

GENERAL

Various regulatory authorities in many countries have introduced or are planning legislation to encourage the manufacture and use of higher efficiency motors, as part of a concerted effort worldwide to reduce energy consumption. Indeed, the International Electrotechnical Commission (IEC) has introduced a new standards relating to energy efficient motors.

IEC 60034-30 defines new efficiency classes for motors and harmonizes the currently different requirements for induction motor efficiency levels around the world.

The **Commission Regulation (EC) N. 640/2009** implementing EcoDesign Directive 2009/125/EC states that in the European Community, with the exception of some special applications, motors shall not be less efficient than the IE3 efficiency level as from 1 January 2015.

In detail:

IE3 by January 1, 2015 (for motors ≥ 7.5 to 375 kW).

IE3 for all motors by January 1, 2017 (for motors from 0.75 to 375 kW).

	MOTOR EVMS		MOTOR EVM
Power Source	Frequency	50 Hz	
	Phase	Single Phase	Three Phase
	Rotation speed	$\approx 2900 \text{ min}^{-1}$	
	Power rating	$0.37 \div 2.2 \text{ kW}$ $0.5 \div 3.0 \text{ HP}$	$0.37 \div 18.5 \text{ kW}$ $0.5 \div 25 \text{ HP}$
	Voltage	$230 \pm 10\% \text{ V}$	$230/400 \pm 10\% \text{ V}$ (up to 4.0 kW) $400/690 \pm 10\% \text{ V}$ (above 5.5 kW)
Type	Type	Electric - TEFC	
	Efficiency Level	from 0.37 up to 2.2 kW	- : from 0.37 up to 0.55 kW IE3 : above 0.75 kW
	No° of poles	2	
	Protection degree	IP 55	
	Insulation Class	F (temperature rise class B)	
Others	Thermal Protection	PTC is available for the above 1.5 kW included	
	Casing Material	Aluminium	
	Flange mount (IEC motor)	IM B14 (up to 4.0 kW) IM B5 (above 5.5 kW)	IM B14 (up to 4.0 kW) IM B5 (above 5.5 kW)
	Terminal Box fixing	Unlosable screw and sealing from 0.75 kW to 11 kW	

NOISE DATA

Motor Size	Power		Noise LpA - dB (A) *
	[kW]	[HP]	
71	0.37	0.5	<70
	0.55	0.75	
80	0.75	1	52
	1.1	1.5	
90	1.5	2	60
	2.2	3	
100	3.0	4	62
112	4.0	5.5	66
132	5.5	7.5	68
	7.5	10	
160	11	15	73
160 M	15	20	74
160 L	18.5	25	
180 M	22	30	77
200 L	30	40	78
	37	50	

* Noise values were measured with a tolerance of $\pm 2.5 \text{ dB (A)}$.

TECHNICAL MOTOR DATA EVMS 1-3-5-10-15-20

Single Phase Motor at 50Hz, 2 poles

Motor Size	Motor Power		Capacitor		Load efficiency and power-factor		Full load current [A]		Locked rotor current [A]	
	[kW]	[HP]	[μF]	[V]	η, % 100%	cos-φ 100%	230 V		230 V	
71	0.37	0.5	16	400	57.6	0.89	3.1		9.6	
	0.55	0.75	16	400	69.0	0.89	3.9		13.6	
80	0.75	1	25	400	65.0	0.95	5.3		28.1	
	1.1	1.5	36	400	74.0	0.97	6.5		26.0	
90 S ■	1.5	2	35	400	79.0	0.97	8.8		46.0	
90 L ■	2.2	3	40	400	78.0	0.97	12.9		61.0	

■ Single phase motors manufactured by EBARA

Three Phase Motor at 50Hz, 2 poles

Motor Size	Motor Power		Efficiency	Load efficiency and power-factor (400 V)				Full load current [A]			Locked rotor current [A]		
	[kW]	[HP]		η, % 50%	75%	100%	cos-φ 100%	230 V	400 V	690 V	230 V	400 V	690 V
71	0.37	0.5	-	58.0	64.0	70.0	0.78	1.7	1.0	-	8.1	4.7	-
	0.55	0.75	-	57.0	64.0	71.0	0.77	2.6	1.5	-	12.5	7.2	-
80	0.75	1	IE3	80.2	82.5	82.1	0.76	3.0	1.7	-	19.7	11.4	-
	1.1	1.5	IE3	81.3	82.8	82.7	0.77	4.3	2.5	-	28.8	16.6	-
90	1.5	2	IE3	83.5	84.3	84.6	0.77	5.8	3.3	-	44.1	25.5	-
	2.2	3	IE3	85.7	86.8	86.0	0.78	8.2	4.7	-	63.3	36.6	-
100	3.0	4	IE3	85.9	87.5	87.1	0.78	11.1	6.4	-	89.8	51.8	-
112	4.0	5.5	IE3	86.0	88.3	88.1	0.75	15.1	8.7	-	131.8	76.1	-
132	5.5	7.5	IE3	88.9	90.3	90.0	0.85	-	10.4	6.0	-	115.3	66.6
	7.5	10	IE3	89.0	90.7	90.4	0.88	-	13.6	7.9	-	144.0	83.1
160	11	15	IE3	90.1	91.4	91.2	0.81	-	21.3	12.3	-	184.0	106.2
160 M	15	20	IE3	91.0	91.3	91.9	0.89	-	26.7	15.4	-	259.0	149.5
160 L	18.5	25	IE3	91.6	92.8	92.4	0.88	-	33.0	19.1	-	353.1	203.9

◆ MOTOR DATA ETM

TECHNICAL MOTOR DATA EVM 32-45-64

Three Phase Motor at 50Hz. 2 poles

Motor Size	Power		Efficiency	Load efficiency and power-factor				Full load current [A]			Locked rotor current [A]		
	[kW]	[HP]		η, %			cos-φ	230 V	400 V	690 V	230 V	400 V	690 V
90 L	2.2	3	IE3	85.0	86.2	86.5	0.82	8.0	4.6	-	73.3	42.3	-
100 L	3.0	4	IE3	82.3	85.8	87.7	0.89	9.7	5.6	-	85.4	49.3	-
112 M	4.0	5.5	IE3	86.8	87.8	88.1	0.93	12.1	7.0	-	116.4	67.2	-
132 S	5.5	7.5	IE3	88.0	88.5	89.2	0.90	-	10.0	5.8	-	89.0	51.4
	7.5	10	IE3	88.6	89.2	90.1	0.92	-	13.1	7.6	-	116.6	67.3
160 M	11	15	IE3	87.4	89.8	91.2	0.89	-	19.7	11.4	-	179.3	103.5
	15	20	IE3	91.0	91.3	91.9	0.89	-	26.7	15.4	-	259.0	149.5
160 L	18.5	25	IE3	91.6	92.8	92.4	0.88	-	33.0	19.1	-	353.1	203.9
180 M	22	30	IE3	92.3	92.9	92.9	0.90	-	38.0	22.0	-	361.0	209.0
200 L	30	40	IE3	92.8	93.9	94.0	0.89	-	51.8	30.0	-	459.0	270.0
	37	50	IE3	93.0	93.9	93.8	0.90	-	62.5	36.0	-	496.0	288.0