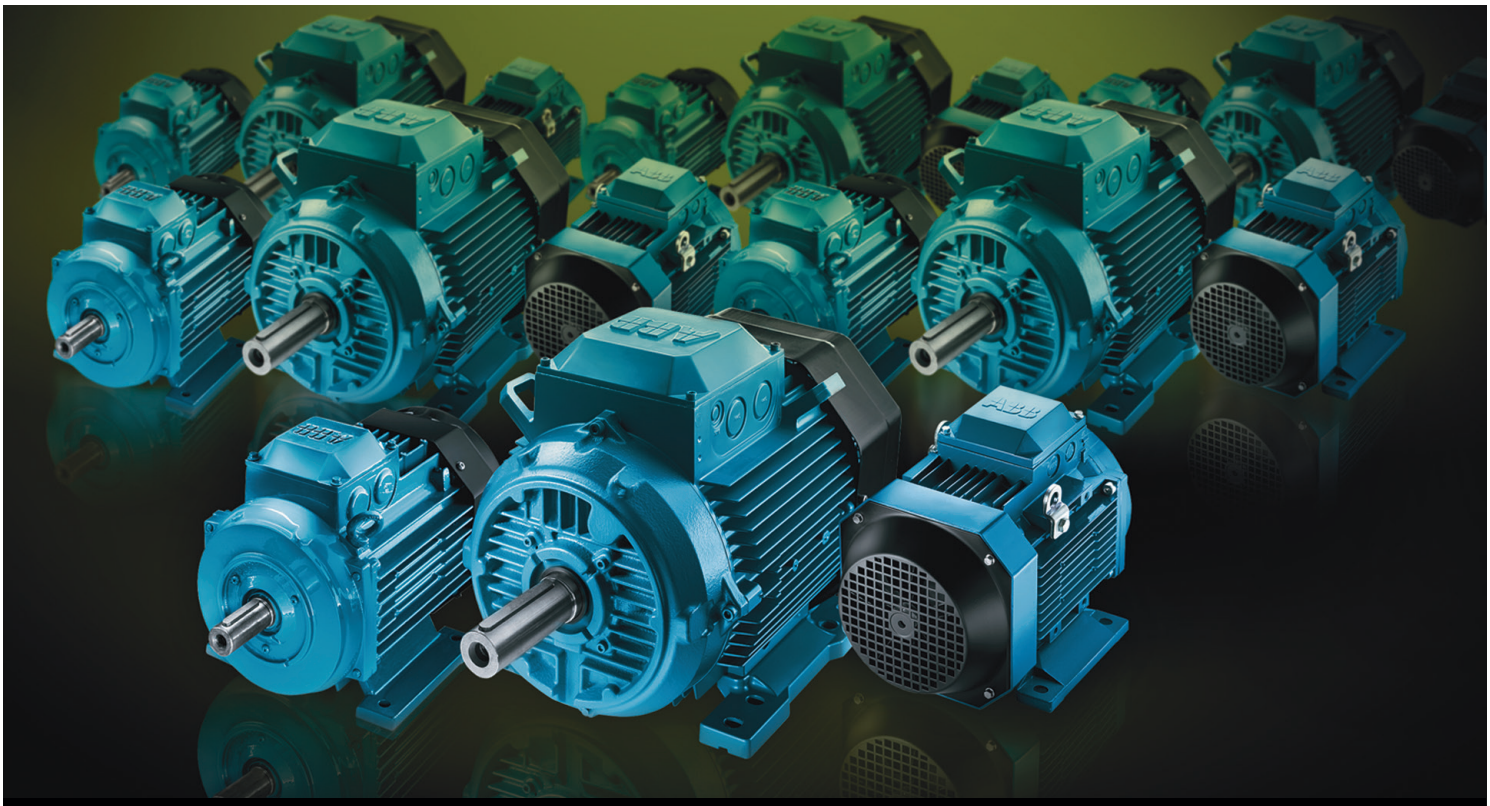


Catalog I December 2014

Low voltage
General performance motors
IE1 & IE2 efficiency motors according to EU MEPS

Power and productivity
for a better world™

Total offer of motors, generators and mechanical power transmission products with a complete portfolio of services

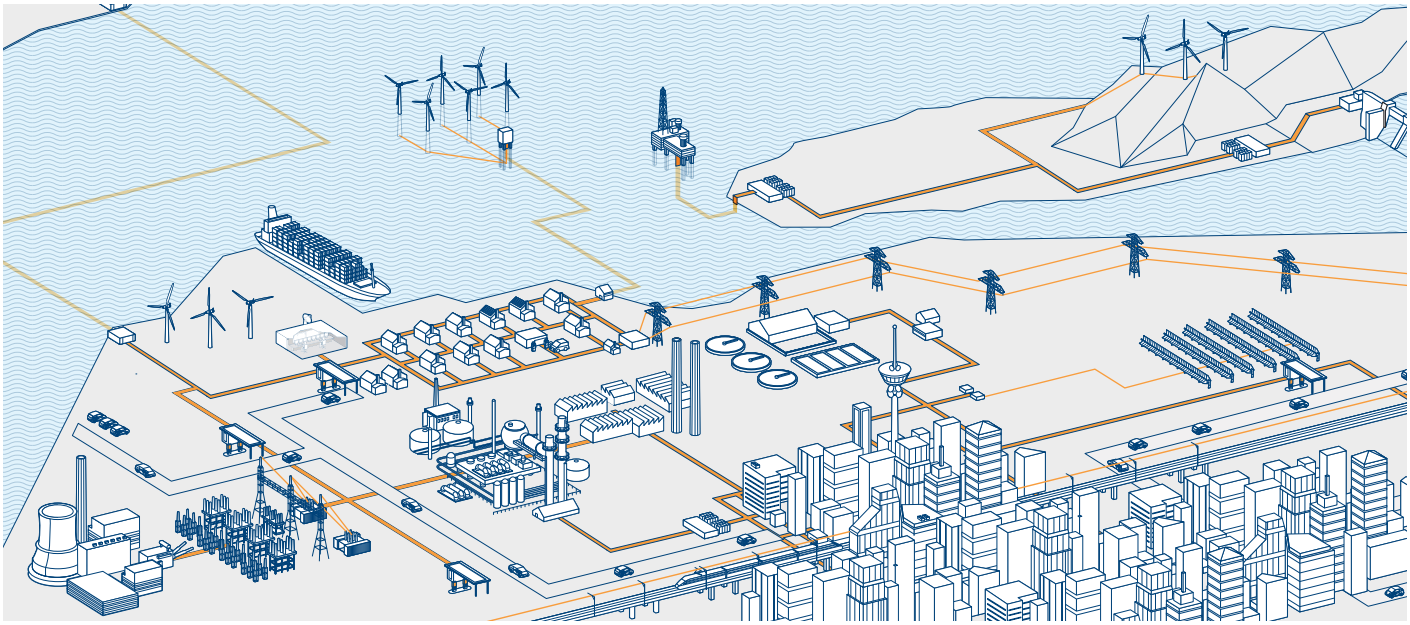


ABB is the leading manufacturer of low, medium and high voltage motors and generators, mechanical power transmission products with an offering of a complete portfolio of services. Our in-depth knowledge of virtually every type of industrial processing ensures we always specify the best solution for your needs.

Low and high voltage IEC induction motors
– Process performance motors
– General performance motors
– High voltage cast iron motors
– Induction modular motors
– Slip-ring modular motors
– Synchronous reluctance motors

Low and medium voltage NEMA motors
– Steel frame open drip proof (ODP) motors
– Weather protected, water cooled, fan ventilated
– Cast iron frame (TEFC)
– Air to air cooled (TEAAC) motors

Motors and generators for explosive atmospheres
– IEC and NEMA motors and generators, for all protection types

Synchronous motors

Synchronous generators
– Synchronous generators for diesel and gas engines
– Synchronous generators for steam and gas turbines

Wind power generators

Generators for small hydro

Other motors and generators
– Brake motors
– DC motors and generators
– Gear motors
– Marine motors and generators
– Single phase motors
– Motors for high ambient temperatures
– Permanent magnet motors and generators
– High speed motors
– Smoke extraction motors
– Wash down motors
– Water cooled motors
– Generator sets
– Roller table motors
– Servo motors
– Traction motors

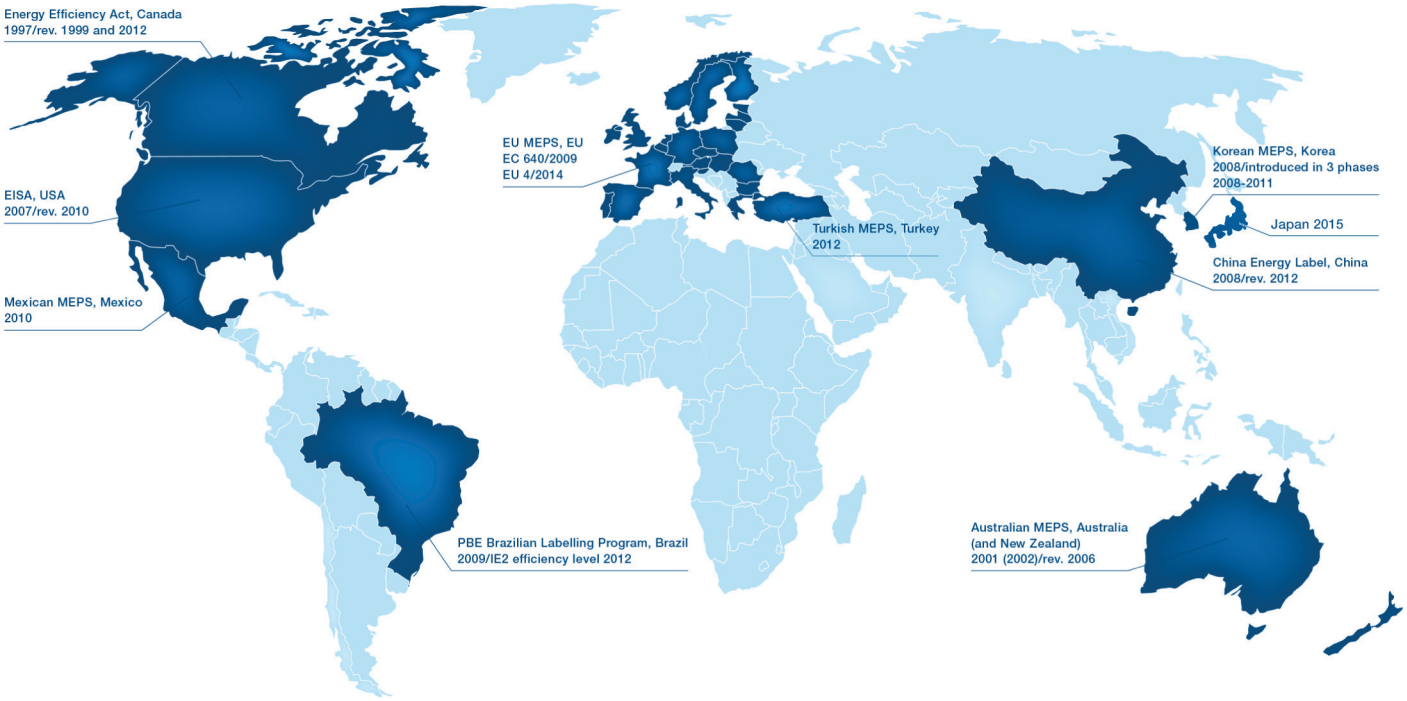
Life cycle services
– Installation and commissioning
– Service contracts
– Preventive maintenance
– Spare parts
– Diagnosis
– Repair and refurbishment
– Site survey and overhaul
– Replacement motors and generators
– Technical support and consulting
– Trainings

Mechanical power transmission components, bearings, gears

General performance cast iron motors
Sizes 71 to 355, from 0.18 to 355 kW

ABB's General performance motors are best suited for applications where simplicity and off-the-shelf availability are paramount. With ABB quality and support these motors have the features appreciated by volume customers and serial OEM's. Motors have IE1 & IE2 efficiency.
Motor range for cast iron motors 71 to 355, 0.18 to 355 kW.

International motor efficiency standards



Since the validation of IEC/EN 60034-30:2008 and its refined version IEC/EN 60034-30-1: 2014 , a worldwide energy efficiency classification system has existed for low voltage three-phase asynchronous motors. This system increases the level of harmonization in efficiency regulations around the world and also covers motors for explosive atmospheres. IEC/EN 60034-30-1: 2014 defines International Efficiency (IE) classes for single speed, three-phase, 50 and 60 Hz induction motors. The standard is part of an effort to unify motor testing procedures as well as efficiency and product labeling requirements to enable motor purchasers worldwide to easily recognize premium efficiency products. The efficiency levels defined in IEC/EN 60034-30-1 are based on test methods specified in IEC/EN 60034-2-1 which has been updated to edition 2.0, 2014-06.

To promote transparency in the market, IEC 60034-30 states that both the efficiency class and efficiency value must be shown on the motor rating plate and in product documentation. The documentation must clearly indicate the efficiency testing method used as the different methods can produce differing results.

Minimum energy performance standards

While the IEC sets guidelines for motor testing and efficiency classes, the organization does not regulate efficiency. The biggest drivers for mandatory Minimum Energy Performance Standard (MEPS) levels for electric motors are global climate change, government targets to cut the CO_2 emissions and rising electricity demand, especially in developing countries. The whole value chain, from manufacturer up to end user, must be aware of the legislation in order to meet local requirements and additionally save energy and reduce carbon footprint.

Harmonized standards and the increasing adoption of MEPS around the world are good news. However, it is important to remember that harmonization is an ongoing process. Even though MEPS are already in effect in several regions, they are evolving and they differ in terms of scope and requirements. At the same time, new countries are planning to adopt their own MEPS. To get the latest information please visit www.abb.com/motors&generators/energyefficiency.

IEC/EN 60034-30-1: 2014

IEC/EN 60034-30-1:2014 defines four International Efficiency (IE) classes for single speed electric motors that are rated according to IEC 60034-1 or IEC 60079-0 (explosive atmospheres) and designed for operation on sinusoidal voltage.

- IE4 = Super premium efficiency
- IE3 = Premium efficiency, identical to 'NEMA Premium' in the USA for 60 Hz
- IE2 = High efficiency, identical to EPAct in the USA for 60 Hz
- IE1 = Standard efficiency

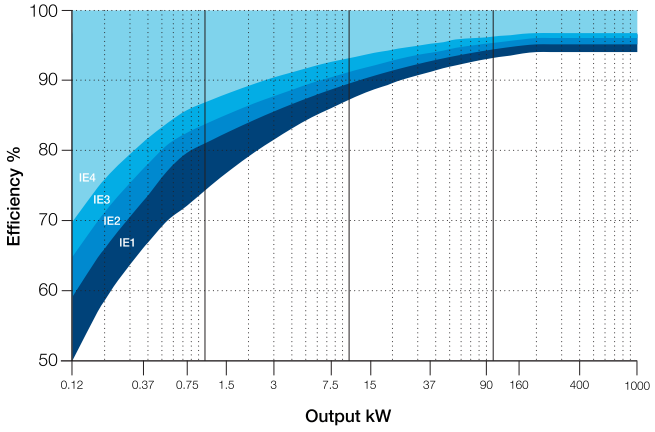
Efficiency levels defined in IEC/EN 60034-30-1 are based on test methods specified in IEC 60034-2-1.

IEC/EN 60034-30-1 covers power range 120 W to 1000 kW. All technical constructions of electric motors are covered as long as they are rated for direct on-line operation. The coverage of the standard includes:

- Single speed electric motors (single and three-phase), 50 and 60 Hz
- 2, 4, 6 and 8 poles
- Rated output P_N from 0.12 kW to 1000 kW
- Rated voltage U_N above 50 V up to 1 kV
- Motors, capable of continuous operation at their rated power with a temperature rise within the specified insulation temperature class
- Motors, marked with any ambient temperature within the range of -20 °C to +60 °C
- Motors, marked with an altitude up to 4000 m above sea level

The following motors are excluded from IEC/EN 60034-30-1:

- Single-speed motors with 10 or more poles or multi-speed motors
- Motors completely integrated into a machine (for example, pump, fan or compressor) that cannot be tested separately from machine
- Brake motors, when the brake can not be dismantled or separately fed



IE Classes - 4-pole motors

Minimum efficiency values defined in IEC/EN 60034-30-1: 2014 (reference values at 50 Hz, based on test methods specified in IEC 60034-2-1 which has been updated to

Output	IE1 Standard efficiency				IE2 High efficiency			
kW	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole
0.12	45.0	50.0	38.3	31.0	53.6	59.1	50.6	39.8
0.18	52.8	57.0	45.5	38.0	60.4	64.7	56.6	45.9
0.20	54.6	58.5	47.6	39.7	61.9	65.9	58.2	47.4
0.25	58.2	61.5	52.1	43.4	64.8	68.5	61.6	50.6
0.37	63.9	66.0	59.7	49.7	69.5	72.7	67.6	56.1
0.40	64.9	66.8	61.1	50.9	70.4	73.5	68.8	57.2
0.55	69.0	70.0	65.8	56.1	74.1	77.1	73.1	61.7
0.75	72.1	72.1	70.0	61.2	77.4	79.6	75.9	66.2
1.1	75.0	75.0	72.9	66.5	79.6	81.4	78.1	70.8
1.5	77.2	77.2	75.2	70.2	81.3	82.8	79.8	74.1
2.2	79.7	79.7	77.7	74.2	83.2	84.3	81.8	77.6
3	81.5	81.5	79.7	77.0	84.6	85.5	83.3	80.0
4	83.1	83.1	81.4	79.2	85.8	86.6	84.6	81.9
5.5	84.7	84.7	93.1	81.4	87.0	87.7	86.0	83.8
7.5	86.0	86.0	84.7	83.1	88.1	88.7	87.2	85.3
11	87.6	87.6	86.4	85.0	89.4	89.8	88.7	86.9
15	88.7	88.7	87.7	86.2	90.3	90.6	89.7	88.0
18.5	89.3	89.3	88.6	86.9	90.9	91.2	90.4	88.6
22	89.9	89.9	89.2	87.4	91.3	91.6	90.9	89.1
30	90.7	90.7	90.2	88.3	92.0	92.3	91.7	89.8
37	91.2	91.2	90.8	88.8	92.5	92.7	92.2	90.3
45	91.7	91.7	91.4	89.2	92.9	93.1	92.7	90.7
55	92.1	92.1	91.9	89.7	93.2	93.5	93.1	91.0
75	92.7	92.7	92.6	90.3	93.8	94.0	93.7	91.6
90	93.0	93.0	92.9	90.7	94.1	94.2	94.0	91.9
110	93.3	93.3	93.3	91.1	94.3	94.5	94.3	92.3
132	93.5	93.5	93.5	91.5	94.6	94.7	94.6	92.6
160	93.8	93.8	93.8	91.9	94.8	94.9	94.8	93.0
200	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
250	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
315	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
355	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
400	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
450	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5
500-1000	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5

ABB and efficiency standards

ABB determines efficiency values according to IEC 60034-2-1 using the low uncertainty method (i.e. indirect method), with additional load losses determined by measurement.

As the world market leader, ABB offers the largest range of LV motors available. It has long advocated the need for efficiency in motors, and high efficiency products have formed the core of its portfolio for many years. The core of ABB's Process performance range is based on full range in IE2 and IE3 motors - with many available from stock. We also supply IE4 motors for additional energy savings.

Ordering information

When placing an order, please state the following minimum data in the order, as in the example.

The product code of the motor is composed in accordance with the following example.

Motor type	M2BA 112 MB
Pole number	4
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	4 kW
Product code	3GBA 112 212-ADB
Variant codes if needed	

Motor size

A	B	C	D, E, F
M2BA	**112 MB**	**3GBA 112 212 -**	**ADB, 122, 451, etc.**

1 2 3 4 5 6 7 8 9 10 11 12 13 14...

A Motor type
B Motor size
C Product code

D Code for mounting arrangement

E Voltage and frequency code

F Generation code followed by variant codes

Explanation of the product code

Positions 1 to 4
3GBA =
Totally enclosed motor with cast iron frame.
3GQA =
Totally enclosed fan cooled squirrel cage motor with cast iron frame.

Position 4
Type of rotor
A = Squirrel cage rotor

Positions 5 and 6
IEC size
05 = 56
06 = 63
07 = 71
08 = 80
09 = 90
10 = 100
11 = 112
13 = 132
16 = 160
18 = 180
20 = 200
22 = 225
25 = 250

Position 7
Pole pairs
1 = 2 poles
2 = 4 poles
3 = 6 poles

Positions 8 to 10
Running number

Position 11
- (dash)

Position 12
Mounting arrangement
A = Foot-mounted motor
B = Flange-mounted motor. Large flange with clearance holes.
C = Flange-mounted motor. Small flange with tapped holes.
F = Foot- and flange-mounted motor. Special flange.
H = Foot- and flange-mounted motor. Large flange with clearance holes.
J = Foot- and flange-mounted motor. Small flange with tapped holes.
N = Flange-mounted (CI ring flange FF)
P = Foot-and flange-mounted motor (CI ring flange FF)

Position 13
Voltage and frequency
Single-speed motors
D 400 V**Δ,** 415 V**Δ**, 460 V**Δ** 60Hz, 690 VY 50 Hz
S 230 V**Δ**, 400 VY, 415 VY 50 Hz, 460 V**Δ** 60 Hz

Position 14
Version **A,B,C...** = Generation code followed by variant codes

General performance cast iron motors
Technical data

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE1 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type		Product code		Speed r/min	Efficiency		Power factor cos φ	Current		Torque		
						Full load 100%	3/4 load 75%		I_N/A	I_S/I_N	T_N/N_m	T_S/T_N	T_{MAX}/T_N
3000r/min=2poles						400V 50 Hz			Basic design				
0.37	M2QA	71M2A	3GQA	071301-••A	2780	72.0	73.5	0.82	0.90	6.0	1.27	2.2	2.4
0.55	M2QA	71M2B	3GQA	071302-••A	2785	75.5	77.7	0.83	1.27	5.5	1.89	2.2	2.4
0.75	M2QA	80M2A	3GQA	081301-••A	2840	74.2	74.8	0.85	1.72	6.1	2.52	2.2	2.2
1.1	M2QA	80M2B	3GQA	081302-••A	2855	76.9	78.3	0.86	2.40	7.0	3.68	2.2	2.2
1.5	M2QA	90S2A	3GQA	091101-••A	2850	78.3	79.4	0.87	3.18	7.0	5.03	2.2	2.2
2.2	M2QA	90L2A	3GQA	091501-••A	2850	80.7	81.5	0.86	4.58	7.0	7.37	2.2	2.2
3	M2QA	100L2A	3GQA	101501-••A	2860	82.4	83.7	0.87	6.04	7.0	10.0	2.2	2.2
4	M2QA	112M2A	3GQA	111301-••A	2875	83.9	85.0	0.90	7.65	7.0	13.3	2.2	2.2
5.5	M2QA	132S2A	3GQA	131101-••A	2905	85.5	86.1	0.89	10.4	7.0	18.1	2.2	2.2
7.5	M2QA	132S2B	3GQA	131102-••A	2910	86.7	88.0	0.895	14.0	7.0	24.6	2.2	2.2
11	M2QA	160M2A	3GQA	161301-••A	2920	88.2	88.7	0.875	20.6	6.5	36.0	2.5	3.0
15	M2QA	160M2B	3GQA	161302-••A	2920	89.3	90.0	0.885	27.4	6.5	49.1	2.5	3.2
18.5	M2QA	160L2A	3GQA	161501-••A	2920	89.8	90.9	0.895	33.2	6.5	60.5	2.5	3.2
22	M2QA	180M2A	3GQA	181301-••A	2940	90.4	91.7	0.90	39.0	6.5	71.5	2.3	2.8
30	M2QA	200L2A	3GQA	201501-••A	2955	91.2	91.0	0.90	52.8	6.5	97.0	2.2	2.7
37	M2QA	200L2B	3GQA	201502-••A	2955	91.6	91.6	0.905	64.4	6.5	120	2.3	2.7
45	M2QA	225M2A	3GQA	221301-••A	2970	92.1	91.3	0.89	79.2	7.0	145	2.5	2.8
55	M2QA	250M2A	3GQA	251301-••A	2965	92.5	92.8	0.90	95.4	7.5	177	2.4	3.0
75	M2QA	280S2A	3GQA	281101-••A	2970	93.1	93.1	0.91	128	7.5	241	2.5	3.3
90	M2QA	280M2A	3GQA	281301-••A	2970	93.4	93.6	0.92	151	7.5	289	2.3	3.2
110	M2QA	315S2A	3GQA	311101-••A	2980	93.6	93.4	0.90	188	7.1	352	1.8	2.2
132	M2QA	315M2A	3GQA	311301-••A	2980	94.2	93.8	0.90	225	7.1	423	1.8	2.2
160	M2QA	315L2A	3GQA	311501-••A	2975	94.2	94.0	0.90	272	7.2	514	1.8	2.2
*200	M2QA	315L2B	3GQA	311502-••A	2975	94.4	94.5	0.91	336	7.2	642	1.8	2.2
*250	M2QA	355M2A	3GQA	351301-••A	2980	94.5	94.5	0.90	424	7.1	801	2.3	2.8
*315	M2QA	355L2A	3GQA	351501-••A	2980	94.8	94.6	0.90	533	6.9	1009	2	2.8
1500r/min=4poles						400V 50 Hz			Basic design				
0.25	M2QA	71M4A	3GQA	072301-••A	1395	69.0	71.2	0.70	0.75	4.5	1.71	2.1	2.4
0.37	M2QA	71M4B	3GQA	072302-••A	1395	69.0	70.7	0.72	1.07	4.5	2.53	2.1	2.4
0.55	M2QA	80M4A	3GQA	082301-••A	1410	72.0	72.5	0.73	1.51	5.2	3.73	2.4	2.0
0.75	M2QA	80M4B	3GQA	082302-••A	1415	74.2	75.6	0.755	1.93	6.0	5.06	2.4	2.2
1.1	M2QA	90S4A	3GQA	092101-••A	1395	76.3	76.8	0.765	2.72	6.0	7.53	2.3	2.2
1.5	M2QA	90L4A	3GQA	092501-••A	1400	78.3	80.6	0.78	3.54	6.0	10.2	2.3	2.2
2.2	M2QA	100L4A	3GQA	102501-••A	1430	80.7	81.3	0.79	4.98	6.0	14.7	2.3	2.2
34	M2QA	100L4B	3GQA	102502-••A	1425	82.4	83.6	0.81	6.49	6.5	20.1	2.3	2.2
5.5	M2QA	112M4A	3GQA	112301-••A	1435	83.9	84.1	0.775	8.88	6.5	26.6	2.3	2.2
7.5	M2QA	132S4A	3GQA	132101-••A	1435	85.5	86.2	0.82	11.3	6.5	36.6	2.3	2.2
11	M2QA	132M4A	3GQA	132301-••A	1440	86.7	87.6	0.83	15.0	6.5	49.7	2.3	2.2
15	M2QA	160M4A	3GQA	162301-••A	1460	88.2	89.1	0.85	21.2	6.5	72.0	2.4	2.8
18.5	M2QA	160L4A	3GQA	162501-••A	1455	89.3	90.8	0.86	28.2	6.5	98.5	2.3	2.4
22	M2QA	180M4A	3GQA	182301-••A	1470	89.8	90.4	0.86	34.6	6.5	120	2.3	3.0
30	M2QA	180L4A	3GQA	182501-••A	1470	90.4	90.1	0.875	40.1	6.5	143	2.4	3.1
37	M2QA	200L4A	3GQA	202501-••A	1475	91.2	91.8	0.87	54.6	6.5	194	2.2	2.8
45	M2QA	225S4A	3GQA	222101-••A	1480	91.6	92.1	0.86	67.8	7.0	239	2.2	2.8
55	M2QA	225M4A	3GQA	222301-••A	1480	92.1	92.3	0.86	82.0	7.0	290	2.2	2.8
75	M2QA	250M4A	3GQA	252301-••A	1475	92.5	92.8	0.88	97.5	7.0	356	2.4	3.0
90	M2QA	280S4A	3GQA	282101-••A	1480	93.1	93.7	0.88	132	6.5	484	2.4	2.6
110	M2QA	280M4A	3GQA	282301-••A	1480	93.6	93.8	0.89	156	7.2	581	2.3	2.8
132	M2QA	315S4A	3GQA	312101-••A	1485	93.6	93.7	0.87	195	6.9	707	2.1	2.2
160	M2QA	315M4A	3GQA	312301-••A	1480	93.8	93.8	0.875	232	6.9	852	2.1	2.2
200	M2QA	315L4A	3GQA	312501-••A	1485	94.0	94.0	0.875	281	6.9	1029	2.1	2.2
*250	M2QA	315L4B	3GQA	312502-••A	1480	94.2	94.2	0.875	350	6.9	1291	2.1	2.2
*315	M2QA	355M4A	3GQA	352301-••A	1485	94.4	94.4	0.90	425	6.9	1608	2.1	2.6
*315	M2QA	355L4A	3GQA	352501-••A	1485	94.8	94.8	0.90	533	7.0	2026	2.1	2.3

Code letters For supplementing the product code

*Insulation Class F Temperature rise Class F

Code letters For voltage and-frequency(product code position 13)

D	S	
380~420V 50Hz	220~240V 50Hz	Other rated voltage connection or frequency(Max,690V)can be used
660~690VY50Hz	380~420VY50Hz	with VC002 or VC209.(The meaning of Varient code can be referred
440~4801)V 60Hz	440~480VY60Hz	to Variant Code List on Page 11)

Efficiency values are giving according to IEC 60034-2-1:2007
Please note that the values are not comparable without knowing the testing method.
ABB has calculated the efficiency values according to indirect method,stray load losses(additional losses)determined from measuring.
IE-class concerns motors from 0.75kW to 375kW and 2,4,6 poles.

General performance cast iron motors Technical data

M2QA - IE1

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE1 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code			Speed r/min	Efficiency		Power factor cos φ	Current		Torque		
						Full load 100%	3/4 load 75%		I_N/A	I_S/I_N	T_N/N_m	T_S/T_N	T_{MAX}/T_N
1000r/min=6poles						400V 50 Hz			Basic design				
0.18	M2QA	71M6A	3GQA	073301-••A	885	55.0	54.0	0.67	0.71	3.5	1.94	2.1	2.3
0.25	M2QA	71M6B	3GQA	073302-••A	885	58.0	59.6	0.67	0.93	3.5	2.70	2.1	2.3
0.37	M2QA	80M6A	3GQA	083301-••A	930	63.5	63.9	0.66	1.27	5.0	3.80	1.9	1.8
0.55	M2QA	80M6B	3GQA	083302-••A	925	65.7	66.9	0.675	1.79	5.0	5.68	1.9	1.8
0.75	M2QA	90S6A	3GQA	093101-••A	920	71.5	72.6	0.72	2.10	5.0	7.79	2.0	2.2
1.1	M2QA	90L6A	3GQA	093501-••A	920	74.3	75.5	0.74	2.89	5.0	11.4	2.0	2.2
1.5	M2QA	100L6A	3GQA	103501-••A	940	76.4	76.2	0.74	3.83	5.5	15.2	2.0	2.2
2.2	M2QA	112M6A	3GQA	113301-••A	940	78.8	79.8	0.73	5.52	5.5	22.4	2.0	2.2
3	M2QA	132S6A	3GQA	133101-••A	945	80.7	81.6	0.77	6.97	6.5	30.3	2.0	2.2
4	M2QA	132M6A	3GQA	133301-••A	950	82.3	82.9	0.77	9.11	6.5	40.2	2.0	2.2
5.5	M2QA	132M6B	3GQA	133302-••A	950	83.9	85.8	0.78	12.1	6.5	55.3	2.0	2.2
7.5	M2QA	160M6A	3GQA	163301-••A	960	85.5	86.4	0.78	16.2	6.0	74.6	2.0	2.3
11	M2QA	160L6A	3GQA	163501-••A	970	87.1	88.0	0.78	23.4	6.0	108	2.2	2.3
15	M2QA	180L6A	3GQA	183501-••A	975	88.3	88.7	0.82	29.9	6.0	147	2.3	2.8
18.5	M2QA	200L6A	3GQA	203501-••A	980	89.2	90.2	0.82	36.5	6.0	180	2.2	2.8
22	M2QA	200L6B	3GQA	203502-••A	980	89.7	90.4	0.83	42.7	6.0	214	2.1	2.8
30	M2QA	225M6A	3GQA	223301-••A	985	90.7	91.1	0.815	58.6	6.6	291	2.2	2.8
37	M2QA	250M6A	3GQA	253301-••A	975	91.3	91.6	0.87	67.2	6.8	362	2.3	2.8
45	M2QA	280S6A	3GQA	283101-••A	985	91.8	92.0	0.875	80.9	6.2	436	2.3	2.4
55	M2QA	280M6A	3GQA	283301-••A	985	92.3	92.4	0.875	98.3	7.0	533	2.3	2.5
75	M2QA	315S6A	3GQA	313101-••A	985	93.0	93.2	0.86	135	7.4	727	2.0	2.0
90	M2QA	315M6A	3GQA	313301-••A	985	93.3	93.5	0.86	162	7.4	872	2.0	2.0
110	M2QA	315L6A	3GQA	313501-••A	985	93.6	93.8	0.875	194	6.8	1066	2.0	2.0
132	M2QA	315L6B	3GQA	313502-••A	985	93.8	94.0	0.875	232	6.8	1280	2.0	2.0
*160	M2QA	355M6A	3GQA	353301-••A	990	94.0	94.2	0.88	279	6.8	1543	2.1	2.4
*200	M2QA	355M6B	3GQA	353302-••A	990	94.2	94.3	0.88	348	6.7	1929	2.0	2.3
*250	M2QA	355L6A	3GQA	353501-••A	990	94.4	94.5	0.88	434	6.7	2412	2.0	2.3
750r/min=8poles						400V 50 Hz			Basic design				
0.18	M2QA	80M8A	3GQA	084301-••A	700	51.0	50.1	0.60	0.85	3.3	2.46	1.8	1.9
0.25	M2QA	80M8B	3GQA	084302-••A	700	54.5	53.2	0.60	1.10	3.6	3.41	1.8	1.9
0.37	M2QA	90S8A	3GQA	094101-••A	700	62.5	62.1	0.605	1.41	4.4	5.05	1.8	1.9
0.55	M2QA	90L8A	3GQA	094501-••A	700	63.5	63.3	0.615	2.03	4.7	7.50	1.8	2.0
0.75	M2QA	100L8A	3GQA	104501-••A	690	68.5	68.6	0.64	2.47	5.0	10.4	1.8	2.0
1.1	M2QA	100L8B	3GQA	104502-••A	675	71.3	70.1	0.645	3.45	5.0	15.6	1.8	2.0
1.5	M2QA	112M8A	3GQA	114301-••A	695	74.2	74.6	0.675	4.32	5.0	20.6	1.8	2.0
2.2	M2QA	132S8A	3GQA	134101-••A	710	79.8	80.6	0.70	5.68	5.5	29.6	1.8	2.0
3	M2QA	132M8A	3GQA	134301-••A	710	80.0	80.4	0.75	7.22	5.5	40.4	1.8	2.0
4	M2QA	160M8A	3GQA	164301-••A	720	83.0	83.0	0.73	9.53	5.5	53.1	2.1	2.5
5.5	M2QA	160M8B	3GQA	164302-••A	720	84.5	94.6	0.74	12.7	5.5	73.0	2.1	2.5
7.5	M2QA	160L8A	3GQA	164501-••A	720	85.2	84.5	0.74	17.2	5.5	99.5	2.1	2.5
11	M2QA	180L8A	3GQA	184501-••A	730	87.5	86.8	0.77	23.6	5.4	144	2.0	2.8
15	M2QA	200L8A	3GQA	204501-••A	730	89.0	89.4	0.775	31.4	5.5	196	2.3	2.8
18.5	M2QA	225S8A	3GQA	224101-••A	735	89.5	88.6	0.73	40.9	5.5	240	2.1	2.8
22	M2QA	225M8A	3GQA	224301-••A	735	89.7	88.8	0.74	47.8	6.0	286	2.2	2.8
30	M2QA	250M8A	3GQA	254301-••A	730	91.3	89.3	0.79	60.0	6.5	392	2.3	2.6
37	M2QA	280S8A	3GQA	284101-••A	735	91.2	91.0	0.80	73.2	6.0	481	2.1	2.6
45	M2QA	280M8A	3GQA	284301-••A	735	92.0	90.6	0.80	88.2	6.0	585	2.1	2.7
55	M2QA	315S8A	3GQA	314101-••A	740	92.5	91.2	0.82	105	6.9	710	1.8	2.0
75	M2QA	315M8A	3GQA	314301-••A	740	93.0	91.9	0.82	142	7.0	968	1.8	2.0
90	M2QA	315L8A	3GQA	314501-••A	740	93.5	92.9	0.82	169	7.1	1161	1.8	2.0
110	M2QA	315L8B	3GQA	314502-••A	740	94.0	92.4	0.825	205	6.4	1420	1.8	2.0
*132	M2QA	355M8A	3GQA	354301-••A	740	94.2	93.9	0.815	248	6.2	1704	1.8	2.0
*160	M2QA	355M8B	3GQA	354302-••A	740	94.5	94.1	0.82	298	6.2	2065	1.8	2.0
*200	M2QA	355L8A	3GQA	354501-••A	740	94.7	94.5	0.82	372	6.2	2581	1.8	2.0

Code letters For supplementing the product code

*Insulation Class F Temperature rise Class F

Code letters For voltage and-frequency (product code position 13)

D	S	
380~420V 50Hz 660~690VY50Hz 440~4801)V 60Hz	220~240V 50Hz 380~420VY50Hz 440~480VY60Hz	Other rated voltage connection or frequency(Max,690V)can be used with VC002 or VC209.(The meaning of Varient code can be referred to Variant Code List on Page 11)

Efficiency values are giving according to IEC 60034-2-1:2007
Please note that the values are not comparable without knowing the testing method.
ABB has calculated the efficiency values according to indirect method,stray load losses(additional losses)determined from measuring.
IE-class concerns motors from 0.75kW to 375kW and 2,4,6 poles.

General performance cast iron motors
Technical data

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014			Power factor Cosφ	Current		Torque			Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
				Full load 100%	3/4 load 75%	1/2 load 50%		I_N A	I_S/I_N	T_N Nm	T_I/T_N	T_b/T_N			
3000 r/min = 2 poles				400 V 50 Hz				CENELEC-design							
0.37	M2BA 71 MA 2	3GBA071211-••B	2768	74.8	74.7	71	0.78	0.9	4.5	1.3	2.2	2.3	0.00039	11	58
0.55	M2BA 71 MB 2	3GBA071212-••B	2813	77.8	78.3	76	0.79	1.3	4.3	1.9	2.4	2.5	0.00051	11	56
0.75	M2BA 80 MB 2	3GBA081212-••B	2895	80.6	79.9	76.2	0.74	1.8	7.7	2.4	4.2	4.2	0.001	16	57
1.1	M2BA 80 MC 2	3GBA081213-••B	2870	81.8	82.4	80.2	0.8	2.4	7.5	3.6	2.7	3.5	0.0012	18	60
1.5	M2BA 90 SLB 2	3GBA091212-••B	2900	82.2	84.1	82.7	0.86	3.0	7.5	4.9	2.5	2.6	0.00254	24	69
2.2	M2BA 90 SLC 2	3GBA091213-••B	2885	84.7	86.7	85.7	0.87	4.3	6.8	7.2	1.9	2.5	0.0028	25	64
3	M2BA 100 LB 2	3GBA101212-••B	2925	85.2	84.9	82.8	0.86	5.9	9.1	9.7	3.1	3.5	0.00528	36	68
4	M2BA 112 MB 2	3GBA111212-••B	2895	86.1	87.0	86.6	0.86	7.7	8.1	13.1	2.9	3.2	0.00575	37	70
5.5	M2BA 132 SMB 2	3GBA131212-••B	2865	88.0	88.6	88.0	0.86	10.4	7.0	18.3	2.0	2.7	0.0128	68	70
7.5	M2BA 132 SMC 2	3GBA131214-••B	2890	88.6	88.8	87.5	0.84	14.5	7.3	24.7	2.0	3.6	0.0136	70	70
11	M2BA 160 MLA 2	3GBA161044-••G	2920	89.8	91.0	90.6	0.89	19.8	5.9	35.9	1.6	2.7	0.038	119	69
15	M2BA 160 MLB 2	3GBA161045-••G	2934	91.1	92.2	92.0	0.9	26.4	7.0	48.8	2.5	3.1	0.048	133	69
18.5	M2BA 160 MLC 2	3GBA161046-••G	2934	90.9	91.8	91.2	0.89	32.9	7.3	60.2	2.6	3.2	0.052	141	73
22	M2BA 180 MLA 2	3GBA181042-••G	2933	91.5	92.7	92.7	0.9	38.1	7.8	71.6	3.0	3.5	0.062	173	73
30	M2BA 200 MLA 2	3GBA201043-••G	2950	92.2	92.8	92.2	0.89	52.7	7.8	97.1	2.7	3.3	0.092	214	75
37	M2BA 200 MLB 2	3GBA201044-••G	2947	92.5	93.0	92.5	0.9	63.4	7.7	119.0	2.8	3.6	0.116	240	75
45	M2BA 225 SMA 2	3GBA221042-••G	2956	93.0	93.5	92.8	0.9	77.6	8.1	145.0	3.1	3.4	0.197	297	75
55	M2BA 250 SMA 2	3GBA251042-••G	2960	93.9	94.3	93.6	0.9	93.9	6.8	177.0	2.6	2.5	0.275	339	75
75	M2BA 280 SA 2	3GBA281110-••L	2977	94.0	93.7	92.3	0.88	130.0	7.6	240.0	2.1	3.0	0.8	530	78
90	M2BA 280 SMB 2	3GBA281220-••L	2976	94.3	94.2	93.1	0.9	153.0	7.4	288.0	2.1	2.9	0.9	570	78
110	M2BA 315 SMA 2	3GBA311210-••L	2982	94.6	94.1	92.7	0.86	195.0	7.6	352.0	2.0	3.0	1.2	750	78
132	M2BA 315 SMB 2	3GBA311220-••L	2982	94.9	94.6	93.4	0.88	228.0	7.4	422.0	2.2	3.0	1.4	810	78
160	M2BA 315 SMC 2	3GBA311230-••L	2981	95.2	95.0	94.1	0.89	272.0	7.5	512.0	2.3	3.0	1.7	900	78
200	M2BA 315 MLA 2	3GBA311410-••L	2980	95.3	95.2	94.4	0.9	336.0	7.7	640.0	2.6	3.0	2.1	1020	83
250	M2BA 355 SMA 2	3GBA351210-••L	2983	95.4	95.2	94.3	0.89	424.0	6.8	800.0	1.5	2.8	2.7	1310	83
315	M2BA 355 SMB 2	3GBA351220-••L	2980	95.4	95.4	94.7	0.89	535.0	7.2	1009.0	1.9	2.8	3.4	1450	83
355	M2BA 355 SMC 2	3GBA351230-••L	2983	95.5	95.5	94.9	0.88	609.0	7.4	1136.0	2.1	2.7	3.6	1520	83
1500 r/min = 4 poles				400 V 50 Hz				CENELEC-design							
0.25	M2BA 71 MA 4	3GBA072211-••B	1365	68.3	70.8	69.7	0.81	0.7	3.5	1.7	1.9	2.0	0.00074	10	45
0.37	M2BA 71 MB 4	3GBA072212-••B	1380	72.4	74.5	74.6	0.83	0.9	4.0	2.5	1.6	2.1	0.00088	11	45
0.55	M2BA 80 MA 4	3GBA082211-••B	1415	74.5	73.8	70	0.73	1.5	5.0	3.7	2.0	2.8	0.00144	15	45
0.75	M2BA 80 MD 4	3GBA082214-••B	1430	81.0	80.7	77.3	0.73	1.8	5.3	5.0	2.7	3.2	0.00205	17	50
1.1	M2BA 90 SLB 4	3GBA092212-••B	1435	83.6	84.5	83.2	0.8	2.3	6.1	7.3	2.7	3.4	0.0044	25	50
1.5	M2BA 90 SLD 4	3GBA092215-••B	1430	84.3	85.6	84.7	0.83	3.0	6.3	10.0	2.7	3.4	0.0053	27	56
2.2	M2BA 100 LC 4	3GBA102213-••B	1450	85.9	85.1	83.4	0.78	4.7	8.8	14.4	3.7	4.1	0.00948	36	56
3	M2BA 100 LD 4	3GBA102214-••B	1450	86.8	87.0	85.4	0.79	6.3	7.7	19.7	2.9	3.4	0.011	38	58
4	M2BA 112 MB 4	3GBA112212-••B	1440	86.8	87.7	87.3	0.81	8.2	7.0	26.5	2.5	2.9	0.0125	44	59
5.5	M2BA 132 SMB 4	3GBA132212-••B	1460	89.0	89.8	88.9	0.8	11.1	5.9	35.9	1.7	2.4	0.0328	70	67
7.5	M2BA 132 SMC 4	3GBA132213-••B	1450	89.3	90.1	90.0	0.81	14.9	5.6	49.3	1.6	2.4	0.0366	73	64
11	M2BA 160 MLA 4	3GBA162043-••G	1463	90.1	91.4	91.2	0.85	20.7	7.1	71.7	2.6	3.0	0.084	134	65
15	M2BA 160 MLB 4	3GBA162044-••G	1463	90.6	91.8	91.6	0.84	28.4	7.2	97.9	2.7	3.6	0.095	141	65
18.5	M2BA 180 MLA 4	3GBA182043-••G	1464	91.2	92.3	92.1	0.84	34.8	7.9	120.0	3.1	3.6	0.112	175	62
22	M2BA 180 MLB 4	3GBA182044-••G	1465	91.6	92.5	92.1	0.83	41.7	8.0	143.0	3.0	3.8	0.13	187	65
37	M2BA 225 SMA 4	3GBA222043-••G	1479	93.0	93.9	93.8	0.84	68.3	7.2	238.0	2.6	2.9	0.309	293	68
45	M2BA 225 SMB 4	3GBA222044-••G	1479	93.2	94.0	93.7	0.83	83.9	7.4	290.0	2.4	3.1	0.368	318	68
55	M2BA 250 SMA 4	3GBA252042-••G	1478	93.5	94.2	93.7	0.85	99.8	7.3	355.0	2.8	3.0	0.476	342	70
75	M2BA 280 SA 4	3GBA282110-••L	1484	94.2	94.2	93.5	0.85	135.0	6.9	482.0	2.5	2.8	1.25	515	71
90	M2BA 280 SMB 4	3GBA282220-••L	1483	94.4	94.6	94.1	0.86	160.0	7.2	579.0	2.5	2.7	1.5	575	71
110	M2BA 315 SMA 4	3GBA312210-••L	1487	94.7	94.6	93.8	0.86	194.0	7.2	706.0	2.0	2.5	2.3	775	78
132	M2BA 315 SMB 4	3GBA312220-••L	1487	95.0	95.0	94.3	0.86	233.0	7.1	847.0	2.3	2.7	2.6	830	78
160	M2BA 315 SMC 4	3GBA312230-••L	1487	95.2	95.3	94.6	0.85	285.0	7.2	1027.0	2.4	2.9	2.9	870	78
200	M2BA 315 MLA 4	3GBA312410-••L	1486	95.3	95.4	94.9	0.86	352.0	7.0	1285.0	2.3	2.8	3.5	995	78
250	M2BA 355 SMA 4	3GBA352210-••L	1488	95.2	95.2	94.4	0.85	445.0	6.7	1604.0	2.0	2.6	5.4	1400	82
315	M2BA 355 SMB 4	3GBA352220-••L	1488	95.5	95.5	94.8	0.85	560.0	7.3	2021.0	2.2	2.7	6.9	1570	82
355	M2BA 355 SMC 4	3GBA352230-••L	1487	95.5	95.7	95.2	0.86	623.0	6.8	2279.0	2.4	2.7	7.2	1650	82

General performance cast iron motors Technical data

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD^2kgm^2	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				CENELEC-design							
0.18	M2BA 71 MA 6	3GBA073211-••B	900	63.7	63.8	59	0.71	0.6	3.1	1.9	2.0	2.1	0.00089	10	42
0.25	M2BA 71 MB 6	3GBA073212-••B	895	67.2	67.2	62.6	0.69	0.8	3.4	2.6	2.2	2.3	0.0011	12	42
0.37	M2BA 80 MA 6	3GBA083211-••B	915	71	71.1	67	0.69	1.1	3.6	3.8	1.8	2.2	0.00187	15	47
0.55	M2BA 80 MB 6	3GBA083212-••B	920	73.9	75	72.8	0.71	1.5	3.8	5.7	1.8	2.2	0.00239	17	47
0.75	M2BA 90 SLC 6	3GBA093213-••B	960	78.7	77.3	72.5	0.58	2.3	4.5	7.4	2.3	3.1	0.00491	25	44
1.1	M2BA 90 SLE 6	3GBA093214-••B	930	78.2	78.6	76.4	0.66	3.0	4.0	11.2	1.9	2.3	0.0054	28	44
1.5	M2BA 100 L 6	3GBA103212-••B	950	82.2	82.9	81.6	0.69	3.8	4.0	15.0	1.5	2.1	0.00873	37	49
2.2	M2BA 112 MB 6	3GBA113212-••B	950	82.5	83.8	81.7	0.69	5.5	4.4	22.1	1.7	2.3	0.0125	44	66
3	M2BA 132 SMC 6	3GBA133212-••B	975	85.3	84.5	81.3	0.63	8.0	5.5	29.3	1.8	2.9	0.0334	69	57
4	M2BA 132 SMC 6	3GBA133212-••B	960	84.9	85.3	83.9	0.68	10.0	4.6	39.7	1.5	2.2	0.0334	69	57
4	M2BA 132 SMC 6	3GBA133212-••B	960	84.9	85.3	83.9	0.68	10.0	4.6	39.7	1.5	2.2	0.0334	69	57
5.5	M2BA 132 SMF 6	3GBA133214-••B	965	86.1	86.6	85.5	0.71	12.9	5.1	54.4	2.0	2.3	0.0487	86	57
7.5	M2BA 160 MLA 6	3GBA163043-••G	971	87.6	89.1	89.0	0.79	15.6	7.1	73.7	1.9	3.3	0.089	141	61
15	M2BA 180 MLA 6	3GBA183042-••G	971	89.7	90.8	90.5	0.76	31.7	7.8	147.0	2.5	4.1	0.137	187	61
18.5	M2BA 200 MLA 6	3GBA203043-••G	975	90.7	92.0	91.9	0.79	37.2	5.9	181.0	1.7	2.7	0.198	228	65
22	M2BA 200 MLB 6	3GBA203044-••G	974	91.0	92.4	92.5	0.79	44.1	5.8	215.0	1.8	2.6	0.222	241	65
30	M2BA 225 SMA 6	3GBA223042-••G	985	92.2	93.1	93.1	0.83	56.5	6.9	290.0	2.4	2.8	0.532	318	65
37	M2BA 250 SMA 6	3GBA253042-••G	985	92.3	93.2	92.9	0.83	69.6	6.6	358.0	2.4	2.8	0.718	336	66
45	M2BA 280 SA 6	3GBA283110-••L	990	92.8	93.0	92.1	0.84	83.3	7.0	434.0	2.5	2.5	1.85	500	71
55	M2BA 280 SB 6	3GBA283120-••L	990	93.3	93.5	92.9	0.84	101.0	7.0	530.0	2.7	2.6	2.2	540	71
75	M2BA 315 SMA 6	3GBA313210-••L	992	94.0	94.0	93.0	0.81	142.0	7.0	721.0	2.1	2.7	3.2	705	75
90	M2BA 315 SMB 6	3GBA313220-••L	992	94.3	94.4	93.6	0.83	165.0	7.2	866.0	2.1	2.7	4.1	800	75
110	M2BA 315 SMC 6	3GBA313230-••L	992	94.7	94.8	94.2	0.83	201.0	7.0	1058.0	2.2	2.7	4.9	870	75
132	M2BA 315 MLA 6	3GBA313410-••L	992	94.9	95.0	94.4	0.83	241.0	7.2	1270.0	2.4	2.7	5.8	980	75
160	M2BA 355 SMA 6	3GBA353210-••L	992	94.9	95.0	94.4	0.83	293.0	6.2	1540.0	2.1	2.3	7.3	1290	77
200	M2BA 355 SMB 6	3GBA353220-••L	992	95.2	95.4	94.9	0.84	360.0	6.5	1925.0	2.1	2.3	9.7	1440	77
250	M2BA 355 SMC 6	3GBA353230-••L	991	95.3	95.5	95.2	0.84	450.0	6.7	2409.0	2.3	2.3	11.3	1590	77

Variant codes

M2QA - IE1

Variant codes specify additional options and features to the standard motor. The desired features are listed as three-digit variant codes in the motor order. Note also that there are variants that cannot be used together.

	Frame size													
Code, variants, M2QA	**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**	**250**	**280**	**315**	**355**
Administration														
531 Sea freight packing	-	-	-	-	-	-	●	●	●	●	●	●	●	●
Balancing														
423 Balanced without key.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
424 Full key balancing.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bearings and Lubrication														
036 Transport lock for bearings.	-	-	-	-	-	●	●	●	●	●	●	●	●	●
037 Roller bearing at D-end.	-	-	-	-	-	●	●	●	●	●	●	●	●	●
039 Cold resistant grease.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
040 Heat resistant grease.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
041 Bearings regreasable via grease nipples.	-	-	-	-	●	●	●	●	●	●	●	●	●	●
058 Angular contact bearing at D-end,shaft force away from bearing.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
059 Angular contact bearing at N-end,shaft force towards bearing.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
060 Angular contact bearing at D-end,shaft force towards bearing.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
061 Angular contact bearing at N-end,shaft force away from bearing.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
043 SPM compatible nipples for vibration measurement	-	-	-	-	●	●	●	●	●	●	●	●	●	●
130 Pt100 3-wire in bearing.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
195 Bearings greased for life.	○	○	○	○	○	○	○	○	○	○	-	-	-	-
798 Stainless steel grease nipples.	-	-	-	-	●	●	●	●	●	●	●	●	●	●
Branch standard designs														
209 Non-standard voltage or frequency (special winding).	●	●	●	●	●	●	●	●	●	●	●	●	●	●
168 Primer paint only.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
178 Stainless steel/acid proof bolts.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
396 Motor designed for ambient temperature -20°C~-40°C,with space heaters(code 450/451 must be added).	●	●	●	●	●	●	●	●	●	●	●	●	●	●
425 Corrosion protected stator and rotor core.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cooling system														
068 Light alloy metal fan.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
075 Cooling method IC418(without fan).	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Documentation														
141 Binding dimension drawing.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Drain holes														
065 Plugged existing drain holes.	○	○	○	○	○	○	○	○	○	○	●	●	●	●
Earthing Bolt														
067 External earthing blolt.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Heating elements														
450 Heating elements,100-120V	●	●	●	●	●	●	●	●	●	●	●	●	●	●
451 Heating elements,200-240V	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ = Included as standard | ● = Available as option | - = Not applicable

Variant codes

M2QA - IE1

Variant codes specify additional options and features to the standard motor. The desired features are listed as three-digit variant codes in the motor order. Note also that there are variants that cannot be used together.

		Frame size													
Code, variants, M2QA		**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**	**250**	**280**	**315**	**355**
Insulation system															
014	Winding insulation class H.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mounting agrangements															
008	IM2101 foot/flange mounted, IEC flange,from IM1001(B34 from B3)	●	●	●	●	●	●	●	-	-	-	-	-	-	-
009	IM2001 foot/flange mounted, IEC flange,from IM1001(B35 from B3)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
047	IM3601 flange mounted,IEC flange,from IM3001(B14 from B5)	●	●	●	●	●	●	●	-	-	-	-	-	-	-
066*	Modified for specified mounting position differing from IM B3 (1001),IM B5(3001,),B14(3601), IM B35 (2001)&IM B34))	●	●	●	●	●	●	●	●	●	●	●	●	●	●
999	Modified for specified mounting position differing from IM B3 (1001),IM B5(3001),B14(3601)& IM B35(2001)&IM B34(2101), strengthen the casting)	-	-	-	-	-	-	-	-	●	●	●	●	●	●
999	B14 big flange	●	●	●	●	●	-	-	-	-	-	-	-	-	-
Painting															
114	Special paint colour,standard grade.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
106	Paint thickness =80µm.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
109	Paint thickness =120µm.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
110	Paint thickness =160µm.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Protection															
005	Metal protective roof,vertical motor,shaft down.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
072	Radial seal at D-end.	●	●	●	●	●	●	●	●	●	●	○	○	○	○
158	Degree of protection IP65	●	●	●	●	●	●	●	●	●	●	●	●	●	●
403	Degree of protection IP56	●	●	●	●	●	●	●	●	●	●	●	●	●	●
784	Gamma-seal at D-end.	○	○	○	○	○	○	○	○	○	○	-	-	-	-
Rating & instuction plates															
002	Restamping voltage,frequency and output,continuous duty.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
095	Restamping output (maintained voltage,frequency),intermittent duty.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
135	Mounting of additional identification plate,stainless.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Shaft & rotor															
070	Special shaft extension at D-end, shandard shaft material	●	●	●	●	●	●	●	●	●	●	●	●	●	●
069	Two shaft extension as per basic catalogue	●	●	●	●	●	●	●	●	●	●	●	●	●	-
164	Shaft extension with closed key-way.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
165	Shaft extension with open key-way.	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Standards and Regulations															
331	IE1 motor not for sale for use in EU.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
115	Painting system C4M acc.To ISO 12944-5:2007	●	●	●	●	●	●	●	●	●	●	●	●	●	●
754	Painting system C5M acc.To ISO 12944-5:2007	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ = Included as standard | ● = Available as option | - = Not applicable

Variant codes specify additional options and features to the standard motor. The desired features are listed as three-digit variant codes in the motor order. Note also that there are variants that cannot be used together.

		Frame size												
Code, variants, M2QA		**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**	**250**	**280**	**315**	**355**
Stator winding temperature sensors															
120	KTY 84=130(1 per phase) in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
121	Bimetal detectors,break type (NCC),(3 in series),130°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
122	Bimetal detectors,break type (NCC),(3 in series),150°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
123	Bimetal detectors,break type (NCC),(3 in series),170°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
124	Bimetal detectors,break type (NCC),(3 in series),140°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
125	Bimetal detectors,break type (NCC),(2×3 in series),150°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
127	Bimetal detectors,break type (NCC),(3 in series 130°C&3 in series 150°C),in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
435	PTC-thermistors(3 in series), 130°Cin stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
436	PTC-thermistors(3 in series), 150°C in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
437	PTC-thermistors(3 in series), 170°C in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
439	PTC-thermistors(2×3 in series), 150°C,in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
440	PTC-thermistors(3 in series 110°C & 3 in series 130°C),in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
441	PTC-thermistors(3 in series 130°C & 3 in series 150°C),in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
442	PTC-thermistors(3 in series 150°C & 3 in series 170°C),in stator winding.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
445	PT100 2-wire in stator winding, 1 per phase.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
446	PT100 2-wire in stator winding, 2 per phase.	-	-	-	●	●	●	●	●	●	●	●	●	●	●
502	PT100 3-wire in stator winding, 1 per phase.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
503	PT100 3-wire in stator winding, 2 per phase.	-	-	-	-	-	-	-	-	●	●	●	●	●	●
Terminal box															
021	Terminal box LHS(see from D-end).	-	●	●	●	●	●	●	●	●	●	●	●	●	●
022	Cable entry LHS(see from D-end).	●	●	●	●	●	●	●	●	●	●	●	●	●	●
157	Terminal box degree of protection IP65	●	●	●	●	●	●	●	●	●	●	●	●	●	●
180	Terminal box RHS(see from D-end).	-	●	●	●	●	●	●	●	●	●	●	●	●	●
376	Two standard plastic cable glands.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Terminal box															
400	4×90 degr turnable terminal box.	○	○	○	○	○	○	●	●	●	●	●	●	●	●
418	Separate terminal box for auxiliaries ,standard material.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
468	Cable entry from D-end.	-	●	●	●	●	●	●	●	●	●	●	●	●	●
469	Cable entry from N-end.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
704	EMC cable gland.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
731	Two standard metal cable glands.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
738	Prepared for metric cable glands.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
740	Prepared for PG cable glands.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
016	9 terminals in terminal box.	●	●	●	●	●	●	-	-	-	-	-	-	-	-
142	Manilla connection.	-	-	-	-	●	●	●	●	●	●	●	●	●	●
137	Extended cable connected,low terminal box,“Flying leads”, factory standard.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Testing															
145	Type test report from a catalogue motor,400V 50HZ	●	●	●	●	●	●	●	●	●	●	●	●	●	●
146	Type test with report for one motor from special delivery batch.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
147	Type test with report for motor from special delivery bach, customer witnessed.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
148	Routine test report.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
221	Tyoe test and multi-point load test with report for one motor from specific delivery batch.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
222	Tyoe test and multi-point load test with report for one motor from specific delivery batch.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
760	Vibration level test.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
762	Noise level test for one motor from specific delivery batch.	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Remark:VC 701 and VC 405 are suitable export market.

○ = Included as standard | ● = Available as option | - = Not applicable

Variant codes

IE2-M2BA

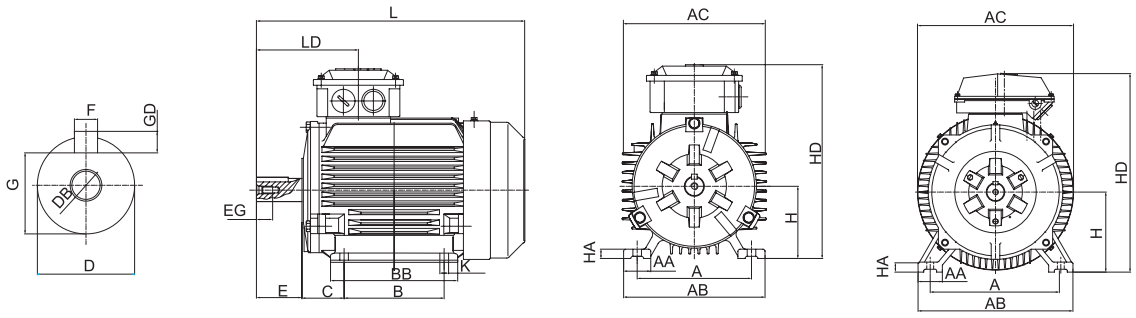
Variant codes specify additional options and features to the standard motor. The desired features are listed as three-digit variant codes in the motor order. Note also that there are variants that cannot be used together.

	Frame size													
Code, variants, M2BA	**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**	**250**	**280**	**315**	**355**
Bearings and Lubrication														
037 Roller bearing at D-end.	-	-	-	-	-	-	●	●	●	●	●	●	●	●
040 Heat-resistant grease	●	●	●	●	●	●	●	●	●	●	●	●	●	●
041 Bearings regreasable via grease nipples.	-	-	-	-	-	-	●	●	●	●	●	○	○	○
043 SPM compatible nipples for vibration measurement	●	●	●	●	●	●	●	●	●	●	●	●	●	●
188 63-series bearing in D-end	●	●	●	●	●	●	●	●	●	●	●	-	-	-
Branch standard designs														
178 Stainless steel / acid proof bolts.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cooling system														
068 Light alloy metal fan	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Documentation														
141 Binding dimension drawing.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Drain holes														
065 Plugged existing drain holes.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Earthing Bolt														
067 External earthing bolt.	●	●	●	●	●	●	●	●	●	●	●	○	○	○
Heating elements														
450 Heating element, 100-120 V	●	●	●	●	●	●	●	●	●	●	●	●	●	●
451 Heating element, 200 - 240 V	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Marine														
096 Fulfilling Lloyds Register of Shipping (LR) requirements, without certificate (non-essential duty only)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
186 Fulfilling Det Norske Veritas (DNV) requirements, without certificate (non-essential duty only)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
492 Fulfilling Registro Italiano Navale (RINA) requirements, without certificate.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
496 Fulfilling Bureau Veritas (BV) requirements, without certificate(non-essential duty only)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
675 Fulfilling American Bureau of Shipping (ABS) requirements, without certificate (non-essential duty only)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
676 Fulfilling Germanischer Lloyd (GL) requirements, without certificate (non-essential duty only)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mounting arrangements														
008 IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	●	●	●	●	●	●	-	-	-	-	-	-	-	-
009 IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	●	●	●	●	●	●	●	●	●	●	●	●	●	●
047 IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	●	●	●	●	●	●	-	-	-	-	-	-	-	-
048 IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).	●	●	●	●	●	●	-	-	-	-	-	-	-	-
066 Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001) & IM B34 (2101)	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Painting														
114 Special paint color, standard grade	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Protection														
005 Protective roof, vertical motor, shaft down.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
072 Radial seal at D-end. Not possible for 2-pole , 280 and 315 frames	●	●	●	●	●	●	●	●	●	●	●	●	●	●
158 Degree of protection IP65.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
403 Degree of protection IP56.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Rating & instruction plates														
002 Restamping voltage, frequency and output, continuous duty.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
095 Restamping output (maintained voltage, frequency), intermittent duty.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
135 Mounting of additional identification plate, stainless.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
159 Additional plate with text “Made in ....”	●	●	●	●	●	●	●	●	●	●	●	●	●	●
161 Additional rating plate delivered loose.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
163 Frequency converter rating plate. Rating data according to quotation.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Standards and Regulations														
331 IE1 motor not for sale for use in EU	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stator winding temperature sensors														
122 Bimetal detectors, break type (NCC), (3 in series), 150 °C, in stator winding	●	●	●	●	●	●	●	●	●	●	●	●	●	●
435 PTC - thermistors (3 in series), 130 °C, in stator winding	●	●	●	●	●	●	●	●	●	●	●	●	●	●
436 PTC - thermistors (3 in series), 150 °C, in stator winding	○	○	○	○	○	○	○	○	○	○	○	○	○	○
439 PTC - thermistors (2x3 in series), 150 °C, in stator winding	●	●	●	●	●	●	●	●	●	●	●	●	●	●
441 PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding	●	●	●	●	●	●	●	●	●	●	●	●	●	●
445 Pt100 2-wire in stator winding, 1 per phase	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Terminal box														
230 Standard metal cable glands.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
447 Top mounted separate terminal box for monitoring equipment.	-	-	-	-	-	-	-	-	-	-	-	●	●	●
Testing														
145 Type test report from a catalogue motor, 400V 50Hz.	●	●	●	●	●	●	●	●	●	●	●	●	●	●
148 Routine test report.	●	●	●	●	●	●	●	●	●	●	●	●	●	●

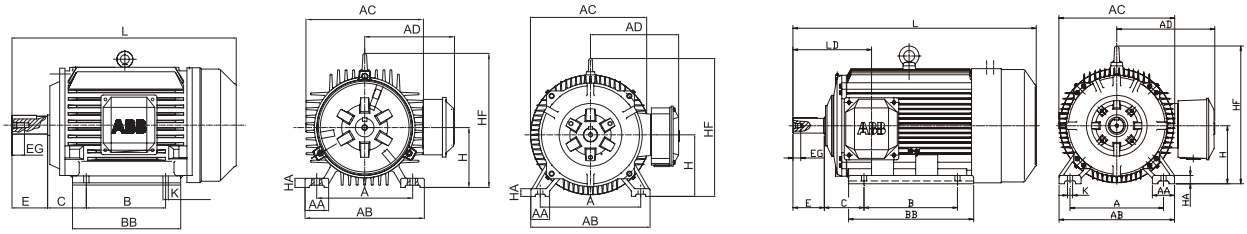
○ = Included as standard | ● = Available as option | - = Not applicable

General performance cast iron motors
Dimension drawings

Three-phase motor, foot-mounted, terminal box top mounted



Three-phase motor, foot-mounted, terminal box on right hand side



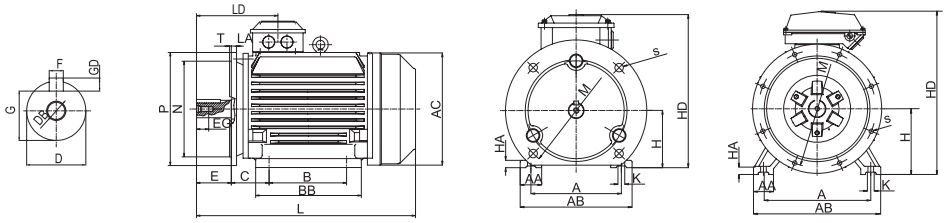
Foot-mounted motor designation IM B3, IM B7, IM B8, IM V5, IM V6

General performance cast iron motors M2QA

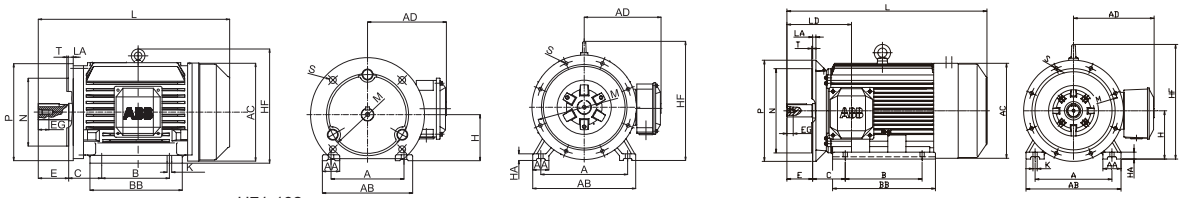
Motor size	Poles	A	AA	AB	AC	B	BB	C	D	E	F	G	GD	DB	EG
71M	2-6	112	30	145	145	90	110	45	14-J6	30	5	11	5	M5	12.5
80M	2-8	125	35	160	165	100	135	50	19-J6	40	6	15.5	6	M6	16
90S	2-8	140	35	175	180	100	140	56	24-J6	50	8	20	7	M8	19
90L	2-8	140	35	175	180	125	165	56	24-J6	50	8	20	7	M8	19
100L	2-8	160	40	200	205	140	180	63	28-J6	60	8	24	7	M10	22
112M	2-8	190	50	235	225	140	190	70	28-J6	60	8	24	7	M10	22
132S	2-8	216	55	270	265	140	205	89	38-K6	80	10	33	8	M12	28
132M	2-8	216	55	270	265	178	240	89	38-K6	80	10	33	8	M12	28
160M	2-8	254	60	325	330	210	265	108	42-K6	110	12	37	8	M16	36
160L	2-8	254	60	325	330	254	310	108	42-K6	110	12	37	8	M16	46
180M	2-4	279	70	350	355	241	315	121	48-K6	110	14	42.5	9	M16	36
180L	4-8	279	70	355	355	279	350	121	48-K6	110	14	42.5	9	M16	36
200L	2-8	318	70	390	395	305	380	133	55-M6	110	16	49	10	M20	39
225S	4-8	356	75	435	440	286	380	149	60-M6	140	18	53	11	M20	39
225M	2	356	75	435	450	311	405	149	55-M6	110	16	49	10	M20	39
225M	4-8	356	75	435	450	311	405	149	60-M6	140	18	53	11	M20	39
250M	2	406	80	490	515	349	455	168	60-M6	140	18	53	11	M20	39
250M	4-8	406	80	490	515	349	455	168	65-M6	140	18	58	11	M20	39
280S	2	457	85	555	585	368	490	190	65-M6	140	18	58	11	M20	39
280S	4-8	457	85	555	585	368	490	190	75-M6	140	20	67.5	12	M20	39
280M	2	457	85	555	585	419	540	190	65-M6	140	18	58	11	M20	39
280M	4-8	457	85	555	585	419	540	190	75-M6	140	20	67.5	12	M20	39
315S	2	508	120	640	630	406	575	216	65-M6	140	18	58	11	M20	42
315S	4-8	508	120	640	630	406	575	216	80-M6	170	22	71	14	M20	42
315M	2	508	120	640	630	457	685	216	65-M6	140	18	58	11	M20	42
315M	4-8	508	120	640	630	457	685	216	80-M6	170	22	71	14	M20	42
315L	2	508	120	640	630	508	685	216	65-M6	140	18	58	11	M20	42
315L	4-8	508	120	640	630	508	685	216	80-M6	170	22	71	14	M20	42
355M	2	610	120	730	710	560	750	250	70-M6	140	20	62.5	12	M20	42
355M	4-8	610	120	730	710	560	750	250	100-M6	210	28	90	16	M24	47
355L	2	610	120	730	710	630	750	250	70-M6	140	20	62.5	12	M20	42
355L	4-8	610	120	730	710	630	750	250	100-M6	210	28	90	16	M24	47

General performance cast iron motors M2QA 71 - 355
Dimension drawings

Three-phase motor, foot and flange mounted, terminal box top mounted

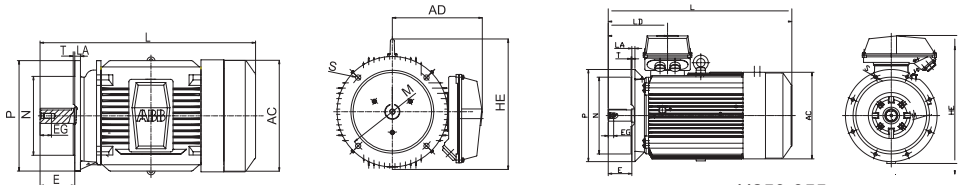


Three-phase motor, foot and flange mounted, terminal box on right hand side



H71-132 H160-280 H31□-3□□□

Three-phase motor, lange mounted



H71-225 H250-355

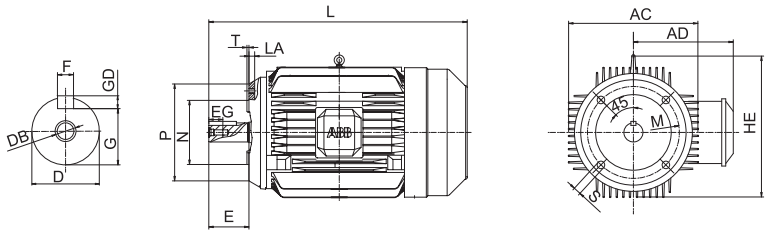
Flang-mounted, mounting designation IM B5, IM V1, IM V3
Foot and flang-mounted, mounting designation IM B35, IM V15, IM V36

General performance cast iron motors M2QA

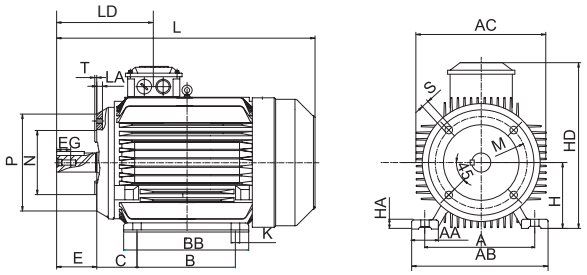
Motor size	Poles	H	HA	HD	HF	K	L	LD	AD	LA	M	N	P	S	T	HE
71M	2-6	71	10	200	---	7	255	100	120	9	130	110	160	4-10	3.5	165
80M	2-8	80	12	255	170	10	285	116	145	9	165	130	200	4-12	3.5	200
90S	2-8	90	12	240	185	10	310	128	150	10	165	130	200	4-12	3.5	200
90L	2-8	90	12	240	185	10	335	128	150	10	165	130	200	4-12	3.5	200
100L	2-8	100	14	275	245	12	380	138	175	11	215	180	250	4-15	4	270
112M	2-8	112	15	290	265	12	395	144	185	11	215	180	250	4-15	4	278
132S	2-8	132	18	335	300	12	465	169	205	12	265	230	300	4-15	4	320
132M	2-8	132	18	335	300	12	505	169	205	12	265	230	300	4-15	4	320
160M	2-8	160	22	415	380	15	600	250	255	15	300	250	350	4-19	5	400
160L	2-8	160	22	415	380	15	645	250	255	15	300	250	350	4-19	5	400
180M	2-4	180	22	450	420	15	670	270	270	18	300	250	350	4-19	5	420
180L	4-8	180	22	450	420	15	710	270	270	18	300	250	350	4-19	5	420
200L	2-8	200	25	510	470	19	770	285	305	20	350	300	400	4-19	5	470
225S	4-8	225	28	560	520	19	820	340	335	20	400	350	450	8-19	5	520
225M	2	225	28	560	520	19	815	310	335	20	400	350	450	8-19	5	520
225M	4-8	225	28	560	520	19	840	340	335	20	400	350	450	8-19	5	520
250M	2	250	30	645	580	24	930	360	395	22	500	450	550	8-19	5	655
250M	4-8	250	30	645	580	24	930	360	395	22	500	450	550	8-19	5	655
280S	2	280	35	715	645	24	975	355	435	22	500	450	550	8-19	5	725
280S	4-8	280	35	715	645	24	975	355	435	22	500	450	550	8-19	5	725
280M	2	280	35	715	645	24	1040	355	435	22	500	450	550	8-19	5	725
280M	4-8	280	35	715	645	24	1040	355	435	22	500	450	550	8-19	5	725
315S	2	315	45	870	---	28	1190	400	555	24	600	550	660	8-24	6	905
315S	4-8	315	45	870	---	28	1220	430	555	24	600	550	660	8-24	6	905
315M	2	315	45	870	---	28	1300	400	555	24	600	550	660	8-24	6	905
315M	4-8	315	45	870	---	28	1330	430	555	24	600	550	660	8-24	6	905
315L	2	315	45	870	---	28	1300	400	555	24	600	550	660	8-24	6	905
315L	4-8	315	45	870	---	28	1330	430	555	24	600	550	660	8-24	6	905
355M	2	355	52	1010	---	35	1495	424	655	25	740	680	800	8-24	6	1010
355M	4-8	355	52	1010	---	35	1565	494	655	25	740	680	800	8-24	6	1010
355L	2	355	52	1010	---	35	1495	424	655	25	740	680	800	8-24	6	1010
355L	4-8	355	52	1010	---	35	1565	494	655	25	740	680	800	8-24	6	1010

General performance cast iron motors M2QA 71 - 160
Dimension drawings

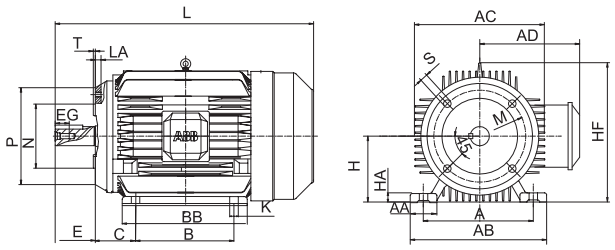
Flange mounted motor, small flange IM B14



Terminal top mounted IM B34



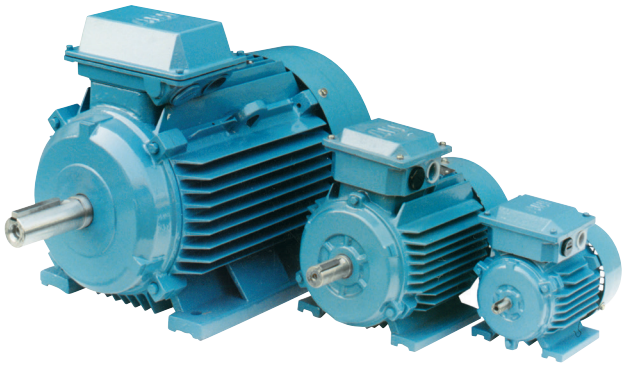
Terminal box side-mounted IM B34



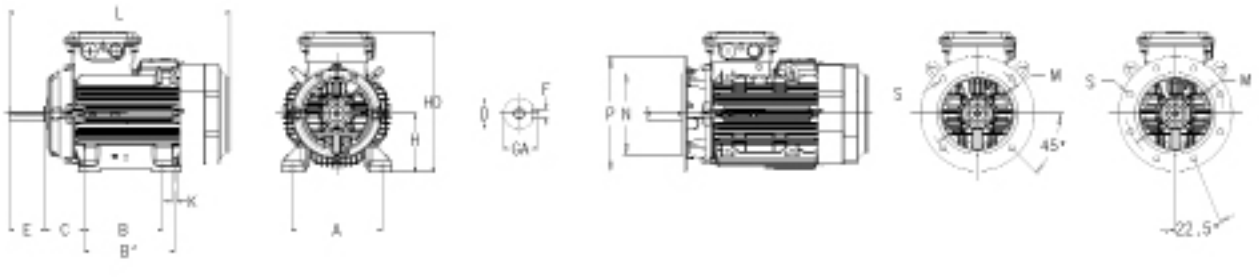
General performance cast iron motors M2QA

Motor size	Poles	A	AA	AB	AC	B	BB	C	D	E	F	G	GD	DB	EG	H	H A	HD	K	L	LD	AD	LA	T	HE	HF
71M	2-6	112	30	145	145	90	120	45	14	30	5	11	5	M5	12.5	71	10	200	7	255	100	120	9	3.5	145	-
80M	2-8	125	35	165	165	100	135	50	19	40	6	15.5	6	M6	16	80	12	225	10	285	116	145	9	3.5	200	185
90S	2-8	140	35	175	180	100	140	56	24	50	8	20	7	M8	19	90	12	240	10	310	128	150	10	3.5	200	95
90L	2-8	140	35	175	180	125	165	56	24	50	8	20	7	M8	19	90	12	240	10	335	128	150	10	3.5	200	195
100L	2-8	160	40	200	205	140	180	63	28	60	8	24	7	M10	22	100	14	275	12	380	138	175	11	3.5	270	245
112M	2-8	190	50	235	225	140	190	70	28	60	8	24	7	M10	22	112	15	290	12	395	144	185	11	3.5	278	265
132S	2-8	216	55	270	265	140	205	89	38	80	10	33	8	M12	28	132	18	335	12	465	169	205	15	3.5	320	300
132M	2-8	216	55	270	265	178	240	89	38	80	10	33	8	M12	28	132	18	335	12	505	169	205	15	3.5	320	300
160M	2-8	254	60	325	330	210	265	108	42	110	12	37	8	M16	36	160	22	415	15	600	250	255	20	4	400	380
160L	2-8	254	60	325	330	254	310	108	42	110	12	37	8	M16	36	160	22	145	15	645	250	255	20	4	400	380

Motor size	Poles	Size	P	M	N	S	T
71M	2-6	C105	105	85	70	M6	2.5
71M	2-6	C140	140	115	95	M6	3.0
80M	2-8	C120	120	100	80	M6	3.0
80M	2-8	C160	160	130	110	M8	3.5
90S	2-8	C140	140	115	95	M8	3.0
90S	2-8	C160	160	130	110	M8	3.5
90L	2-8	C140	140	115	95	M8	3.0
90L	2-8	C160	160	130	110	M8	3.5
100L	2-8	C160	160	130	110	M8	3.5
100L	2-8	C200	200	165	130	M10	3.5
112M	2-8	C160	160	130	110	M8	3.5
112M	2-8	C200	200	165	130	M10	3.5
132S	2-8	C200	200	165	130	M10	3.5
132M	2-8	C200	200	165	130	M10	3.5
160M	2-8	C250	250	215	180	M12	4
160L	2-8	C250	250	215	180	M12	4



Dimension drawings
IE2 General performance cast iron M2BA motors, sizes 71 - 355



Foot- mounted motor IM1001, B3 and Flange-mounted motor IM 3001, B5

General performance cast iron motoxrs M2BA

Motor size	D poles 2	D poles 4-6	GA poles 2	GA poles 4-6	F poles 2	F poles 4-6	E poles 2	E poles 4-6	L max poles 2	L max poles 4-6	A	B	B'	C	HD	K	H	M	N	P	S
71	14	14	16	16	5	5	30	30	264	264	112	90	-	45	178	7	71	130	110	160	10
80	19	19	21.5	21.5	6	6	40	40	321	321	125	100	-	50	195	10	80	165	130	200	12
90	24	24	27	27	8	8	50	50	357	357	140	100	125	56	219	10	90	165	130	200	12
100	28	28	31	31	8	8	60	60	381	381	160	140	-	63	247	12	100	215	180	250	15
112	28	28	31	31	8	8	60	60	403	403	190	140	-	70	259	12	112	215	180	250	15
132	38	38	41	41	10	10	80	80	533	533	216	140	178	89	300	12	132	265	230	300	15
160	42	42	45	45	12	12	110	110	584	584[5]	254	210	254	108	413	14.5	160	300	250	350	19
180	48	48	51.5	51.5	14	14	110	110	681	681	279	241	279	121	433	14.5	180	300	250	350	19
200	55	55	59	59	16	16	110	110	726	726	318	267	305	133	473[6]	18.5	200	350	300	400	19
225	55	60	59	64	16	18	110	140	821	851	356	286	311	149	539	18.5	225	400	350	450	19
250	60	65	64	69	18	18	140	140	879	879	406	311	349	168	584	24	250	500	450	550	19
280S	65	75	69	79.5	18	20	140	140	982	982	457	368	-	190	768	24	280	500	450	550	18
280SM_	65	75	69	79.5	18	20	140	140	1052	1052	457	368	419	190	768	24	280	500	450	550	18
315SM_	65	80	69	85	18	22	140	170	1216	1246	508	406	457	216	845	28	315	600	550	660	23
315ML_	65	90	69	85	18	25	140	170	1330	1360	508	457	508	216	845	28	315	600	550	660	23
355SM_	70	100	74.5	106	20	28	140	210	1399	1469	610	500	560	254	926	35	355	740	680	800	23

Motor size	M	N	P	S
71	85	70	105	M6
80	100	80	120	M6
90	115	95	140	M8
100	130	110	160	M8
112	130	110	160	M8
132	165	130	200	M10

Footnotes

[5] 160MLB 6-pole L = 681

[6] 200, voltage code S HD = 478

Tolerances	
A, B	±0,8
D	ISO j6 ≤ Ø 28 mm
	ISO k6 < Ø 38 mm
	ISO m6 ≥ Ø 55 mm
F	ISO h9
H	-0,5
N	ISO js6
C	±0,8

Motors in brief
IE1 General performance cast iron M2QA motors, sizes 71 - 160

Motor size	M2QA	71	80	90	100	112	132	160
Stator	Material	Cast iron HT150 GB/T9439						
	Paint color shade	Blue, Munsell 8B 4.5/3.25/NCS 4822 B05G						
	Surface treatment	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Bearing end shields	Material	Cast iron HT150 GB/T9439						
	Paint color shade	Blue, Munsell 8B 4.5/3.25/NCS 4822 B05G						
	Surface treatment	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Bearings	D-end	6202	6204	6205	6206	6207	6208	6309
	Radial internal clearance	C3	C3	C3	C3	C3	C3	C3
	N-end	6202	6204	6205	6206	6206	6207	6209
	Radial internal clearance	C3	C3	C3	C3	C3	C3	C3
Axially locked bearings	Spring ring	Locked at D-end						
Lubrication		Greased for life						
Rating plate	Material	Stainless steel						
Terminal box	Frame material	Cast iron HT150 GB/T9439						
	Cover material	Cast iron HT150 GB/T9439						
Connections	Cable entries	2-M16x1.5 2-M16x1.5	2-M16x1.5 2-M25x1.5	2-M16x1.5 2-M25x1.5	2-M16x1.5 2-M32x1.5	2-M16x1.5 2-M32x1.5	2-M16x1.5 2-M32x1.5	2-M16x1.5 2-M40x1.5
	Terminals	6 terminals for connection						
Fan cover		Steel						
	Material	Blue, Munsell 8B 4.5/ 3.25/NCS 4822 B05G						
	Paint color shade	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Stator winding	Material	Copper						
	Insulation class	Insulation class F.						
	Winding protection	On request						
Rotor winding	Material	Pressure die-cast aluminium						
Balancing method		Half key balancing as standard						
Key ways		Open key way						
Enclosure		IP 55						
Cooling method		IC 411						

*) For vertical-mounted motors, pls see the specification on the rating plate.

Motors in brief
IE1 General performance cast iron M2QA motors, sizes 180 - 355

Motor size	M2QA	180	200	225	250	280	315	355
Stator	Material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439 except vartical-mounted			
	Paint color shade	Blue, Munsell 8B 4.5/3.25/NCS 4822 B05G						
	Surface treatment	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Bearing end shields	Material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439 except vartical-mounted			
	Paint color shade	Blue, Munsell 8B 4.5/3.25/NCS 4822 B05G						
	Surface treatment	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Bearings	D-end	6310	6312	6313	6314 *	6316 *	6316(2P) * 6319(4/6/8P)	6319M(2P) * 6322(4/6/8P)
	Radial internal clearance	C3	C3	C3	C3	C4(2P) C3(4/6/8P)	C4(2P) C3(4/6/8P)	C4(2P) C3(4/6/8P)
	N-end	6210	6212	6213	6214 *	6316 *	6316(2P) * 6319(4/6/8P)	6319M(2P) * 6319(4/6/8P)
	Radial internal clearance	C3	C3	C3	C3	C4(2P) C3(4/6/8P)	C4(2P) C3(4/6/8P)	C4(2P) C3(4/6/8P)
Axially locked bearings	Spring ring	Spring ring Locked at D-end	As standard locked at D-end		As standard locked at ND-end			
Lubrication		Greased for life or regreasable			Regreasable bearings			
Rating plate	Material	Stainless steel						
Terminal box	Frame material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439			
	Cover material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439			
Connections	Cable entries	2-M16x1.5 2-M40x1.5	2-M16x1.5 2-M50x1.5	2-M16x1.5 2-M50x1.5	2-M16x1.5 2-M63x1.5	2-M16x1.5 2-M63x1.5	2-M16x1.5 2-M63x1.5	2-M16x1.5 2-M63x1.5
	Terminals	6 terminals for connection						
Fan	Material	Reinforced glass fiber			Reinforced glass fiber or aluminium			
Fan cover		Steel						
	Material	Blue, Munsell 8B 4.5/ 3.25/NCS 4822 B05G						
	Paint color shade	Two-pack 821 Acid Polyurethane Enamel, thickness≥60µm						
Stator winding	Material	Copper						
	Insulation class	Insulation class F.						
	Winding protection	On request						
Rotor winding	Material	Pressure die-cast aluminium						
Balancing method		Half key balancing as standard						
Key ways		Open key way						
Enclosure		IP 55						
Cooling method		IC 411						

*) For vertical-mounted motors, pls see the specification on the rating plate.

Motors in brief
IE2 General performance cast iron M2BA motors, sizes 71 - 132

Motor size	M2BA	71	80	90	100	112	132
Stator and end shields	Material	Cast iron EN-GJL-150/GG 15/GRS 150					
	Paint color shade	Munsell blue 8B 4.5/3.25					
	Surface treatment	Phosphating anticorrosive primer and top coat polyurethane, ≥ 70µm					
Feet	Material	Integrated cast iron feet					
Bearings	D-end	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C3	6208-2Z/C3
	N-end	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205-2Z/C3	6208-2Z/C3
Axially locked bearings		Locked at D-end					
Bearing seals	D-end	V-ring					
	N-end	Labyrinth seal					
Lubrication		Permanently lubricated shielded bearings. Grease temperature range -40 to + 160 °C					
Terminal box	Material	Cast iron EN-GJL-150/GG 15/GRS 150					
	Surface treatment	Phosphating anticorrosive primer and top coat polyurethane, ≥ 70µm					
	Screws	Steel 5G, coated with zinc and yellow chromated.					
Connections	Threaded openings	2 x M16	2 x M25		2 x M32		
	Max Cu-area mm^2	4	6		10		
	Terminal box	Cable lugs, 6 terminals					
Fan	Material	Polypropylene. Reinforced with 20% glass-fibre.					
Fan cover	Material	Steel					
	Paint color shade	Black RAL 9011					
	Surface treatment	Phosphating pretreatment and polyester powder top coat ≥ 70µm					
Stator winding	Material	Copper					
	Insulation class	Insulation class F.					
	Winding protection	3 PTC thermistors as standard, 150 °C					
Rotor winding	Material	Die-cast aluminum					
Balancing method		Half-key balancing					
Key ways		Closed key way					
HEating elements	On request	8 W		25 W			
Enclosure		IP 55					
Cooling method		IC 411					
Drain holes		Drain holes with closable plastic plugs, open on delivery.					
Lifting lugs		Bolted to the stator					

Motors in brief
IE2 General performance cast iron M2BA motors, sizes 160 - 250

Motor size	M2BA	160	180	200	225	250
Stator and end shields	Material	Cast iron EN-GJL-200/GG 20/GRS 200				
	Paint color shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G				
	Surface treatment	Two-pack epoxy paint ≥ 70µm				
Feet		Integrated with stator				
Bearing end shields	Material	Cast iron EN-GJL-200/GG 20/GRS 200				
	Paint color shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G				
	surface treatment	Two-pack epoxy paint ≥ 70µm				
Bearings	D-end	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3	6213-2Z/C3	6215-2Z/C3
	N-end	6209-2Z/C3	6209-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3
Axially locked bearings	Inner bearing cover	As standard, Locked at D-end				
Bearing seals	D-end	V-ring				
	N-end	V-ring				
Lubrication		Permanently lubricated shielded bearings.				
Rating plate	Material	Stainless steel				
Terminal box	Material	Cast iron, base integrated with stator.				
	Surface treatment	Two-pack epoxy paint ≥ 70µm				
	Cover screws	Steel 8.8, zinc electroplated and chromated				
Connections	Threaded openings	2 x M40 + M16)*)			(2 x M63 + M16)	
	Max CU-area mm^2	35				
	Terminal box	6 terminals for connection with cable lugs (not included)				
	Screws	M6			M10	
Fan	Material	Polypropylene. Reinforced with 20% glass-fibre.				
Fan cover	Material	Hot dip galvanized steel				
	Paint color shade	Black, NCS 8801-B09G				
	Surface treatment	Polyester powder paint ≥ 70µm				
Stator winding	Material	Copper				
	Insulation	Insulation class F				
	Winding protection	3 PTC thermistors as standard, 150 °C				
Rotor winding	Material	Die-cast aluminum				
Balancing method		Half-key balancing				
Key ways		Closed key way				
Heating elements	On request	25 W		50 W		
Enclosure		IP 55				
Drain holes		Drain holes with closable plastic plugs, open on delivery				
Cooling method		IC 411				
Drain holes		Drain holes with closable plastic plugs, open on delivery.				
Lifting lugs		Integrated with the stator				

*) Frame size 200 code S
(2 x M63 + M16), max. CU-area 70 mm^2 and screws M10.

Motors in brief
IE2 General performance cast iron M2BA motors, sizes 280 - 355

Motor size	M2BA	280	315	355
Stator and end shields	Material	Cast iron EN-GJL-200		
	Paint color shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G		
	Surface treatment	Two-pack epoxy paint, ≥ 70µm		
Feet		Integrated woth stator		
	Material	Cast iron EN-GJL-200		
Bearings	D-end 2-pole	6217/C3	6217/C3	6219/C3
	4-6 -pole	6217/C3	6219/C3	6222/C3
	N-end 2-pole	6217/C3	6217/C3	6219/C3
	4-6 -pole	6217/C3	6217/C3	6219/C3
Axially locked bearings	Inner bearing cover	D-end		
Bearing seals	D-end	V-ring		
	N-end	V-ring		
Lubrication		Regreasable bearings, regreasing nipples M10x1		
Rating plate	Material	Stainless steel		
Terminal box	Material frame	Cast iron EN-GJL-200		
	cover	Polypropylene. Reinforced with 25% glass fibre.		
	Surface treatment	Two-pack epoxy paint, ≥ 70µm (for terminal box frame)		
	Screws	Steel 5G, coated with zinc and blue chromated		
Connections	Threaded openings	2xM63, 2 x M20	2xM63, 2 x M20	2xM75, 2 x M20
	Max Cu-area mm^2	2x150	2x240	4x240
	Terminal box	Cable lugs, 6 terminals		
	Screws	M12	M12	M12
Fan	Material	Polypropylene. Reinforced with 25% glass fibre.		
Fan cover	Material	Polypropylene. Reinforced with 25% glass fibre.		
	Paint color shade	Black plastic, no painting		
	Surface treatment	No surface treatment		
Stator winding	Material	Copper		
	Insulation	Insulation class F		
	Winding protection	3 PTC thermistors, 155 °C		
Rotor winding	Material	Die-cast aluminum		
Balancing method		Half key balancing		
Keyway		Closed key way		
Heating elements	On request	60 W	2x60 W	2x60 W
Enclosure		IP 55		
Cooling method		IC 411		
Drain holes		Drain holes with closable plastic plugs, open on delivery		
Lifting lugs		Bolted to the stator		

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