PRODUCT NOTE

China Energy Label
for low voltage motors

Low voltage motors manufactured or imported to China must be tested, registered by the label office and marked with an energy label confirming that they meet the energy efficiency levels (Grades) as defined in the Chinese National Standard GB18613-2012.

All low voltage motors manufactured in or imported to China must be certified and registered by the label office and marked with an energy label confirming that they meet the energy efficiency levels (Grades) as defined in GB18613-2012. The energy efficiency sticker must be attached on the motor itself. It shows the following information:

- Name of the manufacturer
- Motor type
- Energy efficiency level of the motor
- Rated power
- Pole number
- Code identifying the Chinese National Standard (GP 18613-2012) applied

The labeling requirement minimum is Grade 3 (IE2) applies to standard and hazardous area 2-, 4- and 6-pole low voltage motors within the power range of 0.75 to 375 kW, rated for 380 V 50 Hz.

Exemptions
The types of exempt motors include, but is not limited to the following: marine motors, motors with electromagnetic brake inside, motors completely integrated into a machine, conical rotor motors for electric hoist and construction machinery, water-cooled motors , VSD motors, two- or multispeed motors and motors with a duty type other than S1 or S3 with a rated cyclic duration factor of 80% or less.

Qualification for the label
To qualify for the China Energy Label, motors must meet the requirements specified in the standard GB 18613-2012. Standard GB 18613 specifies three different energy efficiency levels, Grades 1, 2and 3, where Grade 1 represents best-in-class performance.

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 60034-2-1:2007 and the grades are in line with the IE classes according to IEC 60034-30.

Motors below 0.75 kW
Although at present China Energy Label program does not apply to low power three phase 10 W - 550 W, 2-, 4- and 6-pole asynchronous motors with voltage 690 V 50 Hz and below, 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.” In addition to energy efficiency requirements, low power safe area motors are subject to the China Compulsory Certification (CCC).

Future regulation
The China Energy Label has been mandatory since September 1, 2008 and was revised September 1,
2012. It is expected that the GB 18613 will be revised during 2020 and that Grade 2 (IE3) level would become mandatory one year after publishing the standard.

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

Rated power, W	Grade 1 (= IE4)			Grade 2 (= IE3)			Grade 3 (=IE2)		
	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole
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	Grade 1 (= IE4)			Grade 2 (= IE3)			Grade 3 (=IE2)		
	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole
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	85.1	95.0

Ordering of China Energy Label compliant ABB motors

The variant code “540 China Energy label” must be used when ordering. Safe area motors below 0.75 kW need in addition the variant code “545 China Compulsory Certificate” that is available for motors from China.

Motors for explosive atmospheres need the variant code “782 CQST certificate”. By October 1st 2020 CQST certificate will be replaced by mandatory CCC certificate for Motors in explosive atmospheres.

ABB motors and China Energy Label

ABB has applied certification for a wide range of IE2 and IE3 motors in Process and General performance cast iron and aluminum ranges, and for motors in explosive atmospheres.

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