

Product note

China Energy Label for low voltage motors



Mandatory efficiency grade label

The China Energy Label scheme has been mandatory since 1.9.2008 and it was revised 1.9.2012.

All low voltage motors manufactured in or imported into China must be certified and registered by the Label office and provided with an energy label confirming that they meet certain efficiency standards.

The energy label must be attached to the motor itself or to the packing immediately around it. It must show the following information:

- Name of the manufacturer
- Energy efficiency level of the motor
- Code identifying the National Standard applied

The motor's efficiency value must be stamped on the rating plate.

The labeling requirement minimum Grade 3 (IE2) applies to standard and hazardous area 2-, 4- and 6-pole low voltage motors with a power range of 0.75 to 375 kW, rated up to 1000 V 50 Hz.

Exemptions

The following motors are excluded: marine, brake motors, motors completely integrated into a machine, conical rotor motors for electric hoist and construction machinery, motors with electro-magnetic braking inside, motors with a duty type other than S1 or S3 with a rated cyclic duration factor of 80% or higher, wound-rotor induction motors, two-/multispeed motors, VSD motors, watercooled motors, smoke extraction motors and motors for textile industry.

Qualification for the label

To qualify for the China Energy Label, motors must meet the requirements specified in Chinese National Standard GB 18613-2012. This standard, which was issued by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, specifies the minimum allowable energy efficiency values, and energy efficiency grades for small and medium-sized three-phase asynchronous motors.

Motor efficiency must be equal to or better than the specified value (see table overleaf) at 100% of the rated output power. Efficiency is measured in accordance with Standard GB/T1032, which is identical to IEC 60034-2-1 and the grades are in line with the classes in IEC/EN 60034-30. Standard GB 18613 specifies three different energy efficiency levels, Grades 1-3, where Grade 1 represents best-in-class performance.

Timetable

China has taken a major step towards harmonizing its national standards with IEC standards and has plans to increase the energy efficiency of motors in the following steps:

- 1.9.2016: 7.5 kW-375 kW Grade 2 compulsory (IE3)
- 1.9.2017: 0.75 kW-375 kW Grade 2 compulsory (IE3)

Minimum allowable energy efficiency values for low power motors (per GB25958-2010)

Rated power W	Energy efficiency %								
	Grade 1 (≈ IE4)			Grade 2 (≈ IE3)			Grade 3 (≈ IE2)		
	2-poles	4-poles	6-poles	2-poles	4-poles	6-poles	2-poles	4-poles	6-poles
10	-	35.0	-	-	31.4	-	-	28.0	-
16	54.1	39.4	-	50.1	35.6	-	46.0	32.0	-
25	60.0	50.1	-	56.0	46.0	-	52.0	42.0	-
40	62.8	58.1	-	59.0	54.1	-	56.0	50.0	-
50	67.5	63.8	-	63.8	60.0	-	60.0	56.0	-
90	69.3	65.7	-	65.7	61.9	-	62.0	58.0	-
120	73.8	67.5	-	70.5	63.8	-	67.0	60.0	-
180	75.5	71.1	66.6	72.4	67.7	62.9	69.0	62.0	59.0
250	78.1	73.8	70.2	75.2	70.5	66.7	72.0	67.0	63.0
370	79.3	75.9	74.6	76.5	72.8	71.4	73.5	69.5	68.0
550	81.0	79.3	77.2	78.4	76.5	74.2	75.5	73.5	71.0
750	-	-	-	-	-	-	77.4	79.5	75.9
1 100	-	-	-	-	-	-	79.6	81.4	78.1
1 500	-	-	-	-	-	-	81.3	82.8	79.8
2 200	-	-	-	-	-	-	83.2	84.3	81.8

Minimum allowable energy efficiency values for motors (per GB18613-2012)

Rated power kW	Energy efficiency %								
	Grade 1 (≈ IE4)			Grade 2 (≈ IE3)			Grade 3 (≈ IE2)		
	2-poles	4-poles	6-poles	2-poles	4-poles	6-poles	2-poles	4-poles	6-poles
0.75	84.9	85.6	83.1	80.7	82.5	78.9	77.4	79.6	75.9
1.1	86.7	87.4	84.1	82.7	84.1	81.0	79.6	81.4	78.1
1.5	87.5	88.1	86.2	84.2	85.3	82.5	81.3	82.8	79.8
2.2	89.1	89.7	87.1	85.9	86.7	84.3	83.2	84.3	81.8
3	89.7	90.3	88.7	87.1	87.7	85.6	84.6	85.5	83.3
4	90.3	90.9	89.7	88.1	88.6	86.8	85.8	86.6	84.6
5.5	91.5	92.1	89.5	89.2	89.6	88.0	87.0	87.7	86.0
7.5	92.1	92.6	90.2	90.1	90.4	89.1	88.1	88.7	87.2
11	93.0	93.6	91.5	91.2	91.4	90.3	89.4	89.8	88.7
15	93.4	94.0	92.5	91.9	92.1	91.2	90.3	90.6	89.7
18.5	93.8	94.3	93.1	92.4	92.6	91.7	90.9	91.2	90.4
22	94.4	94.7	93.9	92.7	93.0	92.2	91.3	91.6	90.9
30	94.5	95.0	94.3	93.3	93.6	92.9	92.0	92.3	91.7
37	94.8	95.3	94.6	93.7	93.9	93.3	92.5	92.7	92.2
45	95.1	95.6	94.9	94.0	94.2	93.7	92.9	93.1	92.7
55	95.4	95.8	95.2	94.3	94.6	94.1	93.2	93.5	93.1
75	95.6	96.0	95.4	94.7	95.0	94.6	93.8	94.0	93.7
90	95.8	96.2	95.6	95.0	95.2	94.9	94.1	94.2	94.0
110	96.0	96.4	95.6	95.2	95.4	95.1	94.3	94.5	94.3
132	96.0	96.5	95.8	95.4	95.6	95.4	94.6	94.7	94.6
160	96.2	96.5	96.0	95.6	95.8	95.6	94.8	94.9	94.8
200	96.3	96.6	96.1	95.8	96.0	95.8	95.0	95.1	95.0
250	96.4	96.7	96.1	95.8	96.0	95.8	95.0	95.1	95.0
315	96.5	96.8	96.1	95.8	96.0	95.8	95.0	95.1	95.0
355-375	96.6	96.8	96.1	95.8	96.0	95.8	95.0	95.1	95.0

Low power motors

Although at present China Energy Label program doesn't apply to low power three phase 10W - 550 W, 2/4/6 pole asynchronous motors with voltage 690 V and below and powered by a 50 Hz AC power supply, these motors must comply with the requirements specified in standard GB25958-2010 "Minimum allowable values of energy efficiency and energy efficiency grades for low power motors". The standard took effect in July 1, 2011.

In addition to energy efficiency requirements, low power safe area motors are subject to CCC-certification.

Ordering of China Energy Label compliant ABB motors

The variant code "540 China Energy Label" must be used when ordering.

The following safe area motors need in addition the China Compulsory Certificate, Variant code 545.

2-pole	10W-2.2kW	4-pole	10W-1.1kW
6-pole	10W-0.73kW	8-pole	10W-0.55kW

Motors for explosive atmospheres need the CQST-certificate, Variant code 782.

ABB motors and the China Energy Label

ABB has applied certification for Process performance and General performance cast iron and aluminum IE2 motors. ABB also provides IE class markings for motors for explosive atmospheres according to IEC 60034-30.

Registration for IE3 and IE4 motors is on-going.

For more information please contact:

www.abb.com/motors&generators

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