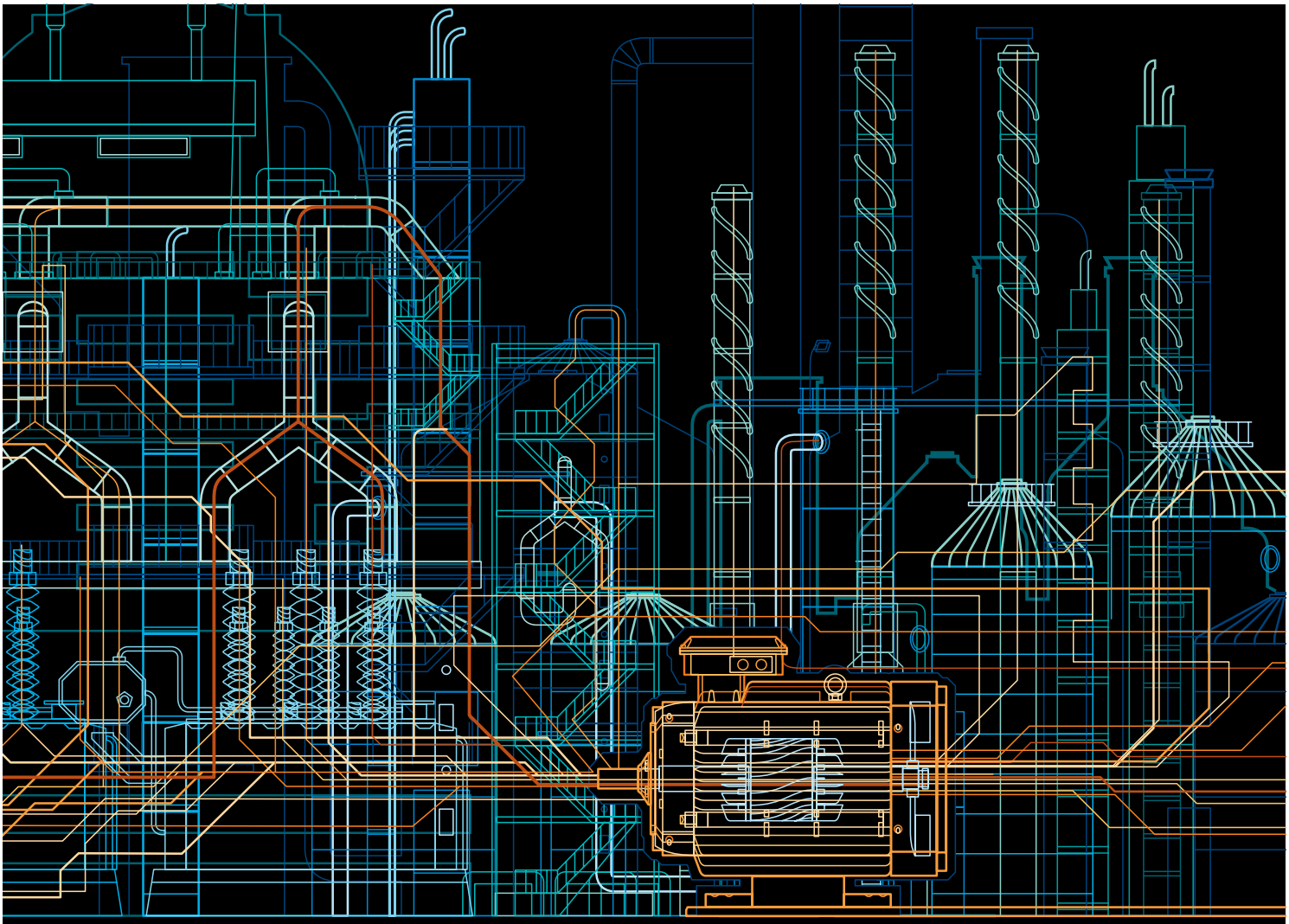


EU MEPS
for low voltage electric motors

Power and productivity
for a better world™

EU MEPS in brief

EU MEPS (European Minimum Energy Performance Standard) sets mandatory minimum efficiency levels for electric motors introduced into the European market. It is part of the EU's ecodesign project, which aims to reduce the energy consumption and other negative environmental impacts of energy-related products.

The EU MEPS scheme covers most single speed, three-phase induction motors up to 375 kW (see Scope). It will come into effect in three stages from mid 2011 onwards.

Under the scheme manufacturers are required to show the IE (International Efficiency) class and efficiency values on motor rating plates and in product documentation.

EU MEPS is based on two IEC (International Electrotechnical Commission) standards. It requires efficiency to be measured using methods specified in IEC/EN 60034-2-1: 2007, and uses efficiency classes defined in IEC/EN 60034-30. As EU MEPS is based on international standards, it represents an important step towards harmonization of efficiency regulations on a global scale.

Scope

EU MEPS covers 2-, 4- and 6-pole single speed, three-phase induction motors in the power range 0.75 to 375 kW, rated up to 1000 V. It covers all duty types, as long as the motors are capable of continuous duty operation.

The following types of motors are excluded:

– motors designed to operate wholly immersed in a liquid;
– motors completely integrated into a product where the motor's energy performance cannot be tested independently from the product;
– motors specifically designed to operate continuously:
  - at altitudes exceeding 1000 meters ASL;
  - outside the ambient air temperature range of -15°C…+40°C
  - in maximum operating temperatures above 400°C;
  - where the water coolant temperature at the inlet to a product is less than 5°C or exceeds 25°C;
  - in potentially explosive atmospheres as defined in Directive 94/9/EC;
– brake motors.

'Specifically designed' means that the motor has a special winding, fan, grease, etc. different from a standard motor.

Please note that the information in this brochure reflects ABB's present understanding of the situation. Certain aspects of the regulations are currently open to interpretation, and accordingly the EU Commission is planning to issue further clarification. It is therefore likely that some of the details shown here will change. ABB intends to provide updated information when this becomes available.

Timeline

October 2009	EU adopted Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (ErP). The requirements apply to electric motors with effect from mid 2011 onwards, giving manufacturers around 2 years to ensure that their products comply.
Forthcoming clarification 2011	**Clarification of the wording of Commission Regulation EC 640/2009, which implements Directive 2009/125/EC with regard to ecodesign requirements for electric motors.**
16 June 2011	**Stage 1: Motors must meet the IE2 efficiency level**
1 January 2015	**Stage 2: Motors with a rated output of 7.5 – 375 kW must meet EITHER the IE3 efficiency level OR the IE2 level if fitted with a variable speed drive**
1 January 2017	**Stage 3: Motors with a rated output of 0.75 – 375 kW must meet EITHER the IE3 efficiency level OR the IE2 level if fitted with a variable speed drive**

ABB and EU MEPS

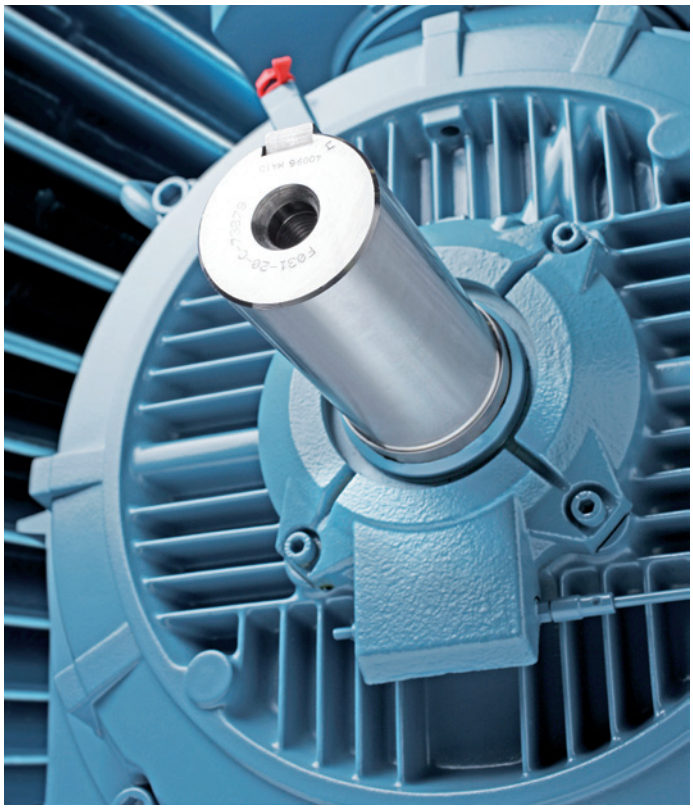


ABB complies with all aspects of Commission Regulation EC 640/2009. Therefore, from June 16, 2011 onwards ABB will not offer / sell / deliver in any markets globally IE1 CE marked products that fall into the scope of EC 640/2009.

ABB has a full range of IE2 motors available from stock, and a broad range of IE3 and IE4 motors.

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.

Frequently Asked Questions

Are manufacturers allowed to produce IE1 motors after 16 June 2011?

Standard efficiency (IE1) motors may no longer be placed on the European market as of 16 June 2011. As of that date all new motors will have to meet the IE2 (high efficiency) rating in Europe.

EU MEPS does not apply outside Europe. Manufacturers can continue to supply IE1 non-CE marked motors to customers located in Europe for further shipment to non-European markets. In this case a statement is required from the customer confirming that the motors' final destination is outside Europe.

When I purchase a motor, how can I be sure that it meets the requirements of EU MEPS?

Check the motor rating plate and ask for the test report. The rating plate should be stamped with the efficiency class – IE2 as a minimum – and efficiency values (see Markings and documentation). The IE class stamped on the plate must be based on the lowest efficiency value at the rated voltage/ frequency/output combination shown on the rating plate. In the case of ABB motors, the IE class and efficiency values are stamped on the rating plate and test reports are available on ABB's website.

The efficiency class stamped on the rating plate is verified using the testing methods specified in IEC 60034-2-1: 2007. ABB utilizes low uncertainty testing methods.

Does EU MEPS cover motors for explosive atmospheres?

No, EU MEPS does not cover all the types of motor covered by IEC 60034-30. Some motors (such as motors for explosive atmospheres) are included in IEC 60034-30 but excluded from EU MEPS.

As a global player, ABB will follow the requirements of IEC/ EN 60034-30. Even though it is not required under EU MEPS, ABB will also provide IE markings for standard motors for explosive atmospheres.

Does EU MEPS cover marine motors?

No. Marine motors are designed for ambient temperatures outside the range -15°C…+40°C, specified in the Comission Regulation EC 640/2009.

Does EU MEPS cover brake motors?

No. Brake motors are excluded from the Comission Regulation EC 640/2009.

If a motor is rated for altitudes in excess of 1000 m does it fall within the scope of EU MEPS?

Yes, if the motor is of a standard type but de-rated for operation at altitudes in excess of 1000 m.
No, if the motor has a special design (winding, fan, grease, etc.) for operation in excess of 1000 m.

Can a motor without IE marking be placed on the European market after 16 June 2011?

No. Motors placed on the market on 16 June 2011 or after must have the IE marking.
Even if the motor was ordered before 16 June 2011 it cannot be delivered without the IE marking after 16 June 2011.

ABB will roll out the new IE rated motors into all central stocks in time for the introduction of EU MEPS.

Can a motor be rewound and still be used after 16 June 2011?

EU MEPS does not regulate rewinding. As long as the motor has been placed on the market or put into service prior to 16 June 2011 it does not have to meet the minimum efficiency requirements. This means that when a motor fails the user has the normal choice between rewinding and replacement.

Even though rewinding is still permitted, however, the user should carefully consider the advantages of replacing the motor rather than having it rewound. Each rewind normally reduces a motor's efficiency by 1– 3 %. In many cases the payback period for a new motor is less than three years. A new high efficiency motor costs less over the long term, because the initial purchase cost is much lower than the lifetime operating expenses.

What does EU MEPS mean by 'placed on the market or put into service'?

The way these concepts should be understood is that 'placing on the market' (making a product available for the first time on the EU market) and 'putting into service' (first

use of a product for its intended purpose by an end-user in the EU) refer to two different ‘moments’ in the process of bringing a product to the market. Compliance for entry into the market is required only once, based on the moment when the product is placed on the market or when it is put into service. Accordingly, Article 3 of the Ecodesign Directive (2009/125/EC) should be taken to mean that products covered by implementing measures may be placed on the market or put into service, or both, only if they comply with those implementing measures and bear CE marking in accordance with Article 5.

A product has to comply with the requirements for CE marking from the moment that it is placed on the market. Only in cases where a product is not placed on the market in the literal sense shall the moment of compliance be the time when the product is put into service.

As of 16 June 2011 motor manufacturers cannot ‘place on the market’ (sell) motors in Europe that are destined for final use in the EU market and do not meet IE2 efficiency levels. Motor users cannot ‘put into service’ (install) new motors that do not have the correct IE2/CE marking. However, users can install motors from their stock that were purchased before 16 June 2011.

As of 16 June 2011, are distributors or OEMs allowed to sell IE1 motors put into their stock previous to that date?

Yes, the EU legislation is not retroactive. These motors can be sold provided that they were put into stock or into the distribution chain before 16 June 2011. Products legally placed on the market can stay on the market and still be sold to the end-user and put into service.

Does EU MEPS apply to ‘dual purpose’ smoke extraction motors?

The answer depends on the type of motor:

– Yes, if the motor can be tested by the motor manufacturer at rated power and normal ambient with its own fan. This type of motor is covered by EU MEPS and must have the correct IE markings as of 16 June 2011.

– No, if the motor cannot be tested independently at rated power (ie, it requires a fan supplied by an outside manufacturer). These products – known as TEAO or Totally Enclosed, Air Over motors – are not covered by EU MEPS.

Does EU MEPS cover motors intended for VSD use?

Motors that can be used with a VSD and run direct on line (DOL) are covered by EU MEPS and must have the correct IE marking.

Motors produced for VSD duty only (motors that cannot be run DOL), such as permanent magnet motors, are not covered and do not need an IE marking.

Efficiency classes

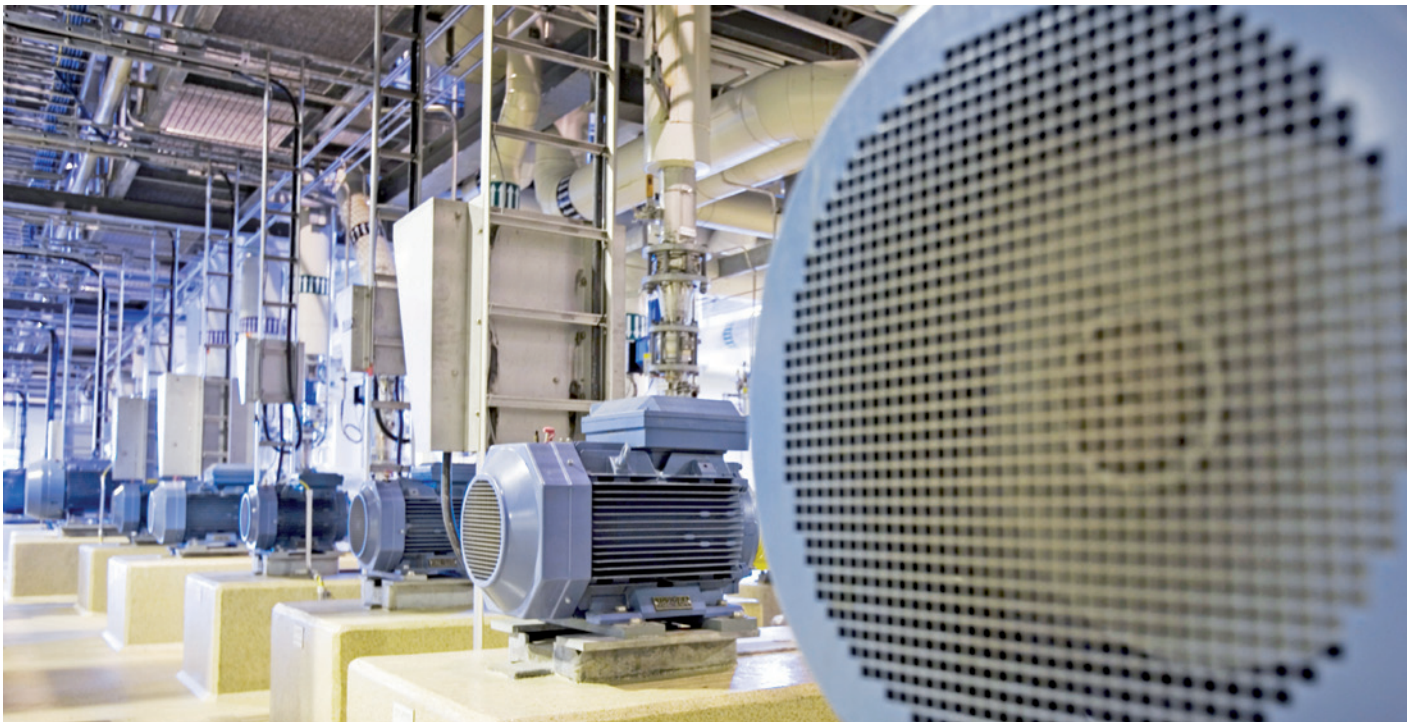
IEC/EN 60034-30	EU MEPS	EISA 2007	Local regulations
IE3 Premium efficiency	**IE3** **Premium efficiency**	IE3 values at 60 Hz are identical to NEMA Premium efficiency	
IE2 High efficiency	**IE2** **High efficiency**	IE2 values at 60 Hz are identical to NEMA Energy efficiency/EPACT	Canada Mexico Australia New Zealand Brazil China 2011 Switzerland 2012
IE1 Standard efficiency	Below standard efficiency after 16.6.2011	Below standard efficiency	China Brazil Costa Rica Israel Taiwan Switzerland

In addition, IEC/TS 60034-31 introduced IE4 / Super Premium Efficiency, an efficiency level above IE3.

EU MEPS efficiency classes are based on IEC/EN 60034-30: 2008. The table above shows the EU MEPS and IEC efficiency classes, with the EISA 2007 classes for comparison.

Note that the scope of IEC/EN 60034-30: 2008 is wider than that of EU MEPS. The IEC standard covers motors for explosive atmospheres and brake motors, for example, which are excluded from EU MEPS. As a global player, ABB will follow the IEC standard, and will provide efficiency class information (on the rating plate and in documentation) for motors for explosive atmospheres and brake motors even though this is not required under the EU MEPS scheme.

More detailed information on IEC 60034-30: 2008 is available from ABB Technical note TM025 RevB 2009.



Markings and documentation

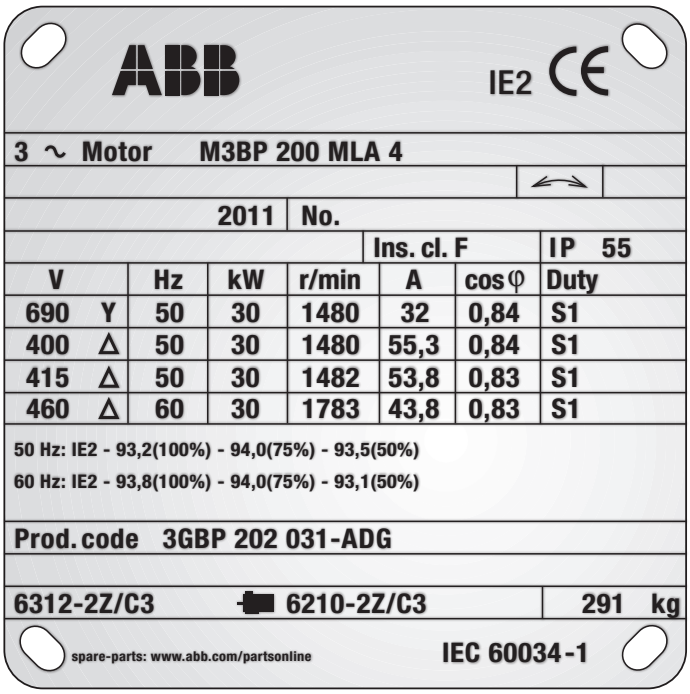


ABB IE2 CE

3 ~ Motor M3BP 200 MLA 4

2011 No.

Ins. cl. F IP 55

V		Hz	kW	r/min	A	cos φ	Duty
690	Y	50	30	1480	32	0,84	S1
400	Δ	50	30	1480	55,3	0,84	S1
415	Δ	50	30	1482	53,8	0,83	S1
460	Δ	60	30	1783	43,8	0,83	S1

50 Hz: IE2 - 93,2(100%) - 94,0(75%) - 93,5(50%)

60 Hz: IE2 - 93,8(100%) - 94,0(75%) - 93,1(50%)

Prod. code 3GBP 202 031-ADG

6312-2Z/C3 6210-2Z/C3 291 kg

spare-parts: www.abb.com/partsonline IEC 60034-1

From 16 June 2011, the following information must be shown on the motor rating plate:
– Lowest nominal efficiency at 100 % rated load
– Efficiency level (IE2 or IE3)
– Year of manufacture

In addition EU MEPS lists information that has to be shown in motor technical documentation and on manufacturers' free-access websites.

ABB determines efficiency values according to IEC/EN 60034-2-1 using the low uncertainty method (ie, indirect method with additional load losses determined by measurement). More detailed information on IEC 60034-2-1: 2007 is available from ABB Technical note TM018 RevC 2009.

The rating plates of all ABB motors covered by IEC/EN 60034-30 – including motors for explosive atmospheres – will carry the lowest efficiency values and associated IE code with efficiency at 100 %, 75 % and 50 % load. As standard ABB will stamp the safe area motors:
– Frame sizes up to 132: 230 V, 400 V 50 Hz and 460 V, 60 Hz with 50 Hz output
– Partial load efficiency only at 50 Hz
– Frame sizes up to 250: 400 V, 415 V, 690 V 50 Hz and 460 V, 60 Hz with 50 Hz output
– Frame sizes up to 450 and all Ex-motors: 400V, 415V, 690V 50Hz

Contact us

www.abb.com/motors&generators

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