM3-250M-4	55	1485	103.93	98.73	95.16	94.6	0.85	357.3	2.5	1.8	2.5
EM3-280S-4	75	1485	137.88	130.98	126.25	95	0.87	484.0	2.5	1.8	2.8
EM3-280M-4	90	1485	165.10	156.85	151.18	95.2	0.87	580.7	2.5	1.8	2.8
EM3-315S-4	110	1485	201.37	191.3	184.39	95.4	0.87	709.8	2.2	1.5	2.6
EM3-315M-4	132	1490	241.14	229.08	220.80	95.6	0.87	851.8	2.2	1.5	2.6
EM3-315L-4	160	1490	288.36	273.95	264.04	95.8	0.88	1032.4	2.2	1.5	2.6
EM3-315LB-4	200	1490	359.70	341.72	329.37	96	0.88	1290.5	2.2	1.5	2.6
EM3-355M-4	250	1490	444.58	422.35	407.08	96	0.89	1613.2	2.0	1.3	2.3
EM3-355LB-4	315	1490	560.17	532.16	512.92	96	0.89	2032.6	2.0	1.8	2.2

6 pole - 1000 rpm Synchronous Speed **50Hz**

Motor Type	Power (kW)	Full Load Speed (r/min)	Inl 400V (A)	Ifl 400V (A)	Ist/In (Times)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
EM3-90S-6	0.75	935	2.16	2.05	1.97	78.9	0.67	7.66	2.0	1.8	2.2
EM3-90L-6	1.1	940	3.13	2.97	2.86	81	0.66	11.18	2.3	1.8	2.2
EM3-100L-6	1.5	940	3.73	3.55	3.42	82.5	0.74	15.24	2.0	1.7	2.2
EM3-112M-6	2.2	940	5.66	5.38	5.19	84.3	0.70	22.35	2.0	1.8	2.2
EM3-132S-6	3	940	7.20	6.84	6.59	85.6	0.74	30.48	2.0	1.7	2.2
EM3-132MA-6	4	945	9.46	8.99	8.66	86.8	0.74	40.21	2.0	1.6	2.5
EM3-132MB-6	5.5	950	13.37	12.71	12.25	88.0	0.71	55.29	2.3	1.8	2.5
EM3-160M-6	7.5	960	17.05	16.20	15.61	89.1	0.75	74.60	2.3	1.4	2.8
EM3-160L-6	11	960	24.35	23.1	22.3	90.3	0.76	109.4	2.5	1.4	2.8
EM3-180L-6	15	960	31.63	30.1	28.96	91.2	0.79	149.2	2.5	1.4	2.8
EM3-200LA-6	18.5	970	38.31	36.4	35.08	91.7	0.80	182.1	2.5	1.4	2.8
EM3-200LB-6	22	970	44.76	42.5	40.98	92.2	0.81	216.6	2.5	1.5	2.8
EM3-225M-6	30	975	55.75	53.0	51.05	92.9	0.88	293.8	1.8	1.5	2.2
EM3-250M-6	37	975	70.89	67.3	64.91	93.3	0.85	362.4	1.8	1.3	2.0
EM3-280S-6	45	980	87.91	83.5	80.50	93.7	0.83	438.5	2.5	1.8	2.8
EM3-280M-6	55	980	104.47	99.3	95.66	94.1	0.85	536.0	2.5	1.8	2.8
EM3-315S-6	75	980	146.90	139.6	134.51	94.6	0.82	730.9	2.0	1.3	2.3
EM3-315M-6	90	980	175.72	166.9	160.90	94.9	0.82	877.0	2.0	1.3	2.3
EM3-315LA-6	110	980	214.32	203.6	196.24	95.1	0.82	1071.9	2.0	1.3	2.3
EM3-315LB-6	132	980	256.37	243.6	234.75	95.4	0.82	1286.3	2.0	1.3	2.3
EM3-355MA-6	160	980	310.10	294.6	283.95	95.6	0.82	1559.2	2.0	1.3	2.3
EM3-335MB-6	200	980	386.82	367.5	354.19	95.8	0.82	1949.0	2.0	1.3	2.3
EM3-355L-6	250	980	483.52	459.3	442.74	95.8	0.82	2436.2	2.0	1.3	2.3

Class H Motors

Three-Phase Asynchronous Motors
Cast Iron / Aluminum Housing



Class H series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. Class H series of motors is a enhancement of our standard induction motors, technical data will be as follows with induction motors.

Class H motors are to cater to the needs of High Temperature Resistance requirements. It can withstand an ambient temperature of up to 85 °C, and an internal winding temperature of up to 300 °C for up to 2 hours, this is achieved through higher temperature safety margins and enhancements onto our internal winding, and many more.

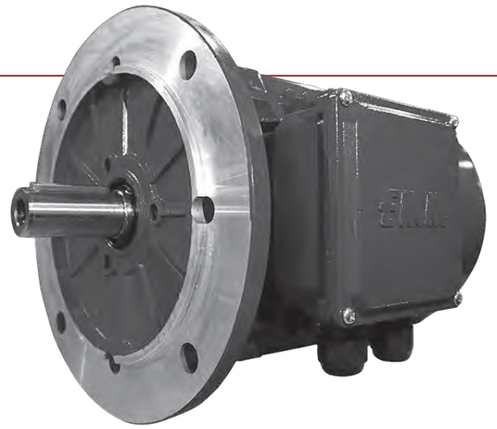
TENV Motors

Three-Phase Asynchronous Motors
Cast Iron / Aluminum Housing

TENV series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. TENV series of motors is a modification of our standard induction motors, technical data will be as follows with induction motors. TENV motors come without fan blade and fan cover, and with a 1 metre wire extension with detached T-box as standard issue. These series of motors can be used for fan duty.

Inverter Motors

Three-Phase Asynchronous Motors
Cast Iron / Aluminum Housing

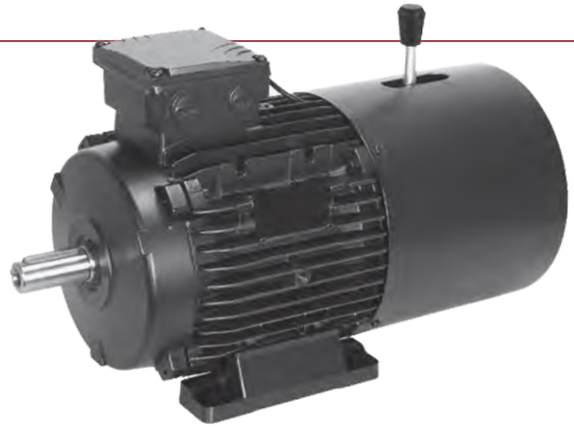


Inverter series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. Inverter series of motors is a enhancement of our standard induction motors, technical data will be as follows with induction motors.

Inverter duty motors are fully compatible with any brand of VFD/VSD, the motors are capable of prolong operation at frequencies between 5Hz to 100Hz. Inverter duty motors comes standard with an attached Force Cooling Fan, longer rotor and stator construct, and reinforced corona resistance.

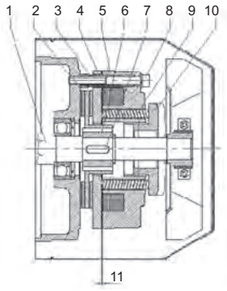
Brake Motors

Three-Phase Asynchronous Motors
Cast Iron / Aluminum Housing



Brake motors series results from coupling an asynchronous three phase motor to an electromagnetic D.C. brake unit. Due to their reliability and operating safety, as well as their quick braking time (connection & disconnection time = 5 to 80 milliseconds), these series of motors are suitable for a great variety of applications, such as:

- Braking of loads or torques on the drive shaft
- Braking of rotating masses to reduce any lost time
- Braking operations to increase the set up precision
- Braking of machine parts, according to safety rules



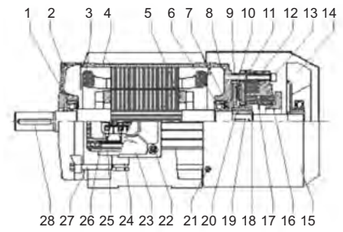
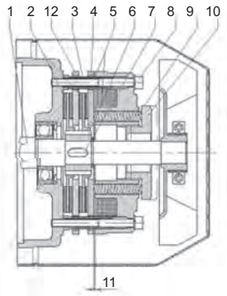


Figure 1 **B3 63~160**



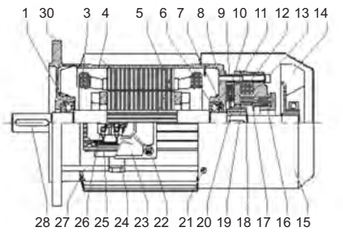
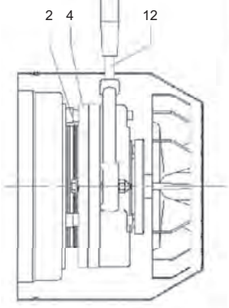


Figure 2 **B5 63~112**



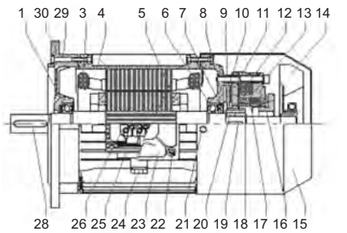


Figure 3 **B5 132~160**

Spare Parts

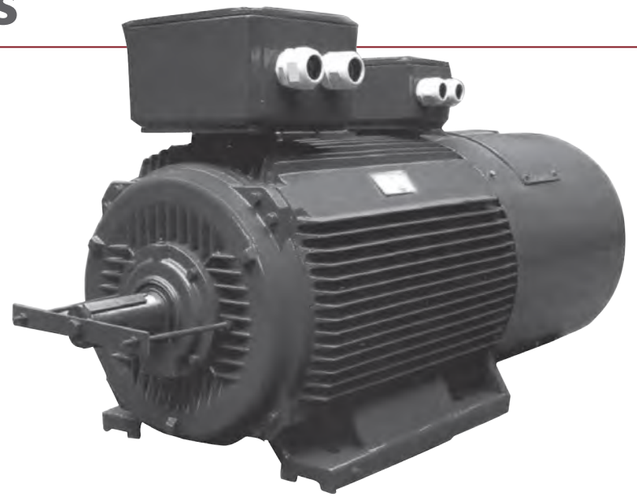
1. Front bearing
2. Front shield
3. Winding
4. Frame with stator package
5. Shaft with rotor
6. Rear bearing
7. Spring
8. Rear shield
9. Adjusting bush
10. Brake disc
11. Moving anchor
12. Electromagnet coil with diode
13. Fixing screws for brake
14. Cooling fan
15. Fan hood
16. Ring nut
17. Spring
18. See gearing
19. Key brake side
20. Toothed pinion
21. Fixing screw for fan hood
22. Fixing screw for terminal-box
23. Terminal-box
24. Able-holder
25. Packing
26. Terminal-block
27. Tie-bolt
28. Coupling side key
29. Fixing screw for shield
30. Flange shield

Slip Ring Motors

Three-Phase Asynchronous Motors Cast Iron Housing

Slip ring series of three phase asynchronous motors is a selection of high torque motors that caters to client specific applications. These series of motors are only available in cast iron housing due to the heavy duty nature of use, well designed exterior, and conforms to all IEC standards.

Slip ring motors comes attached with our in-house designed Slip Ring Device with carbon brush, made from high quality materials, according to European motor winding standards and technology. This series of motors can be used for all heavy duty industries.



Basic Performance Datas (380/415V, Deltar Connection) — Slip Ring

4 Pole - 1500 rpm Synchronous Speed **50Hz**

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ¢		V	A	dB(A)	kg.m	Kg
200L1-4	18.5	1470	33.9	31	89.80%	0.86	3.7	239	47.6	94	0.29	272
200L2-4	22	1470	40	36.6	90.70%	0.86	3.7	281	48	94	0.32	286
225M2-4	30	1475	52.3	47.9	91.70%	0.89	3.3	350	51.5	98	0.63	376
250M1-4	37	1480	67	61.3	91.80%	0.86	3.6	290	79	98	0.87	460
250M2-4	45	1480	80.2	73.4	92.50%	0.87	3.6	338.7	81.7	100	0.98	520
280S-4	55	1472	95	87	92.00%	0.91	3.2	484	71	100	1.86	655
280M-4	75	1477	128	117.2	92.50%	0.91	3.9	277	166	103	2.41	765
315S-4	90	1476	157	143.8	92.80%	0.89	3	296	187	103	3.97	1175
315M-4	110	1481	192	175.8	93.50%	0.88	3.7	328	203	103	4.59	1263
315L1-4	132	1483	230	210.6	94.00%	0.88	4	399	200	106	5.33	1338
315L2-4	160	1484	275	251.8	94.50%	0.89	4	505	191	106	6.11	1450
355M1-4	200	1484	344	315	94.00%	0.89	2.7	627	194	106	10.03	1952
355M2-4	250	1486	438	401	94.50%	0.86	3.5	723	207	108	11.33	2078
355L-4	280	1488	489	447.8	94.80%	0.87	3.5	704	238	108	12.47	2194
400L1-4	315	1485	524	479.8	95.00%	0.91	2.8	557	340	111	17.85	3390
400L2-4	355	1486	587	537.5	95.20%	0.91	2.8	620	344	111	19.34	3515
400L3-4	400	1487	659	603.4	95.50%	0.91	2.8	698	343	111	21.11	3655

6 Pole - 1000 rpm Synchronous Speed **50Hz**

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ¢		V	A	dB(A)	kg.m	Kg
200L2-6	15	980	29.4	26.9	89.20%	0.81	3.1	199.3	48.1	88	0.41	277
22M1-6	18.5	980	35.3	32.3	89.00%	0.83	2.7	187	62.5	88	0.65	335
22M2-6	22	980	41.6	38.1	89.50%	0.83	2.7	224	61	88	0.72	360
250M1-6	30	985	55.3	50.6	91.00%	0.84	3.5	284.7	66.3	91	1.22	480
250M2-6	37	985	68.9	63.1	91.50%	0.84	3.5	338	69	91	1.35	520
280S-6	45	985	81.9	75	92.00%	0.86	3.6	361	77.6	94	2.41	645
280M-6	55	985	98.4	90.1	92.50%	0.86	3.4	486	70.1	94	2.74	695
315S-6	75	987	137	125.4	93.00%	0.85	2.8	266	172	98	5.48	1220
315M-6	90	989	163	149.2	93.50%	0.85	2.8	322	169	98	6.25	1335
315L1-6	110	989	194	177.6	94.00%	0.87	2.8	381	175	98	7.3	1421
315L2-6	132	990	234	214.3	94.20%	0.86	2.8	464	171	98	8.45	1430
355M1-6	160	991	291	266.5	94.50%	0.83	2.8	470	205	102	12.28	1950
355M2-6	200	991	353	323.2	94.80%	0.84	2.7	575	209	102	14.86	2164
355L-6	220	992	388	355.3	94.80%	0.84	2.7	647	204	102	16.71	2273
400L1-6	250	989	444	406.6	94.50%	0.85	2.6	446	337	108	20.69	3345
400L2-6	315	990	553	506.4	94.80%	0.86	2.6	536	352	108	23.73	3545
400L3-6	355	992	627	574.1	95.10%	0.85	2.8	670	315	108	28.28	3835

8 Pole - 750 rpm Synchronous Speed **50Hz**

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ¢		V	A	dB(A)	kg.m	Kg
200L1-8	11	730	23.7	21.7	87.90%	0.75	2.4	147.3	47.3	82	0.41	276
225M1-8	15	735	31.9	29.2	89.30%	0.75	2.4	169	56	86	0.71	357
225M2-8	18.5	735	39.1	35.8	89.50%	0.75	2.4	211	54	86	0.83	387
250M1-8	22	735	44.5	40.7	90.00%	0.78	3	213.9	64.9	86	1.18	480
250M2-8	30	735	61.5	56.3	90.50%	0.77	3	274	68.4	90	1.4	520
280S-8	37	740	74	67.8	91.30%	0.79	3	281.4	81.7	90	2.36	645
280M-8	45	740	86.3	79	92.30%	0.8	3	357.7	77.7	93	3	735
315S-8	55	742	104	95.2	92.50%	0.79	2.4	486	69	93	5.24	1060
315M-8	75	742	139	127.3	93.30%	0.8	2.4	498	91	96	6.82	1386
315L1-8	90	743	171.8	157.3	93.60%	0.8	2.4	504	108	96	7.82	1475
315L2-8	110	743	209.4	191.7	94.00%	0.8	2.6	514	129	96	9.21	1485
355M1-8	132	743	246	225.3	94.00%	0.81	2.7	462	171	99	13.24	1908
335M2-8	160	744	294	269.2	94.50%	0.82	2.7	562	170	99	16.05	2086
355L-8	185	744	345	315.9	94.50%	0.8	2.8	655	168	99	17.84	2203
400L1-8	200	740	404	369.9	93.80%	0.76	3	464	257	102	18.9	3275
400L2-8	250	740	498	456	94.00%	0.76	3	557	267	105	21.94	3470
400L3-8	315	741	624	571.4	94.50%	0.76	3	696	268	105	26.5	3765

Dimension Drawing — Slip Ring

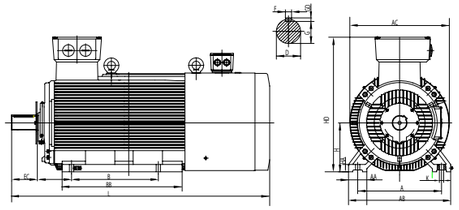


Figure 1 **B3**

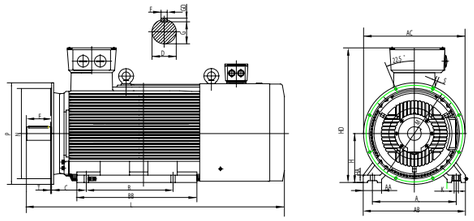


Figure 2 **B35**

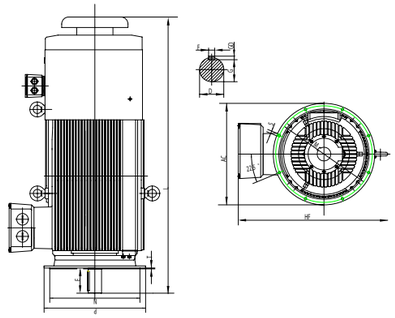


Figure 3 **B5**

For Foot Mounted (B3)

Frame	A	B	C	D	E	FxGD	G	H	K	AB	AC	AA	BB	HD	HA	L
200L	318	305	133	55	110	16x10	49	200	19	388	400	70	375	525	25	970
225M	356	311	149	60	140	18x11	53	225	19	435	446	75	400	555	28	1061
250M	406	349	168	65	140	18x11	58	250	24	490	495	80	450	615	30	1150
280S	457	368	190	75	140	20x12	67.5	280	24	550	560	85	490	700	35	1260
280M	457	419	190	75	140	20x12	67.5	280	24	550	560	85	540	700	35	1310
315S	508	406	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700
315M	508	457	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700
315L	508	508	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700
355M	610	560	254	100	210	28x16	90	355	28	730	730	125	750	1010	52	1910
355L	610	630	254	100	210	28x16	90	355	28	730	730	125	750	1010	52	1910
400L	686	710	280	110	210	28x16	100	400	35	840	820	150	985	1105	60	2115

For Flange Mounted (B5)

Frame	D	E	FXGD	G	M	N	P	S	T	AC	HF	L
200L	55	110	16x10	49	350	300	400	4xΦ19	5	420	580	1040
225M	60	140	18x11	53	400	350	450	8xΦ19	6	446	640	1150
250M	65	140	18x11	58	500	450	550	8xΦ19	6	495	695	1250
280S	75	140	20x12	67.5	500	450	550	8xΦ19	6	560	770	1385
280M	75	140	20x12	67.5	500	450	550	8xΦ19	6	560	770	1425
315S	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815
315M	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815
315L	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815
355M	100	210	28x16	90	740	680	800	8xΦ24	6	710	1160	2050
355L	100	210	28x16	90	740	680	800	8xΦ24	6	710	1160	2050
400L	110	210	28x16	100	975	925	1060	8xΦ24	10	820	1295	2270

For Foot & Flange Mounted (B35)

Frame	A	B	C	D	E	FxGD	G	H	K	M	N	P	S	T	AA	AB	AC	HA	HD	BB	L
200L	318	305	133	55	110	16x10	49	200	19	350	300	400	4xΦ19	5	70	388	420	25	525	375	970
225M	356	311	149	60	140	18x11	53	225	19	400	350	450	8xΦ19	6	75	435	446	28	555	400	1061
250M	406	349	168	65	140	18x11	58	250	24	500	450	550	8xΦ19	6	80	490	495	30	615	450	1150
280S	457	368	190	75	140	20x12	67.5	280	24	500	450	550	8xΦ19	6	85	550	560	35	700	490	1260
280M	457	419	190	75	140	20x12	67.5	280	24	500	450	550	8xΦ19	6	85	550	560	35	700	540	1310
315S	508	406	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
315M	508	457	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
315L	508	508	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
355M	610	560	254	100	210	28x16	90	355	28	740	680	800	8xΦ24	6	125	730	710	52	1010	750	1910
355L	610	630	254	100	210	28x16	90	355	28	740	680	800	8xΦ24	6	125	730	710	52	1010	750	1910
400L	686	710	280	110	210	28x16	100	400	35	975	925	1060	8xΦ24	10	150	840	820	60	1105	985	2115

Single-Phase Motors

Three-Phase Asynchronous Motors
Cast Iron / Aluminum Housing

Single phase series of aluminium housing dual-capacitor asynchronous motors, with the latest design in entirety, are made of selected quality materials and conform to IEC standards.

Single phase motors have good performance, safety and reliable operation; it has a multiple of starting torque up to 2.5. These series of motors are suitable for requirements with big starting torque and high over load, such as air compressors, pumps and many other small types of machinery.

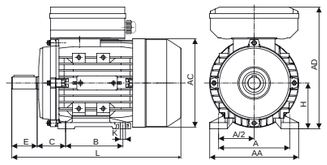


Figure 1 **IM B3**

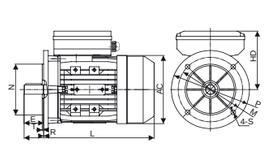


Figure 2 **IM B5**

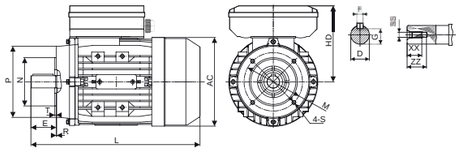


Figure 3 **IM B14**

Double Capacitor Run — Single-Phase

Frame Size	Mounting Dimensions																					Overall Dimensions					Shaft End Screw Dimensions		
	General									IM B14						IM B5													
	A	B	C	D	E	F	G	H	K	M	N	P	R	S	T	M	N	P	R	S	T	AA	AC	AD	HD	L	SS	XX	ZZ
63	100	80	40	11	23	4	8.5	63	7X10	75	60	90	0	M5	2.5	115	95	140	0	φ10	3.0	120	121	179	116	217	M4	10	14
71	112	90	45	14	30	5	11	71	7X10	85	70	105	0	M6	2.5	130	110	160	0	φ10	3.5	132	139	194	123	255	M5	12	17
80	125	100	50	19	40	6	15.5	80	10X13	100	80	120	0	M6	3.0	165	130	200	0	φ12	3.5	160	156	223	143	290	M6	16	21
90S	140	100	56	24	50	8	20	90	10X13	115	95	140	0	M8	3.0	165	130	200	0	φ12	3.5	175	174	240	150	335	M8	19	25
90L	140	125	56	24	50	8	20	90	10X13	115	95	140	0	M8	3.0	165	130	200	0	φ12	3.5	175	174	240	150	365	M8	19	25
100L	160	140	63	28	60	8	24	100	12X15	130	110	160	0	M8	3.5	215	180	250	0	φ15	4.0	198	196	271	171	403/421	M10	22	30
112M	190	140	70	28	60	8	24	112	12X15	130	110	160	0	M8	3.5	215	180	250	0	φ15	4.0	220	221	297	185	431	M10	22	30

Technical Data - Single Phase Double Capacitor Series

Single-Phase

Model	Power	Current	Speed	Eff.	Power Factor	Rate Torque	Tst/Tn	Tmax/Tn	Starting Current	Run Capacitor	Start Capacitor	Noise	Inertia
	(kW)	(A)	(r/min)	(%)	(Cos φ)	(N.M)	(Times)	(Times)	(A)	(μF/V)	(μF/V)	dB(A)	(kg*m²)
ML631-2	0.18	1.36	2820	62	0.93	0.63	1.9	1.8	7	8μF/450V	30μF/250V	70	0.000141
ML632-2	0.25	1.71	2800	67.5	0.94	0.88	2.3	1.8	8	10μF/450V	30μF/250V	70	0.000168
ML711-2	0.37	2.40	2780	70.5	0.95	1.27	2.5	1.6	12	12μF/450V	40μF/250V	75	0.000330
ML712-2	0.55	3.31	2790	74.5	0.97	1.88	2.5	1.8	20	16μF/450V	50μF/250V	75	0.000437
ML801-2	0.75	4.25	2840	77.5	0.99	2.56	2.5	1.8	30	20μF/450V	75μF/250V	75	0.000781
ML802-2	1.1	6.08	2850	79.5	0.99	3.74	2.3	1.8	40	30μF/450V	120μF/250V	78	0.000938
ML90S-2	1.5	8.23	2860	80	0.99	5.10	2.5	1.8	56	40μF/450V	200μF/300V	80	0.001512
ML90L-2	2.2	11.90	2850	81	0.99	7.48	2.5	1.75	15	50μF/450V	250μF/300V	80	0.001995
ML100L-2	3.0	17.70	2830	75	0.98	10.13	2.5	1.63	110	60μF/450V	300μF/300V	83	0.004803
ML112M1-2	3.7	19.90	2900	82.5	0.98	12.40	2.5	1.8	155	60μF/450V	400μF/300V	84	0.007170
ML112M2-2	4.0	21.30	2900	83.5	0.98	13.41	2.5	1.8	165	60μF/450V	400μF/300V	84	0.007453
ML631-4	0.12	1.01	1380	54.5	0.95	0.85	2.5	1.65	6	8μF/450V	30μF/250V	65	0.000291
ML632-4	0.18	1.36	1340	60	0.96	1.27	2.3	1.43	6	10μF/450V	30μF/250V	65	0.000340
ML711-4	0.25	1.78	1415	63	0.97	1.73	2.5	1.7	10	12μF/450V	40μF/250V	65	0.000598
ML712-4	0.37	2.53	1410	65.5	0.97	2.56	2.3	1.6	15	16μF/450V	50μF/250V	68	0.000760
ML801-4	0.55	3.52	1420	71.5	0.95	3.75	2.5	1.8	20	20μF/450V	75μF/250V	70	0.001380
ML802-4	0.75	4.56	1420	73	0.98	5.08	2.5	1.75	27	25μF/450V	100μF/250V	70	0.001656
ML90S-4	1.1	6.62	1420	76	0.95	7.45	2.5	1.7	40	35μF/450V	150μF/250V	73	0.002510
ML90L-4	1.5	8.56	1420	78.5	0.97	10.24	2.5	1.75	55	40μF/450V	200μF/300V	75	0.003252
ML100L1-4	2.2	12.10	1440	80.5	0.98	14.70	2.5	1.65	80	50μF/450V	250μF/300V	78	0.008045
ML100L2-4	3	16.40	1445	83	0.96	19.91	2.4	1.75	110	60μF/450V	300μF/300V	78	0.010543
ML112M1-4	3.7	19.70	1430	83.5	0.98	24.55	2.4	1.75	130	60μF/450V	400μF/300V	79	0.013608
ML112M2-4	4.0	21.30	1435	83.5	0.98	26.54	2.5	1.75	140	60μF/450V	400μF/300V	79	0.014485

Dual Speed Motors

Three-Phase Asynchronous Motors Cast Iron / Aluminum Housing

Dual speed series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. This series of motors has the capability of operation at multiple power output and/or multiple speeds with a wide selection of variation.

Dual Speed motors utilises very special winding technology to achieve its flexible capabilities, reliable operation and professional appearance, easy to maintain, while low on noise and little vibration. This series of motors is used widely for fan and pump industry.

Technical Data

Dual Speed

2/4 Poles - 3000/1500 rpm - Single Winding

Model	Power		Speed		Current	
	(kW)		(r/min)		A	
	2P	4P	2P	4P	2P	4P
80B	0.8	0.16	2955	1480	1.9	0.72
90S	1.2	0.24	2955	1480	2.91	0.81
90L	1.7	0.34	2955	1480	3.91	1.09
100L	2.4	0.48	2955	1480	5.52	1.35
112M	3.3	0.66	2955	1480	7.48	1.66
132SA	4.4	0.88	2955	1480	9.92	2.23
132SB	6.1	1.2	2955	1480	13.05	3.1
160MA	8.3	1.7	2955	1480	17.53	4.26
160MB	12	2.4	2955	1480	24.23	5.56
160L	17	3.4	2955	1480	34.1	7.27
180M	20	4	2955	1480	39.84	8.5
200LA	24	4.8	2955	1480	46.22	10.13
200LB	33	6.6	2955	1480	59.15	13.09
225M	41	8.2	2955	1480	77.48	17.5
250M	50	10	2955	1480	90.74	19.09
280S	61	12	2955	1480	118.95	24.84
280M	83	17	2955	1480	150.5	34.32
315S	99	20	2955	1480	172.36	39.7
315MA	121	24	2955	1480	219.87	46.99
315LA	145	29	2955	1480	262.84	57.5
315LB	176	35	2955	1480	321.58	67.9

4/6 Poles - 1500/1000 rpm - Separate Winding

Model	Power (kW)		Speed (rpm)		Current A	
	4P	6P	4P	6P	4P	6P
80B	0.55	0.18	1480	990	1.64	0.67
90S	0.75	0.25	1480	990	2.12	0.86
90L	1.1	0.36	1480	990	2.96	1.3
100LA	1.5	0.5	1480	990	3.81	1.8
100LB	2.2	0.75	1480	990	5.11	2.32
112M	3	1	1480	990	6.84	3
132S	4	1.3	1480	990	8.88	3.91
132M	5.5	1.8	1480	990	11.76	4.78
160M	7.5	2.5	1480	990	15.65	6.21
160L	11	3.5	1480	990	22.56	9
180L	15	5	1480	990	30.32	12.5
200LA	18.5	6.1	1480	990	36.26	13.01
200LB	22	7.3	1480	990	42.9	17.1
225M	33	11	1480	990	63.48	24.52
250M	45	15	1480	990	84.59	31.66
280M	55	18	1480	990	103	37.02
315S	75	25	1480	990	138.11	51.09
315MA	90	30	1480	990	165.95	59.3
315LA	110	36	1480	990	201	70.1
315LB	132	44	1480	990	240.06	86.61

4/8 Poles - 1500/750 rpm - Single Winding

Model	Power (kW)		Speed (rpm)		Current A	
	4P	8P	4P	8P	4P	8P
80B	0.6	0.12	1480	735	1.66	0.6
90S	0.8	0.16	1480	735	2.23	0.92
90L	1.2	0.24	1480	735	3.1	1.25
100LA	1.7	0.34	1480	735	4.26	1.4
100LB	2.4	0.5	1480	735	5.56	1.72
112M	3.3	0.7	1480	735	7.27	2.19
132S	4.4	0.9	1480	735	9.1	3.24
132M	6.1	1.2	1480	735	13.09	4.31
160M	8.3	1.7	1480	735	17.5	5.8
160L	12	2.4	1480	735	24.84	6.95
180M	17	3.4	1480	735	34.32	8.85
180L	20	4	1480	735	39.7	10.87
200L	24	5	1480	735	46.99	11.71
225S	33	6.6	1480	735	65.5	15.58
225M	41	8.2	1480	735	81.24	19.11
250M	50	10	1480	735	89.32	22.79
280S	61	12	1480	735	114.69	28.88
280M	83	17	1480	735	147.2	36.5
315S	99	20	1480	735	191.82	45
315MA	121	24	1480	735	224.3	47.1
315LA	145	29	1480	735	277.11	58.53
315LB	176	35	1480	735	324.89	72.15

6/8 Poles - 1000/750 rpm - Separate Winding

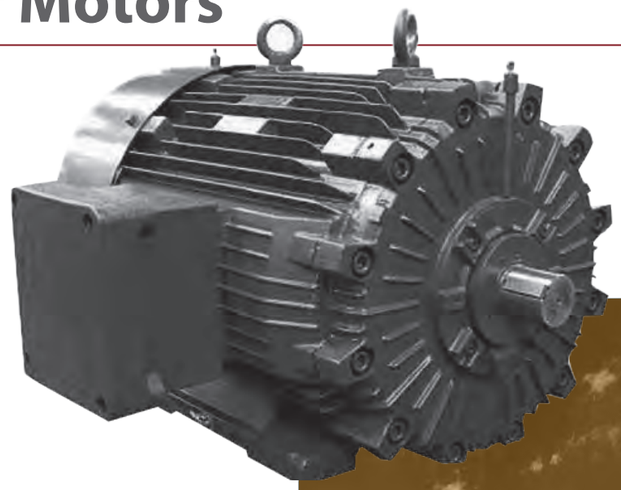
Model	Power (kW)		Speed (rpm)		Current A	
	6P	8P	6P	8P	6P	8P
90S	0.55	0.24	990	735	1.87	1.25
90L	0.75	0.32	990	735	2.32	1.4
100L	1.1	0.47	990	735	3.28	1.7
112M	1.5	0.65	990	735	4.14	1.91
132S	2.2	0.95	990	735	5.61	3.58
132MA	3	1.3	990	735	7.47	4.81
132MB	4	1.7	990	735	9.76	5.8
160M	5.5	2.4	990	735	12.8	6.95
160L	7.5	3.2	990	735	17.15	8.85
180L	11	4.7	990	735	24.52	11.5
200L	13	5.5	990	735	28.99	13.6
225S	15	6.5	990	735	31.6	15.58
225M	21	9	990	735	44.71	21.09
250M	26	11	990	735	52.11	25.43
280S	30	13	990	735	59.35	30.02
280M	37	16	990	735	70.15	38.22
315S	53	23	990	735	104	49.85
315MA	65	28	990	735	122.84	58.58
315LA	80	34	990	735	162.05	71.88
315LB	92	40	990	735	170.25	82.41

DUAL SPEED

Explosion Proof Motors

Three-Phase Asynchronous Motors Cast Iron Housing

Explosion proof motors are manufactured according to International IEC standards, and can be delivered with International ATEX Certificate for all frame sizes, and for many different ex-proof requirements. This series of motors are designed to conform to the standards of Exd IIA T4, Exd IIB T4, Exd IIC T4.



Nemko

Page 1 of 3

[1] EC-TYPE EXAMINATION CERTIFICATE
[2] Equipment or Protected System Intended for use in Potentially explosive atmospheres Directive 94/9/EC

[3] EC-Type Examination Certificate Number: Nemko 08ATEX1097

[4] Equipment or Protective System: Motor

[5] Applicant/ Manufacturer: Nanyang Explosion Protection Group Co., Ltd.
[6] Address: No.22 North Zhongjing Road
Nanyang, Henan,
P. R. CHINA

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] Nemko AS, notified body number 0470 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 110359

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

CENELEC EN 60079-0: 2004
CENELEC EN 60079-1: 2004
CENELEC EN 60079-7: 2003

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

Ex II 2 G Ex d IIB T4, or
Ex de IIB T4, or
Ex d IIC T4, or
Ex de IIC T4
Ta : +40°C (Can be extended to +60°C, see conditions page 2)

Oslo, 2008-11-07

Rolf Hoel
Certification Manager, Ex-products

This certificate may only be reproduced in its entirety and without any change, schedule included.

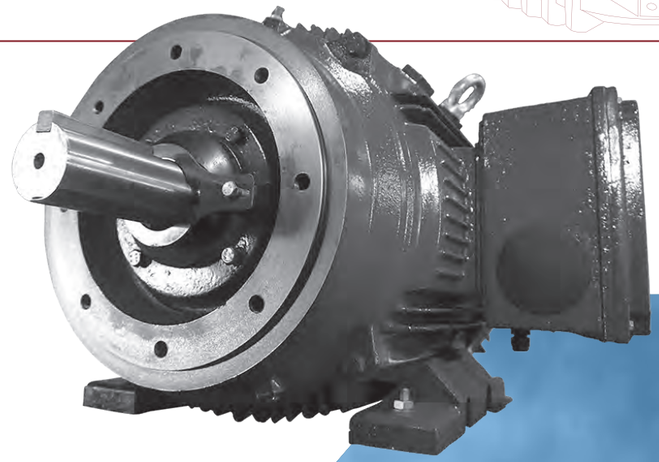
Postal address:	Office address:	Telephone:	Enterprise number:
P.O.box 73 Blindern	Gaustadalléen 30	+47 22 96 03 30	NO 974404532
N-0314 OSLO, NORWAY	0373 OSLO	Fax: +47 22 96 05 50	

International ATEX Certificate
Exd IIB T4 | Exd IIC T4

Marine Motors

Three-Phase Asynchronous Motors Cast Iron Housing

Elektrim Techtop marine class motors are manufactured according to International IEC standards and can be delivered with GL (Germanischer Lloyed) Type Approval Certificate for all frame sizes, and suitable for third party witness certification testing from all major marine certification societies. Marine motors are installed in various industrial and marine fields all over the world, and are a reliable prime mover for all vessel and marine applications.



Type Approval Certificate GL

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No.	62 000 - 14 HH
Company	Shanghai Top Motor Co., Ltd. No.303 Kangliu Road Kangqiao Town Pudong, Shanghai, 201315, CHINA
Product Description	Induction Motors Cast iron frame
Type	T1C.., T2C.., T3C.., frame sizes 80 up to 355 TCI.., TCP.., frame sizes 80 up to 355
Environmental Category	H
Technical Data / Range of Application	Place of manufacturing: SHANGHAI HIMAK ELECTRICAL MA.. CO., LTD. No. 568 YUANXI Rd, NANHUI Industry Area Pudong, Shanghai, P. R. China
	Sizes: 1, 2, 3, S, S1, S2, M, M1, M2, L, L1, L2 Rated voltage: 220 V up to 690 V Rated power, Duty Type: S1 0,75 kW up to 315 kW Synchronous speed: 750 1/min up to 3600 1/min Rated frequency: 50 Hz, 60 Hz Ambient temperature: 45 °C Thermal class: 155 (F) Degree of protection: IP 55, IP 56, IP 65 No. of poles: 2, 4, 6 and 8 Spec. model: For marine applications / environments
Test Standard	Guidelines for the Performance of Type Approvals, Chapter 2- Test Requirements for Electrical / Electronic Equipment and Systems (VI-7-2), Edition 2012
Documents	Drawing: 8MHY.010.T035; 8MHY.010.T036 dated 2014-03-12 Technical data: TECHTOP, T.C-serie page 44 - 46 Test report: T3C 315L2-6, Report No. 20140312001 dated 2014.03.11 Catalogue: SHANGHAI TOP MOTOR CO., LTD, TECHTOP Motor 2013
Remarks	None

Valid until 2019-04-01
Page 1 of 1
File No. I.G.03
Hamburg, 2014-04-02

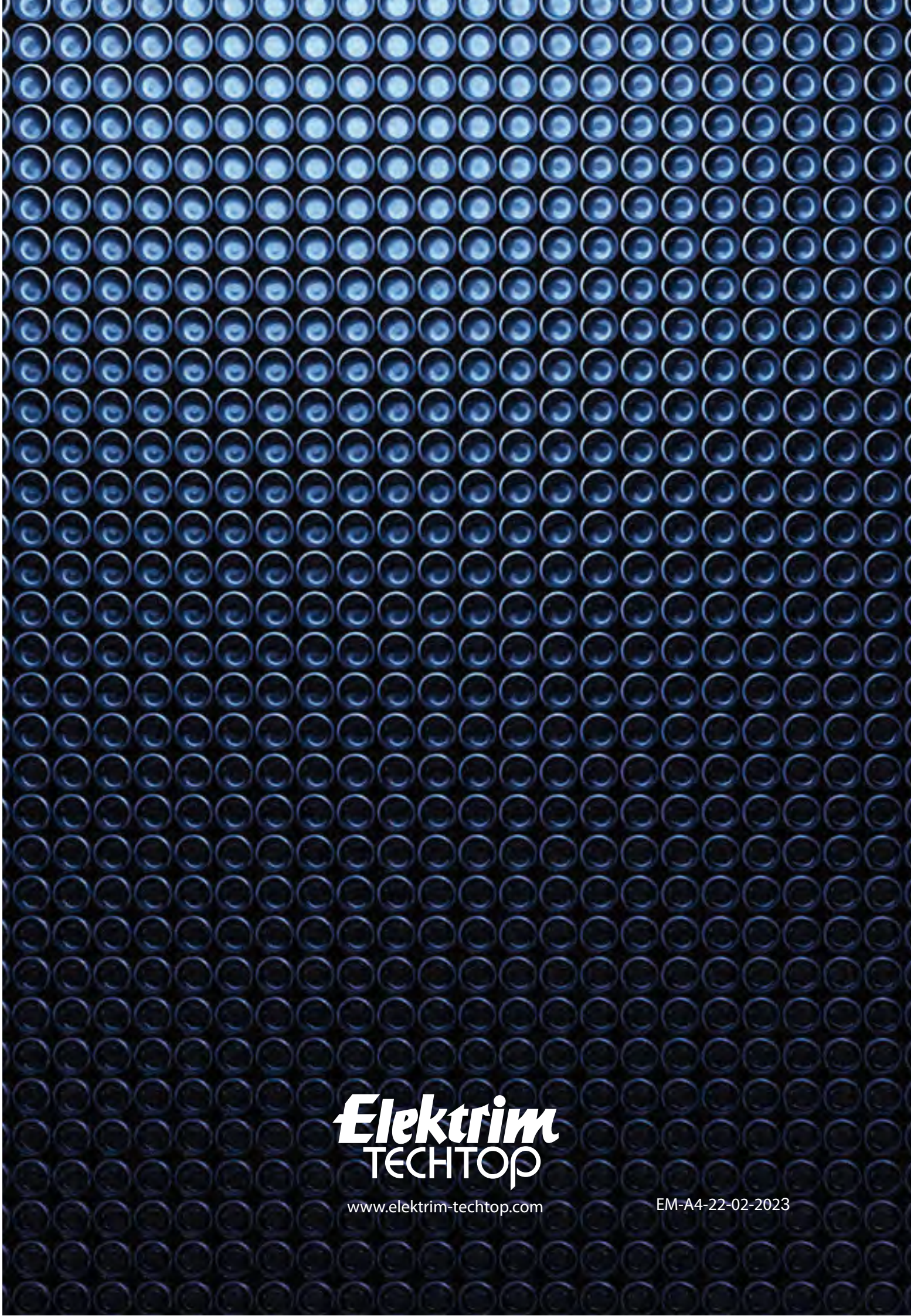
Type Approval Symbol GL

Germanischer Lloyd

i.V. W.V. Wolfgang Voß
i.A. Heinz-Dieter Hespe

This certificate is issued on the basis of "Guidelines for the Performance of Type Approvals Part 1, Procedure".

GL Type Approval Certificate
Series range 0.75kW - 355kW



www.elektrim-techtop.com

EM-A4-22-02-2023