

EMMElektrim TECHTOP

HIGH EFFICIENCY (IE1 - IE2) AC MOTORS

EFISIENSI TINGGI (IE1 - IE2) MOTOR AC



The Driving Force Behind Every Machine

Kekuatan Penggerak Dibalik Setiap Mesin

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HIGH EFFICIENCY (IE1 - IE2) AC MOTORS



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-pole 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-pole and 4-pole standard three phase motors described in this documentation correspond with the EU efficiency classification IE1 - IE2. Designation takes place with the IE1 - IE2 logo on the nameplate.

Dengan tujuan untuk mengurangi kebutuhan daya motor listrik dan konsumsi energi di Eropa, CEMEP dan Uni Eropa mencapai sebuah kesepakatan, dimana motor AC tiga Fasa 2 kutub dan 4 kutub terpengaruh, I.E. motor standar, yang didefinisikan sebagai pendinginan kipas yang benar-benar tertutup, motor tegangan rendah sangkar tupai dengan 400V, 50Hz dan S1 pada nilai kisaran keluaran dari 1,1 sampai 90kW.

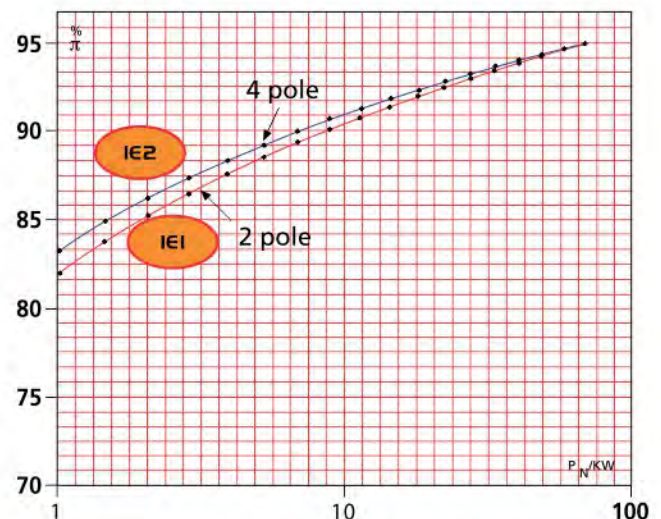
Pada kisaran output 1,1 sampai 90kW, motor tiga fasa 2 kutub dan 4 kutub yang dijelaskan dalam dokumentasi ini sesuai dengan klasifikasi efisiensi EU IE1 - IE2. Penunjukan ditempatkan dengan logo IE1 - IE2 pada plat nama.

The nominal levels of efficiency, to which the individual rated outputs, pole numbers and classes are allocated, are contained in the following tables.

Tingkat efisiensi nominal, yang mana masing-masing diberi nilai keluaran, nomor kutub dan kelas dialokasikan, tercantum dalam tabel berikut.

2-pole	IE1	IE2
kw	$\pi\%$	$\pi\%$
1.1	≥ 76.2	≥ 82.8
1.5	≥ 78.5	≥ 84.1
2.2	≥ 81.0	≥ 85.6
3	≥ 82.6	≥ 86.7
4	≥ 84.2	≥ 87.6
5.5	≥ 85.7	≥ 88.6
7.5	≥ 87.0	≥ 89.5
11	≥ 88.4	≥ 90.5
15	≥ 89.4	≥ 91.3
18.5	≥ 90.0	≥ 92.2
22	≥ 90.5	≥ 92.9
30	≥ 91.4	≥ 93.3
37	≥ 92.0	≥ 93.7
45	≥ 92.5	≥ 94.0
55	≥ 93.0	≥ 94.0
75	≥ 93.6	≥ 94.6
90	≥ 93.9	≥ 95.0

4-pole	IE1	IE2
kw	$\pi\%$	$\pi\%$
1.1	≥ 76.2	≥ 82.8
1.5	≥ 78.5	≥ 84.1
2.2	≥ 81.0	≥ 85.6
3	≥ 82.6	≥ 86.7
4	≥ 84.2	≥ 87.6
5.5	≥ 85.7	≥ 88.6
7.5	≥ 87.0	≥ 89.5
11	≥ 88.4	≥ 90.5
15	≥ 89.4	≥ 91.3
18.5	≥ 90.0	≥ 92.2
22	≥ 90.5	≥ 92.9
30	≥ 91.4	≥ 93.3
37	≥ 92.0	≥ 93.7
45	≥ 92.5	≥ 94.0
55	≥ 93.0	≥ 94.0
75	≥ 93.6	≥ 94.6
90	≥ 93.9	≥ 95.0



EMMElektrim Techtop series cast iron motors are totally enclosed fan cooled, 3 phase, squirrel cage induction motors.

EMMElektrim Techtop seri motor besi cor adalah pendinginan kipas yang benar-benar tertutup, 3 fasa, motor induksi sangkar tupai.

EMMElektrim Techtop series cast iron motors are manufactured to High Efficiency (IE1 - IE2) and starting torque and are characterized by outstanding features such as : protection degree in IP55, insulation class F, low noise (test at load), optimized structure and artistic outline. It's cooling method is IC411 and the rated output and mounting dimensions fully conformed to the standard IEC and DIN 42673. The EMMElektrim Techtop series cast iron motors are suitable for driving various kinds of machines or equipments without special requirements.

EMMElektrim Techtop seri motor besi cor diproduksi dengan Efisiensi Tinggi (IE1 - IE2) dan torsi awal dan ditandai dengan fitur luar biasa seperti: tingkat perlindungan di IP55, isolasi kelas F, kebisingan rendah (uji pada beban), struktur optimal dan garis besar artistik. Metode pendinginannya adalah IC411 dan nilai keluaran dan dimensi pemasangan yang sepenuhnya sesuai dengan standar IEC dan DIN 42673. Motor besi cor EMMElektrim cocok untuk menggerakkan berbagai jenis mesin atau peralatan tanpa persyaratan khusus.

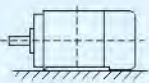
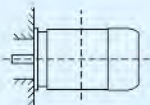
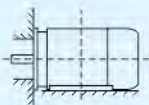
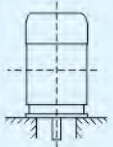
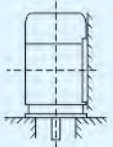
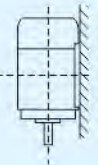
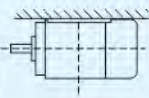
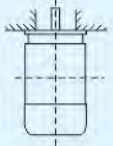
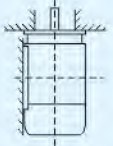
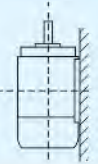
Degrees of Protection (IEC 60034-5)

Tingkat Perlindungan (IEC 60034-5)

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 from 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 (IEC 60034-7)

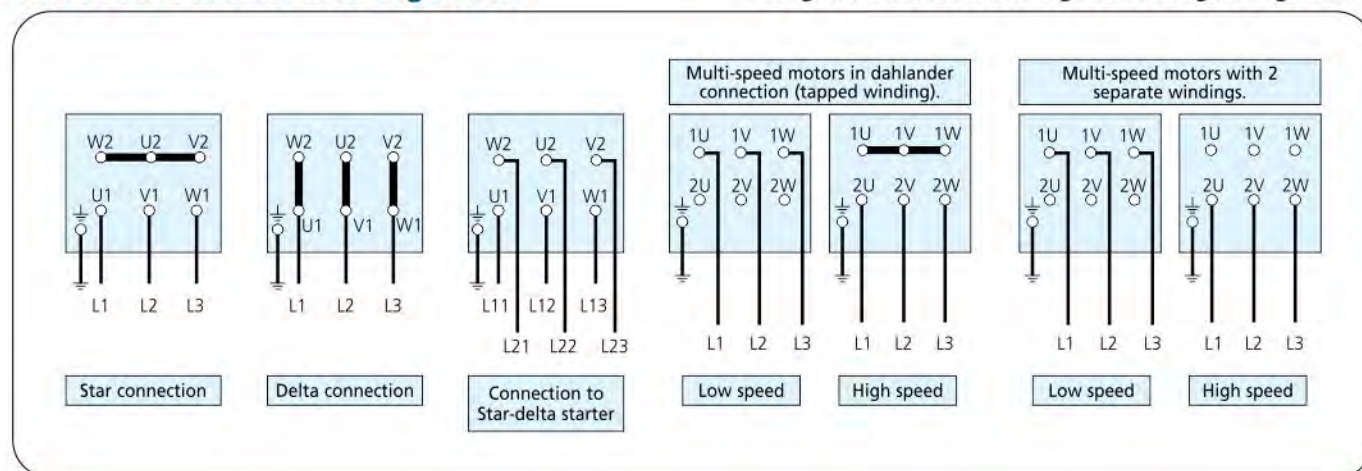
Pengaturan Pemasangan (IEC 60034-7)

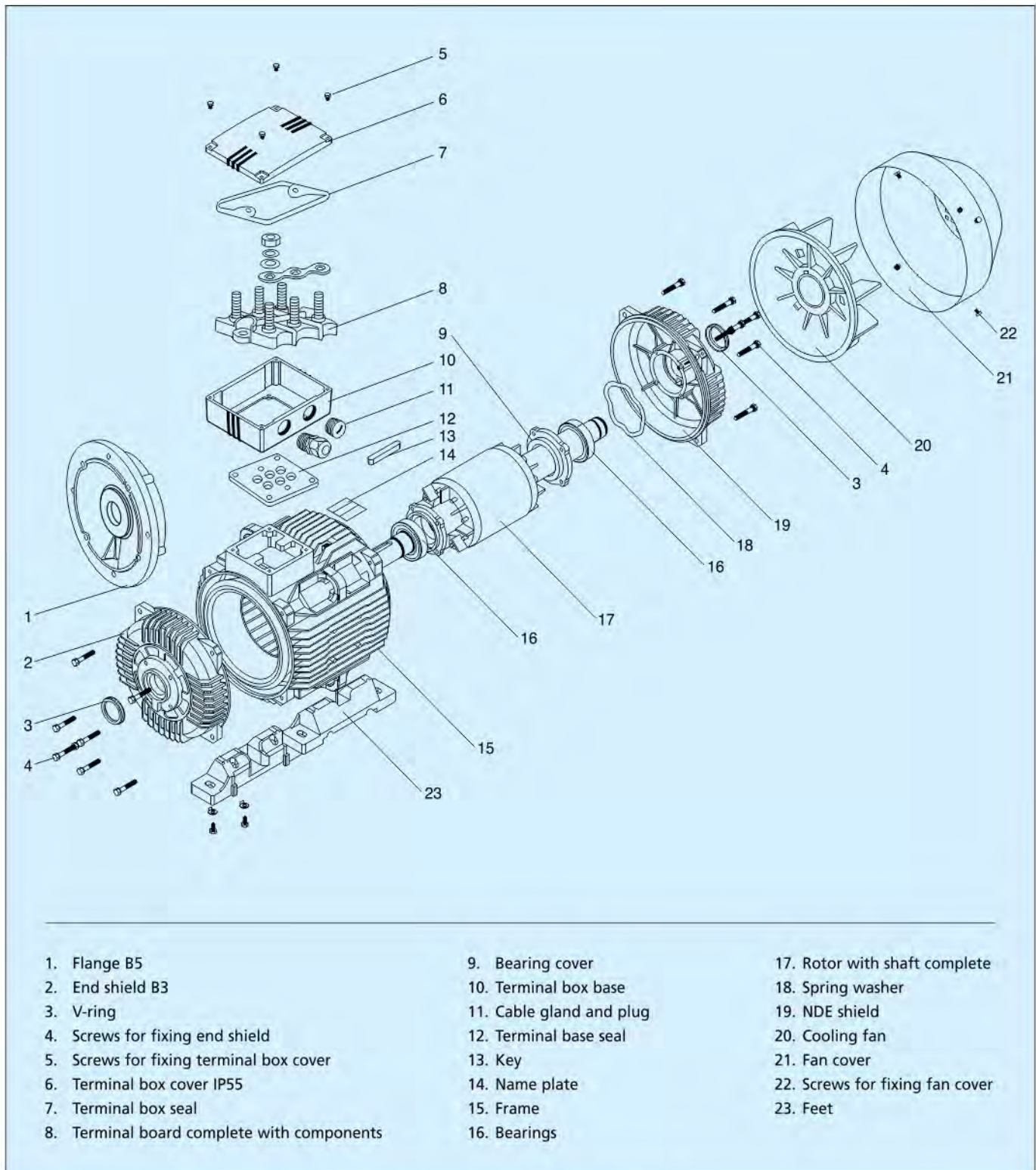
FOOT MTG HORIZ	FLANGE MTG	FOOT/FLANGE MTG	FOOT MTG VERT
B3 IM1001 H80 ~ 355 	B5 IM3001 H80 ~ 280 	B35 IM2001 H80 ~ 355 	
B6 IM1051 H80 ~ 160 	V1 IM3011 H80 ~ 355 	V15 IM2011 H80 ~ 160 	V5 IM1011 H80 ~ 160 
B7 IM1061 H80 ~ 160 			
B8 IM1071 H80 ~ 160 	V3 IM3031 H80 ~ 160 	V36 IM2031 H80 ~ 160 	V6 IM1031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

Connection Diagrams

Three Phase Motors with Cage Rotor

Diagram Koneksi Motor Tiga Fasa dengan Cage Rotor





- This catalogue is only a reference for users. The data may be changed, please contact us before ordering.
Katalog ini hanya menjadi referensi bagi pengguna. Data dapat berubah, silahkan hubungi kami sebelum memesan.
- Note type, rated output, synchronous speed, voltage and frequency, insulation class, mounting type etc. When ordering.
Catat tipe, nilai keluaran, kecepatan sinkron, voltase dan frekuensi, kelas insulasi, tipe pemasangan dll. Ketika memesan.
- For special requirement, please contact us, we may deliver following special type of motor:
Untuk keperluan khusus, silahkan hubungi kami, kami dapat memberikan jenis motor khusus berikut ini:
 1. Voltage: such as 420V. (Tegangan: seperti 420V)
 2. Frequency 60Hz. (Frekuensi 60Hz)
 3. Double end shaft. (Poros akhir ganda)
 4. Motor for tropical humid climate. (Motor untuk iklim lembab tropis)

2 Pole - 3000 rpm Synchronous Speed 50Hz

2 Kutub - 50Hz Kecepatan Sinkron 3000 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-2	0.75	1	2840	1.8	1.7	1.67	5.5	75.5	0.83	2.5	2.3	2.6	0.001	67	16
EM80B-2	1.1	1.5	2840	2.6	2.5	2.4	5.6	76.2	0.84	3.7	2.3	2.6	0.001	67	17
EM90S-2	1.5	2	2850	3.4	3.2	3.1	6.1	79.5	0.85	5	2.5	2.9	0.001	72	22
EM90L-2	2.2	3	2850	4.8	4.6	4.4	6.1	81.7	0.85	7.4	2.7	2.9	0.001	72	25
EM100L-2	3	4	2880	6.3	6	5.8	6.5	83.1	0.87	10	2.7	2.9	0.004	76	33
EM112M-2	4	5.5	2880	8.2	7.8	7.6	6.5	84.2	0.88	13.3	2.6	2.9	0.006	77	45
EM132SA-2	5.5	7.5	2900	11.1	10.5	10.2	6.9	85.9	0.88	18.1	2.3	2.6	0.011	80	64
EM132SB-2	7.5	10	2900	14.9	14.2	13.5	6.9	87.2	0.88	24.5	2.5	2.8	0.013	80	70
EM160MA-2	11	15	2930	21.1	20.1	19.4	6.7	88.7	0.89	35.8	2.6	2.9	0.038	86	117
EM160MB-2	15	20	2930	28.6	27.2	26.2	6.7	89.5	0.89	48.8	2.6	2.9	0.045	86	125
EM160L-2	18.5	25	2930	34.6	32.9	31.8	6.8	90.2	0.9	60.4	2.5	2.8	0.055	86	147
EM180M-2	22	30	2940	41	38.9	37.6	6.6	90.6	0.9	71.4	2.6	2.8	0.076	89	180
EM200LA-2	30	40	2950	55.4	52.6	50.7	6.5	91.5	0.9	97.2	2.5	2.7	0.124	92	240
EM200LB-2	37	50	2950	67.9	64.5	62.2	6.5	92	0.9	119.8	2.4	2.6	0.139	92	255
EM225M-2	45	60	2970	82.1	78	75.3	6.8	92.5	0.9	144.8	2.4	2.6	0.233	92	309
EM250M-2	55	75	2970	99.6	94.6	91.3	6.8	93.2	0.9	177	2.5	2.8	0.312	93	403
EM280S-2	75	100	2970	134.8	128.1	123.5	6.7	93.9	0.9	241.3	2.4	2.7	0.597	94	544
EM280M-2	90	125	2970	159.5	151.5	146.1	6.7	94.2	0.91	289.5	2.4	2.7	0.675	94	620
EM280M-2	110	150	2970	194.7	185	178.3	6.5	94.3	0.91	353.9	2	2.5	0.86	96	733
EM315S-2	110	150	2980	194.6	184.9	178.2	6.6	94.4	0.91	352.7	2	2.5	1.18	96	980
EM315M-2	132	180	2980	233	221.4	213.4	6.6	94.6	0.91	423.2	2.1	2.5	1.55	96	1080
EM315LA-2	160	220	2980	282.1	270	258.4	6.7	94.7	0.91	513	1.9	2.4	1.76	99	1160
EM315LB-2	200	270	2980	347.7	330.1	318.4	6.7	95	0.92	641.2	1.9	2.4	2.02	99	1190
EM355M-2	250	340	2980	432.3	410.8	395.9	6.5	95.5	0.92	801.5	1.6	2.3	3.56	103	1760
EM355L-2	315	430	2980	543	515.9	497.3	6.5	95.8	0.92	1010	1.6	2.3	4.1	103	1850

4 Pole - 1500 rpm Synchronous Speed 50Hz

4 Kutub - 50Hz Kecepatan Sinkron 1500 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-4	0.55	0.75	1390	1.6	1.5	1.4	5.5	71.4	0.75	3.8	2.2	2.4	0.002	58	17
EM80B-4	0.75	1	1390	2.1	2	1.9	5.6	73.5	0.76	5.2	2.2	2.4	0.002	58	18
EM90S-4	1.1	1.5	1400	2.9	2.7	2.6	5.4	76.2	0.77	7.5	2.2	2.5	0.002	61	22
EM90L-4	1.5	2	1400	3.8	3.5	3.4	5.2	78.7	0.78	10.2	2.4	2.6	0.003	61	27
EM100LA-4	2.2	3	1420	5.1	4.9	4.7	6	81	0.81	14.8	2.3	2.6	0.007	64	34
EM100LB-4	3	4	1420	6.8	6.4	6.2	6.1	82.7	0.82	20.2	2.3	2.7	0.007	64	38
EM112M-4	4	5.5	1440	8.8	8.4	8.1	6.5	84.5	0.82	26.5	2.3	2.8	0.01	65	43
EM132S-4	5.5	7.5	1440	11.7	11.2	10.8	6.8	85.7	0.83	36.5	2.3	2.9	0.021	71	68
EM132M-4	7.5	10	1440	15.6	14.8	14.3	6.5	87.1	0.84	49.8	2.4	3	0.03	71	81
EM160M-4	11	15	1460	22.5	21.3	20.6	6.9	88.6	0.84	72	2.3	2.9	0.075	75	123
EM160L-4	15	20	1460	30.3	28.5	27.5	6.8	89.5	0.85	98.2	2.3	2.9	0.092	75	144
EM180M-4	18.5	25	1470	36.2	34.4	33.2	6.4	90.2	0.86	120.2	2.3	2.9	0.139	76	182
EM180L-4	22	30	1470	42.9	40.7	39.3	6.9	90.7	0.86	143	2.3	2.9	0.158	76	190
EM200L-4	30	40	1470	57.5	54.7	52.7	6.8	92.1	0.86	195	2.4	2.9	0.262	79	270
EM225S-4	37	50	1480	69.7	66.2	64.6	6.5	92.7	0.87	238.9	2.2	2.7	0.406	81	284
EM225M-4	45	60	1480	84.5	80.3	77.4	6.3	93	0.87	290.5	2.3	2.5	0.469	81	320
EM250M-4	55	75	1480	103	97.8	94.3	6.4	93.3	0.87	355.1	2.2	2.5	0.66	83	427
EM280S-4	75	100	1480	138.1	131.1	126.4	6.8	93.8	0.88	483.9	2.1	2.8	1.12	86	562
EM280M-4	90	125	1480	165	157	152	6.9	94.1	0.88	580.7	2.2	2.7	1.46	86	667
EM280M-4	110	150	1480	201	191	184	6.5	94.5	0.89	709.8	2.1	2.3	2.68	93	717
EM315S-4	110	150	1480	200.5	190.5	183.6	6.5	94.7	0.88	709.8	1.9	2.7	3.11	93	1000
EM315M-4	132	180	1480	240	228	220	6.8	95	0.88	851.8	2.3	3.2	3.29	93	1100
EM315LA-4	160	220	1480	287	273	263	6.6	95.2	0.89	1032	2.6	3	3.79	97	1160
EM315LB-4	200	270	1480	358	340	328	6.4	95.4	0.89	1290	2.2	2.8	4.49	97	1270
EM355M-4	250	340	1490	441	419	405	6.2	95.6	0.9	1603	1.9	2.9	5.67	101	1700
EM355L-4	315	430	1490	555	527	509	6.1	95.8	0.9	2020	2.1	3.1	6.66	101	1850

■ IFL = Full Load Current

■ IST = Locked Rotor Current

■ TST = Locked Rotor Torque

■ TM = Maximum Torque

■ TFL = Full Load Torque

6 Pole - 1000 rpm Synchronous Speed 50Hz

6 Kutub - 50Hz Kecepatan Sinkron 1000 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-6	0.37	0.5	890	1.3	1.2	1.1	4.4	62	0.7	4	1.9	2.3	0.002	54	17
EM80B-6	0.55	0.75	890	1.8	1.7	1.6	4.5	65	0.72	5.9	2.1	2.4	0.003	54	19
EM90S-6	0.75	1	910	2.3	2.2	2.1	4.1	69.1	0.72	7.9	2.3	2.7	0.003	57	23
EM90L-6	1.1	1.5	910	3.2	3	2.9	4.6	72	0.73	11.5	2.3	2.7	0.004	57	25
EM100L-6	1.5	2	920	4.1	3.9	3.7	5	76	0.75	15.6	2.4	2.8	0.007	61	33
EM112M-6	2.2	3	940	5.6	5.3	5.1	5.2	79.1	0.76	22.4	2.1	2.5	0.014	65	45
EM132S-6	3	4	960	7.4	7	6.8	5.6	81.3	0.76	29.9	1.9	2.5	0.029	69	63
EM132MA-6	4	5.5	960	9.7	9.2	8.9	6.2	82.3	0.76	39.8	2.1	2.7	0.036	69	73
EM132MB-6	5.5	7.5	960	12.8	12.2	11.7	6.5	84.7	0.77	54.7	2.3	2.8	0.045	69	84
EM160M-6	7.5	10	970	17.1	16.2	15.6	5.6	86.6	0.77	73.9	2	2.6	0.088	73	119
EM160L-6	11	15	970	24.5	23.2	22.4	5.8	87.6	0.78	108.3	2.1	2.4	0.116	73	147
EM180L-6	15	20	970	31.6	30.1	28.9	5.7	89	0.81	147.7	2	2.4	0.207	73	195
EM200LA-6	18.5	25	970	38.5	36.6	35.2	6.7	90.2	0.81	182.2	2.2	2.8	0.315	76	220
EM200LB-6	22	30	970	44.7	42.5	40.9	6.6	90.2	0.83	216.7	2.3	2.9	0.36	76	250
EM225M-6	30	40	980	59.3	56.4	54.3	6.8	91.5	0.84	292.5	2.2	2.7	0.547	76	292
EM250M-6	37	50	980	70.1	67.4	64.9	6.2	92.2	0.86	360.7	2	2.5	0.834	78	408
EM280S-6	45	60	980	86	82	79	6.1	92.5	0.86	438.7	1.9	2.5	1.39	80	536
EM280M-6	55	75	980	105	100	96	6.7	92.9	0.86	536.2	2.1	2.7	1.65	80	595
EM315S-6	75	100	990	142	135	129	6.5	93.7	0.86	723.8	2	2.7	4.11	85	990
EM315M-6	90	125	990	170	161	155	6.2	93.9	0.86	868.6	2	2.6	4.28	85	1080
EM315LA-6	110	150	990	206	196	188	6	94.5	0.86	1062	1.9	2.7	5.45	85	1150
EM315LB-6	132	180	990	244	232	223	5.8	94.6	0.87	1274	2	2.7	6.12	85	1210
EM355MA-6	160	220	990	291	276	266	6.3	95.1	0.88	1544	1.6	2.8	8.85	92	1600
EM355MB-6	200	270	990	362	343	331	6.6	95.2	0.88	1930	2	2.9	9.55	92	1700
EM355L-6	250	340	990	451	429	413	6.5	95.1	0.88	2413	1.6	3	10.3	92	1800

8 Pole - 750 rpm Synchronous Speed 50Hz

8 Kutub - 50Hz Kecepatan Sinkron 750 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-8	0.18	0.25	630	0.88	0.83	0.8	2.9	51	0.61	2.8	2	2.2	0.002	52	17
EM80B-8	0.25	0.37	640	1.15	1.09	1.05	3	54	0.61	3.7	2.1	2.4	0.003	52	19
EM90S-8	0.37	0.5	660	1.48	1.41	1.36	3.4	62	0.61	5.4	2	2.2	0.004	56	23
EM90L-8	0.55	0.75	660	2.16	2.06	1.98	3.5	63	0.61	8	2.1	2.3	0.004	56	25
EM100LA-8	0.75	1	690	2.41	2.29	2.21	3.5	70.5	0.67	10.4	2	2.2	0.008	59	33
EM100LB-8	1.1	1.5	690	3.35	3.18	3.06	3.6	72.4	0.69	15.2	2.2	2.4	0.01	59	38
EM112M-8	1.5	2	690	4.4	4.2	4	3.9	74.5	0.7	20.8	2.4	2.6	0.017	61	50
EM132S-8	2.2	3	710	5.9	5.6	5.4	4.3	79.3	0.71	29.6	2.3	2.5	0.031	64	63
EM132M-8	3	4	710	7.8	7.4	7.1	4.4	80.1	0.73	40.4	2.2	2.4	0.01	64	79
EM160MA-8	4	5.5	720	10.2	9.7	9.3	4.4	81.6	0.73	53.1	2.2	2.5	0.075	68	118
EM160MB-8	5.5	7.5	720	13.6	12.9	12.4	5	83.3	0.74	73	2.2	2.4	0.093	68	119
EM160L-8	7.5	10	720	17.7	16.8	16.2	5.7	85.9	0.75	99.5	2.1	2.3	0.126	68	145
EM180L-8	11	15	730	25.4	24.1	23.2	5.6	87.8	0.75	144	2.3	2.5	0.203	70	184
EM200L-8	15	20	730	34	32.3	31.1	5.5	88.3	0.76	196.3	2.1	2.4	0.339	73	250
EM225S-8	18.5	25	730	41	39	37.5	5.6	90.2	0.76	242.1	2.2	2.6	0.491	73	266
EM225M-8	22	30	740	47.2	44.8	43.2	5.4	90.8	0.78	284	2.1	2.4	0.547	73	292
EM250M-8	30	40	740	63.3	60.1	57.9	5.3	91.2	0.79	387.3	2.2	2.5	0.83	75	405
EM280S-8	37	50	740	77.5	73.6	71	5.6	91.8	0.79	477.7	2.3	2.7	1.39	76	520
EM280M-8	45	60	740	94.1	89.4	86.1	5.2	92	0.79	581	2.1	2.8	1.65	76	592
EM315S-8	55	75	740	110.8	105.3	101.5	5.7	93.1	0.81	710.1	1.9	2.5	4.79	82	1000
EM315M-8	75	100	740	150.1	142.6	137.5	5.9	93.7	0.81	968.3	2.1	2.8	5.58	82	1100
EM315LA-8	90	125	740	177.4	168.5	162.4	6.2	94	0.82	1162	2.3	2.9	6.37	82	1160
EM315LB-8	110	150	740	216.4	205.6	198.1	6	94.2	0.82	1420	2.2	2.8	7.23	82	1230
EM355MA-8	132	180	740	259.4	246.4	237.5	6.4	94.3	0.82	1704	1.9	2.7	7.55	90	1600
EM355MB-8	160	220	740	313.7	298	287.3	6.3	94.5	0.82	2066	1.7	2.6	11.73	90	1700
EM355L-8	200	270	740	386.2	366.9	353.6	6.5	94.8	0.83	2582	1.8	2.9	12.86	90	1800

■ IFL = Full Load Current ■ IST = Locked Rotor Current ■ TST = Locked Rotor Torque ■ TM = Maximum Torque ■ TFL = Full Load Torque

2 Pole - 3000 rpm Synchronous Speed 50Hz

2 Kutub - 50Hz Kecepatan Sinkron 3000 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-2	0.75	1	2840	1.7	1.62	1.56	80.6	0.83	2.54	2.2	2.3	6.1	0.0008	67	16
EM80B-2	1.1	1.5	2840	2.4	2.28	2.19	82.9	0.84	3.72	3	3.2	8	0.0009	67	17
EM90S-2	1.5	2	2840	3.22	3.06	2.95	84.2	0.84	5.04	3	3.2	8	0.0012	72	22
EM90L-2	2.2	3	2840	4.59	4.36	4.2	85.7	0.85	7.4	3	3.2	8	0.0014	72	25
EM100L-2	3	4	2860	6.04	5.73	5.53	86.8	0.87	9.95	2.8	3.2	8	0.0029	76	33
EM112M-2	4	5.5	2880	7.87	7.48	7.21	87.7	0.88	13.22	2.5	3.2	8	0.0055	77	45
EM132SA-2	5.5	7.5	2900	10.7	10.2	9.79	88.8	0.88	18.11	2.2	3.2	8	0.0109	80	64
EM132SB-2	7.5	10	2900	14.5	13.7	13.2	89.6	0.88	24.7	2.2	3.2	8	0.0126	80	70
EM160MA-2	11	15	2930	20.7	19.6	18.9	90.8	0.89	35.85	1.9	3	8	0.0377	86	117
EM160MB-2	15	20	2930	28	26.6	25.6	91.5	0.89	48.89	1.9	3	8	0.0499	86	125
EM160L-2	18.5	25	2930	33.9	32.3	31.1	92	0.9	60.3	1.9	3	8	0.055	86	147
EM180M-2	22	30	2940	40.2	38.2	36.8	92.3	0.9	71.46	1.9	3	8.2	0.075	89	180
EM200LA-2	30	40	2950	54.5	51.7	49.9	93	0.9	97.12	1.9	3	7.6	0.124	92	240
EM200LB-2	37	50	2950	66.8	63.5	61.2	93.5	0.9	119.78	1.9	3	7.6	0.139	92	255
EM225M-2	45	60	2960	81	76.9	74.2	93.8	0.9	144.7	1.8	2.5	7.6	0.233	92	309
EM250M-2	55	75	2965	98.6	93.6	90.3	94.2	0.9	176.85	1.8	2.5	8.2	0.312	93	403
EM280S-2	75	100	2970	134	127	122	94.8	0.9	241.16	1.7	2.5	7.6	0.579	94	544
EM280M-2	90	125	2970	158	150	145	95.2	0.91	289.39	1.7	2.5	7.6	0.675	94	620
EM315S-2	110	150	2975	193	183	177	95.2	0.91	352.51	1.6	2.2	7.2	1.18	96	980
EM315M-2	132	180	2975	231	219	211	95.5	0.91	423.02	1.6	2.2	7.2	1.82	96	1080
EM315LA-2	160	220	2975	276	263	253	95.6	0.92	512.75	1.6	2.2	7.2	2.08	99	1160
EM315LB-2	200	270	2975	346	329	317	95.5	0.92	640.94	1.6	2.2	7.2	2.38	99	1190
EM355M-2	250	340	2980	430	409	394	96	0.92	799.83	1.6	2.2	7.2	3	103	1760
EM355L-2	315	430	2980	542	515	496	96	0.92	1007.9	1.6	2.2	7.2	3.5	103	1850

4 Pole - 1500 rpm Synchronous Speed 50Hz

4 Kutub - 50Hz Kecepatan Sinkron 1500 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-4	0.55	0.75	1390	1.38	1.31	1.26	80.6	0.75	3.78	2.4	2.3	5.2	0.0018	58	17
EM80B-4	0.75	1	1390	1.82	1.73	1.67	82.4	0.76	5.15	2.4	2.3	6	0.0021	58	18
EM90S-4	1.1	1.5	1390	2.59	2.46	2.37	83.9	0.77	7.5	2.7	3	7	0.0023	61	22
EM90L-4	1.5	2	1390	3.39	3.22	3.11	85.1	0.79	10.23	2.7	3	7	0.0027	61	27
EM100LA-4	2.2	3	1410	4.77	4.53	4.37	86.5	0.81	14.8	2.5	2.8	7	0.0054	64	34
EM100LB-4	3	4	1410	6.35	6.04	5.82	87.5	0.82	20.18	2.5	2.8	7	0.0067	64	38
EM112M-4	4	5.5	1435	8.37	7.96	7.67	88.5	0.82	26.53	2.2	2.8	7	0.0095	65	43
EM132S-4	5.5	7.5	1440	11.3	10.7	10.3	89.3	0.83	36.48	2.2	2.8	7	0.0214	71	68
EM132M-4	7.5	10	1440	15	14.3	13.8	90.2	0.84	49.74	2.2	2.8	7	0.0296	71	81
EM160M-4	11	15	1460	21.8	20.7	20	91.1	0.84	71.59	2.1	2.8	7.5	0.0747	75	123
EM160L-4	15	20	1460	29.1	27.7	26.7	92	0.85	98.12	2.1	2.8	7.5	0.0918	75	144
EM180M-4	18.5	25	1470	35.4	33.6	32.4	92.3	0.86	120.19	2.1	2.8	7.5	0.139	76	182
EM180L-4	22	30	1470	41.9	39.8	38.4	92.8	0.86	142.93	2.1	2.5	7.5	0.158	76	190
EM200L-4	30	40	1470	56.8	54	52	93.3	0.86	160.98	2.1	2.5	7.5	0.262	79	270
EM225S-4	37	50	1475	68.9	65.4	63.1	93.8	0.87	198.51	1.8	2.3	7.5	0.406	81	284
EM225M-4	45	60	1475	83.6	79.4	76.6	94	0.87	290.37	1.8	2.3	7.5	0.469	91	320
EM250M-4	55	75	1480	102	96.7	93.2	94.4	0.87	354.9	1.8	2.3	7.5	0.66	83	427
EM280S-4	75	100	1480	138	131	126	94.9	0.87	483.95	1.8	2.3	7.5	1.12	86	562
EM280M-4	90	125	1480	165	157	151	95.2	0.87	578.79	1.8	2.3	7.5	1.46	86	667
EM315S-4	110	150	1480	199	189	182	95.5	0.88	707.41	1.7	2.2	7.2	3.11	93	1000
EM315M-4	132	180	1480	238	226	218	95.6	0.88	848.89	1.7	2.2	7.2	3.62	93	1100
EM315LA-4	160	220	1480	285	271	261	95.8	0.89	1029	1.7	2.2	7.2	4.13	97	1160
EM315LB-4	200	270	1480	357	339	327	95.6	0.89	1286.2	1.7	2.2	7.2	4.73	97	1270
EM355M-4	250	340	1490	440	418	403	96	0.9	1602.4	1.7	2.2	7.2	6.5	101	1700
EM355L-4	315	430	1490	554	526	507	96	0.9	2019	1.7	2.2	7.2	8.2	101	1850

■ IFL = Full Load Current

■ IST = Locked Rotor Current

■ TST = Locked Rotor Torque

■ TM = Maximum Torque

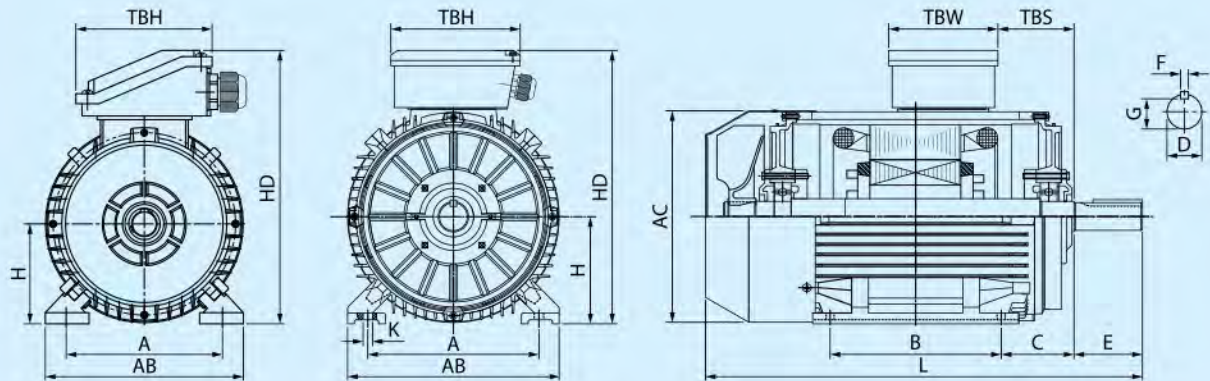
■ TFL = Full Load Torque

6 Pole - 1000 rpm Synchronous Speed 50Hz

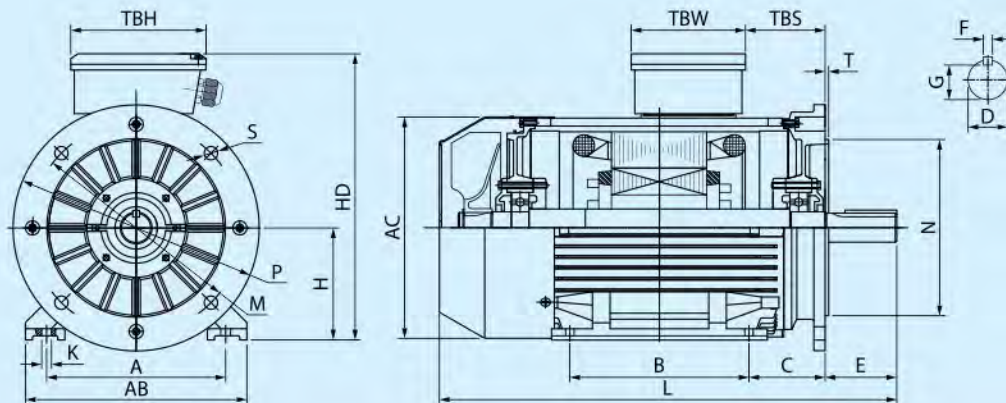
6 Kutub - 50Hz Kecepatan Sinkron 1000 rpm

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	EFF %	Power Factor	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm ²	Noise Level LW dB (A)	Net Weight kg
	kW	HP													
EM80A-6	0.37	0.5	885	1.29	1.23	1.18	62.5	0.7	3.93	1.9	2	4.7	0.0016	52	17
EM80B-6	0.55	0.75	885	1.54	1.46	1.41	75.5	0.72	5.84	1.9	2.1	4.7	0.0019	52	19
EM90S-6	0.75	1	910	2.03	1.93	1.86	77.8	0.72	7.87	2.5	2.5	5.5	0.0029	55	23
EM90L-6	1.1	1.5	910	2.86	2.72	2.62	80	0.73	11.54	2.5	2.5	5.5	0.0035	55	25
EM100L-6	1.5	2	920	3.72	3.53	3.41	81.7	0.75	15.24	2.2	2.5	5.5	0.0069	59	33
EM112M-6	2.2	3	935	5.26	5	4.82	83.6	0.76	22.35	2.2	2.5	5.5	0.014	63	45
EM132S-6	3	4	960	7.05	6.7	6.45	85.1	0.76	29.84	2.1	2.5	5.5	0.0286	67	63
EM132MA-6	4	5.5	960	9.27	8.8	8.48	86.3	0.76	39.79	2.1	2.5	6	0.357	67	73
EM132MB-6	5.5	7.5	960	12.4	11.8	11.3	87.6	0.77	54.71	2.1	2.5	6	0.0449	67	84
EM160M-6	7.5	10	970	16.6	15.8	15.2	89.2	0.77	73.84	2.1	2.5	6	0.0081	71	119
EM160L-6	11	15	970	23.8	22.6	21.8	90.2	0.78	108.3	2.1	2.5	6.5	0.116	71	147
EM180L-6	15	20	970	30.9	29.3	28.2	91.2	0.81	147.68	2.1	2.5	6.5	0.207	71	195
EM200LA-6	18.5	25	980	37.8	36	34.7	91.7	0.81	182.14	2.1	2.5	7	0.315	74	220
EM200LB-6	22	30	980	43.7	41.5	40	92.2	0.83	216.6	2.1	2.5	7	0.36	74	250
EM225M-6	30	40	980	58.6	55.7	53.7	92.6	0.84	292.35	1.8	2	7	0.547	74	292
EM250M-6	37	50	980	70.1	66.6	64.2	93.2	0.86	360.26	1.8	2	7	0.843	76	408
EM280S-6	45	60	980	84.8	80.6	77.7	93.7	0.86	438.52	1.8	2	7	1.39	78	536
EM280M-6	55	75	980	103	98.2	94.7	94	0.86	535.97	1.8	2	7	1.65	78	595
EM315S-6	75	100	985	140	133	128	94.6	0.86	730.87	1.8	2	7	4.11	83	990
EM315M-6	90	125	985	167	159	153	95	0.86	872.59	1.8	2	7	4.78	83	1080
EM315LA-6	110	150	985	204	194	187	95.2	0.86	1066.5	1.8	2	7	5.45	83	1150
EM315LB-6	132	180	985	241	229	221	95.5	0.87	1279.8	1.8	2	7	6.12	83	1210
EM355MA-6	160	220	990	288	274	264	95.8	0.88	1543.4	1.8	2	7	9.5	90	1600
EM355MB-6	200	270	990	363	345	332	95.4	0.88	1913.3	1.8	2	7	10.4	90	1700
EM355L-6	250	340	990	454	431	416	95.7	0.88	2411.6	1.8	2	7	12.4	90	1800

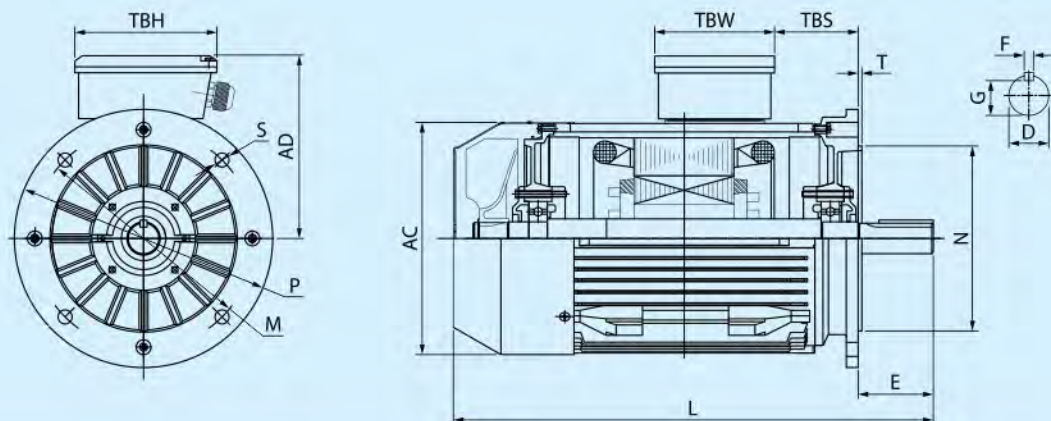
EM B3 (Foot Mount)



EM B35 (Foot-Flange Mount)



EM B5 (Flange Mount)



Frame Size		B3 (Foot Mounting)					General							
		A	B	C	H	K	AB	AC	AD	HD	L	TBH	TBS	TBW
80		125	100	50	80	Ø9	154	Ø158	134	214	290	114	43	114
90S/L		140	100/125	56	90	Ø10	178	Ø176	141	231	320/345	114	49/61.5	114
100L		160	140	63	100	Ø12	203	Ø199	151	251	385	114	76	114
112M		190	140	70	112	Ø12	231	Ø220	180	292	405	134	73	134
132S/M		216	140/178	89	132	Ø12	263	Ø259	200	332	467/505	134	61.5	134
160M/L		254	210/254	108	160	Ø15	316	Ø313	244	404	605/650	187	91	162
180M/L		279	241/279	121	180	Ø15	354	Ø360	265	445	687/725	187	160/180	162
200L		318	305	133	200	Ø19	393	Ø399	300	500	768.5	233	192	186
225S	4,6,8	356	286	149	225	Ø19	440	Ø459	333	558	810	233	199	186
225M	2	356	311	149	225	Ø19	440	Ø459	333	558	805	233	211.5	186
	4,6,8	356	311	149	225	Ø19	440	Ø459	333	558	835	233	211.5	186
250M	2	406	349	168	250	Ø24	484	Ø506	366	616	915	260	233	218
	4,6,8	406	349	168	250	Ø24	484	Ø506	366	616	915	260	233	218
280S/M	2	457	368/419	190	280	Ø24	560	Ø559	395	675	984/1035	260/280	265/277	218/245
	4,6,8	457	368/419	190	280	Ø24	560	Ø559	395	675	984/1035	260/280	265/277	218/245
315S	2	508	406	216	315	Ø28	628	Ø680	510	825	1205	350	200	290
	4,6,8	508	406	216	315	Ø28	628	Ø680	510	825	1235	350	200	290
315M/L	2	508	457/508	216	315	Ø28	628	Ø680	510	825	1355	350	200	290
	4,6,8	508	457/508	216	315	Ø28	628	Ø680	510	825	1385	350	200	290
355M/L	2	610	560/630	254	355	Ø28	740	Ø820	655	1010	1495	380	140	330
	4,6,8	610	560/630	254	355	Ø28	740	Ø820	655	1010	1525	380	140	330
	4,6,8	610	560/630	254	355	Ø28	740	Ø820	655	1010	1565	380	140	330

Frame Size		Shaft				B5 (Flange Mounting)					Cable Gland
		D	E	F	G	M	N	P	S	T	
80		Ø19	40	6	15.5	Ø165	Ø130	Ø200	4-Ø12	3.5	1-M20x1.5
90S/L		Ø24	50	8	20	Ø165	Ø130	Ø200	4-Ø12	3.5	1-M20x1.5
100L		Ø28	60	8	24	Ø215	Ø180	Ø250	4-Ø15	4	1-M20x1.5
112M		Ø28	60	8	24	Ø215	Ø180	Ø250	4-Ø15	4	2-M25x1.5
132S/M		Ø38	80	10	33	Ø265	Ø230	Ø300	4-Ø15	4	2-M25x1.5
160M/L		Ø42	110	12	37	Ø300	Ø250	Ø350	4-Ø19	5	2-M32x1.5
180M/L		Ø48	110	14	42.5	Ø300	Ø250	Ø350	4-Ø19	5	2-M32x1.5
200L		Ø55	110	16	49	Ø350	Ø300	Ø400	4-Ø19	5	2-M40x1.5
225S	4,6,8	Ø60	140	18	53	Ø400	Ø350	Ø450	8-Ø19	5	2-M50x1.5
225M	2	Ø55	110	16	49	Ø400	Ø350	Ø450	8-Ø19	5	2-M50x1.5
	4,6,8	Ø60	140	18	53	Ø400	Ø350	Ø450	8-Ø19	5	2-M50x1.5
250M	2	Ø60	140	18	53	Ø500	Ø450	Ø550	8-Ø19	5	2-M50x1.5
	4,6,8	Ø65	140	18	58	Ø500	Ø450	Ø550	8-Ø19	5	2-M50x1.5
280S/M	2	Ø65	140	18	58	Ø500	Ø450	Ø550	8-Ø19	5	2-M50x1.5
	4,6,8	Ø75	140	20	67.5	Ø500	Ø450	Ø550	8-Ø19	5	2-M50x1.5
315S	2	Ø65	140	18	58	Ø600	Ø550	Ø660	8-Ø24	6	2-M63x1.5
	4,6,8	Ø80	170	22	71	Ø600	Ø550	Ø660	8-Ø24	6	2-M63x1.5
315M/L	2	Ø65	140	18	58	Ø600	Ø550	Ø660	8-Ø24	6	2-M63x1.5
	4,6,8	Ø80	170	22	71	Ø600	Ø550	Ø660	8-Ø24	6	2-M63x1.5
355M/L	2	Ø75	140	20	67.5	Ø740	Ø680	Ø800	8-Ø24	6	2-M63x1.5
	4,6,8	Ø95	170	25	86	Ø740	Ø680	Ø800	8-Ø24	6	2-M63x1.5
	4,6,8	Ø100	210	28	90	Ø740	Ø680	Ø800	8-Ø24	6	2-M63x1.5

EMMElektrim Techtop series aluminium motors are totally enclosed, fan cooled, 3 phase, squirrel cage induction motors. The motors come with removable feet for universal mounting advantages and general purpose application.

EMMElektrim Techtop seri motor aluminium benar-benar tertutup, pendinginan kipas, 3 fasa, motor induksi (squirrel cage) sangkar tupai. Motor datang dengan kaki yang dapat dilepas untuk keuntungan pemasangan universal dan tujuan aplikasi umum.

EMMElektrim Techtop series aluminium motors are manufactured to High Efficiency (IE1) and starting torque and are characterized by outstanding features such as : protection degree in IP55, insulation class F, low noise (test at load), optimized structure and artistic outline.

It's cooling method is IC411 and the rated output and mounting dimensions fully conformed to the standard IEC and DIN 42673. The **EMMElektrim Techtop series aluminium motors** are suitable for driving various kinds of machines or equipments without special requirements. They are rated at 400V, 50Hz, Y-connection for motors up to 3kW, Δ -connection for 4kW and above. The S1 duty operating condition is not more than 40°C ambient temperature and not exceeding 1,000 meters height above sea level.

EMMElektrim Techtop seri motor aluminium diproduksi dengan Efisiensi Tinggi (IE1) dan torsi awal dan ditandai dengan fitur yang luar biasa seperti: tingkat perlindungan di IP55, kelas isolasi F, kebisingan rendah (uji pada beban), struktur optimal dan garis besar artistik.

Metode pendinginannya adalah IC411 dan nilai keluaran dan dimensi pemasangan yang sepenuhnya sesuai dengan standar IEC dan DIN 42673.

EMMElektrim Techtop seri motor aluminium sangat cocok untuk menggerakkan berbagai jenis mesin atau peralatan tanpa persyaratan khusus. Rating pada 400V, 50Hz, Y-koneksi untuk motor hingga 3kW, Δ -koneksi untuk 4kW ke atas. Kondisi operasi S1 bertugas tidak lebih dari 40°C suhu lingkungan dan tidak melebihi ketinggian 1.000 meter di atas permukaan laut.



2 Pole - 3000 rpm Synchronous Speed 50Hz

2 Kutub - 50Hz Kecepatan Sinkron 3000 rpm

Model	Power (kW)	FLC 230V (A)	FLC 380V (A)	FLC 415V (A)	Speed (rpm)	Eff (%)	Power Factor	Tstart/Tn	Tmax/Tn	Ist/In	Net Weight (kg)
EM56A-2	0.09	0.55	0.33	0.30	2800	62	0.68	2.3	2.4	6	4.6
EM56B-2	0.12	0.64	0.38	0.35	2800	67	0.71	2.3	2.4	6	4.8
EM63A-2	0.18	0.87	0.53	0.49	2800	69	0.75	2.2	2.4	6	5
EM63B-2	0.25	1.12	0.68	0.62	2800	72	0.78	2.2	2.4	6	5.3
EM71A-2	0.37	1.58	0.95	0.87	2800	73.5	0.80	2.2	2.4	6	6.5
EM71B-2	0.55	2.23	1.35	1.24	2800	75.5	0.82	2.2	2.4	6	7
EM80A-2	0.75	2.90	1.75	1.60	2800	76.5	0.85	2.2	2.4	6	9.5
EM80B-2	1.10	4.23	2.55	2.33	2800	77	0.85	2.2	2.4	6	11
EM90S-2	1.50	5.64	3.48	3.19	2800	77	0.85	2.2	2.4	6	14.5
EM90L-2	2.20	7.93	4.98	4.56	2800	78	0.86	2.2	2.4	6	17
EM100L-2	3.00	10.5	6.4	5.86	2870	82	0.87	2.2	2.3	7	24.5
EM112M-2	4.00	-	8.2	7.51	2890	85.5	0.87	2.2	2.3	7	30
EM132SA-2	5.50	-	11	10.07	2900	85.5	0.88	2.0	2.2	7	42
EM132SB-2	7.50	-	15	13.73	2900	86.2	0.88	2.0	2.2	7	50

4 Pole - 1500 rpm Synchronous Speed 50Hz

4 Kutub - 50Hz Kecepatan Sinkron 1500 rpm

Model	Power (kW)	FLC 230V (A)	FLC 380V (A)	FLC 415V (A)	Speed (rpm)	Eff (%)	Power Factor	Tstart/Tn	Tmax/Tn	Ist/In	Net Weight (kg)
EM56A-4	0.06	0.47	0.28	0.26	1400	56	0.58	2.3	2.4	6	4.6
EM56B-4	0.09	0.64	0.39	0.36	1400	58	0.61	2.3	2.4	6	4.8
EM63A-4	0.12	0.80	0.48	0.44	1400	60	0.63	2.2	2.4	6	4.8
EM63B-4	0.18	1.07	0.65	0.60	1400	64	0.66	2.2	2.4	6	5
EM71A-4	0.25	1.38	0.83	0.76	1400	67	0.68	2.2	2.4	6	6.3
EM71B-4	0.37	1.86	1.12	1.03	1400	69.5	0.72	2.2	2.4	6	7
EM80A-4	0.55	2.57	1.56	1.43	1400	73.5	0.73	2.2	2.4	6	9.5
EM80B-4	0.75	3.33	2.01	1.84	1400	75.5	0.75	2.2	2.4	6	11
EM90S-4	1.10	4.53	2.75	2.52	1400	78	0.78	2.2	2.4	6	14.5
EM90L-4	1.50	6.04	3.65	3.34	1400	79	0.79	2.2	2.4	6	16
EM100LA-4	2.20	8.23	5	4.58	1430	81	0.82	2.2	2.3	7	23
EM100LB-4	3.00	11.3	6.8	6.23	1430	82.5	0.81	2.2	2.3	7	27
EM112M-4	4.00	-	8.8	8.06	1440	84.5	0.82	2.2	2.3	7	33.5
EM132SA-4	5.50	-	12	10.99	1440	85.5	0.84	2.2	2.2	7	49.5
EM132SB-4	7.50	-	15	13.73	1440	87	0.85	2.2	2.2	7	57.5

6 Pole - 1000 rpm Synchronous Speed 50Hz

6 Kutub - 50Hz Kecepatan Sinkron 1000 rpm

Model	Power (kW)	FLC 230V (A)	FLC 380V (A)	FLC 415V (A)	Speed (rpm)	Eff (%)	Power Factor	Tstart/Tn	Tmax/Tn	Ist/In	Net Weight (kg)
EM90S-6	0.75	3.79	2.3	2.11	910	72.5	0.70	2.2	2.2	5.5	14.5
EM90L-6	1.10	2.26	3.2	2.93	910	73.5	0.72	2.2	2.2	5.5	17
EM100L-6	1.50	6.60	4	3.66	940	77.5	0.74	2.2	2.2	6	22.5
EM112M-6	2.20	9.28	5.6	5.13	940	80.5	0.74	2.2	2.2	6	29
EM132S-6	3.00	11.86	7.2	6.59	960	83	0.76	2.0	2.0	6.5	48
EM132MA-6	4.00	-	9.4	8.61	960	84	0.77	2.0	2.0	6.5	49
EM132MB-6	5.50	-	13	11.9	960	85.3	0.78	2.0	2.0	6.5	57.5

8 Pole - 750 rpm Synchronous Speed 50Hz

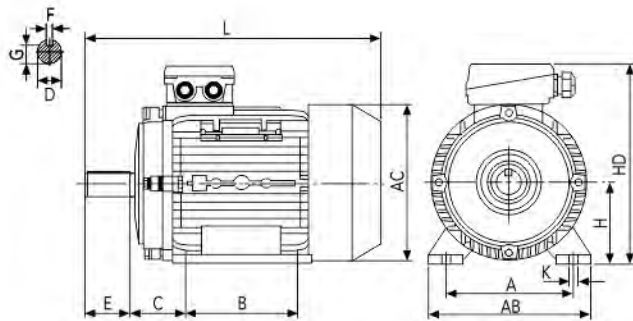
8 Kutub - 50Hz Kecepatan Sinkron 750 rpm

Model	Power (kW)	FLC 230V (A)	FLC 380V (A)	FLC 415V (A)	Speed (rpm)	Eff (%)	Power Factor	Tstart/Tn	Tmax/Tn	Ist/In	Net Weight (kg)
EM132S-8	2.20	9.66	5.8	5.31	710	85.5	0.71	2.0	2.0	5.5	39
EM132M-8	3.00	12.72	7.7	7.05	710	82	0.72	2.0	2.0	5.5	45

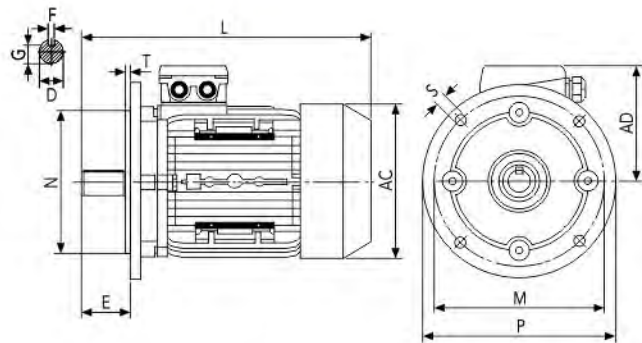
Bearing Size

Ukuran Bearing

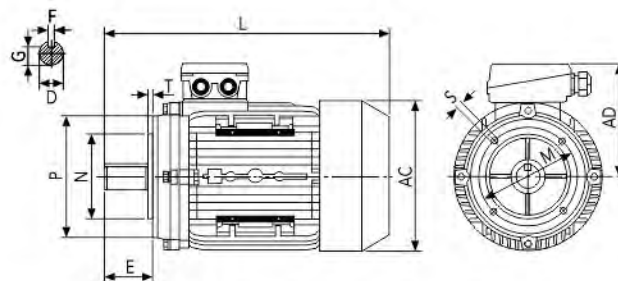
Sizes	Drive Side Bearing	N-Drive Side Bearing
56	6201	6201
63	6201	6201
71	6202	6202
80	6204	6204
90	6205	6204
100	6206	6206
112	6306	6306
132	6308	6308
160	6309	6309



IM B3 : Foot Mount



IM B5 : Foot & Flange Mount



IM B14 : Flange Mount

Frame Size	Mounting Dimensions (mm)																			Frame Dimensions (mm)				
										IM B14					IM B5									
	A	B	C	D	E	F	G	H	K	M	N	P	S	T	M	N	P	S	T	AB	AC	AD	HD	L
56	90	71	36	9	20	3	7.2	56	5.8	65	50	80	M5	2.5	98	80	120	7	3.0	110	120	110	155	195
63	100	80	40	11	23	4	8.5	63	7	75	60	90	M5	2.5	115	95	140	10	3.0	130	130	115	165	230
71	112	90	45	14	30	5	11	71	7	85	70	105	M6	2.5	130	110	160	10	3.5	145	145	125	185	255
80	125	100	50	19	40	6	15.5	80	10	100	80	120	M6	3.0	165	130	200	12	3.5	160	165	135	215	295
90S	140	100	56	24	50	8	20	90	10	115	95	140	M8	3.0	165	130	200	12	305	180	185	145	235	335
90L	140	125	56	24	50	8	20	90	10	115	95	140	M8	3.0	165	130	200	12	3.5	180	185	145	235	360
100L	160	140	63	28	60	8	24	100	12	130	110	160	M8	3.5	215	180	250	15	4.0	205	215	170	255	380
112M	190	140	70	28	60	8	24	112	12	130	110	160	M8	3.5	215	180	250	15	4.0	245	240	180	285	400
132S	216	140	89	38	80	10	33	132	12	165	130	200	M10	4.0	265	230	300	15	4.0	280	275	195	325	475
132M	216	178	89	38	80	10	33	132	12	165	130	200	M10	4.0	265	230	300	15	4.0	280	275	195	325	515

EMMElekttrim TECHTOP



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