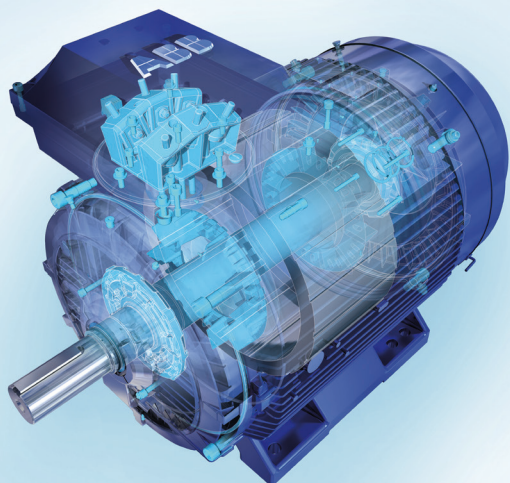


## Turkish MEPS

# Efficiency requirements for low voltage motors Updated for Commission Regulation (EU) 4/2014



Commission Regulation (EU) 4/2014 amends Commission Regulation EC 640/2009. Together, these regulations are also referred to as “EU MEPS” (European Minimum Energy Performance Standard), and set mandatory minimum efficiency levels for electric motors. Turkey has confirmed the EU MEPS requirements as legal requirements with same timeline.

### EC 640/2009

The MEPS scheme covers almost all 2-, 4- and 6-pole single speed, three-phase induction motors with a power range of 0.75 to 375 kW, rated up to 1000 V and on the basis of continuous duty operation.

### Amending Commission Regulation EU 4/2014

The amending regulation came into force in mid-2014 and was intended to close loopholes in the original regulation. The amendment was issued in order to clarify the text in the regulation and to achieve the energy savings as planned as well as to close possible loop holes.

### Efficiency measurement methods and IE classes

The scheme is based on the following harmonized EN standards:

- IEC/EN 60034-2-1 – Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
- IEC/EN 60034-30 – Rotating electrical machines – Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE-code)

### Included in the scope:

- Single-speed motors
- Rated output power from 0.75 to 375 kW
- Rated voltage up to 1000 V
- 2, 4 or 6-pole
- Duty type S1 (continuous duty)
- Ambient temperature from -30 °C to +60 °C
- IE3 compulsory in direct on-line (DOL) supply
- IE2 is allowed only for variable speed drive use

### Excluded from the scope:

- Wholly immersed in liquid
- Completely integrated into a product
- Specified to operated exclusively:
  - at altitudes exceeding 4000 m above sea level
  - where the ambient temperature exceeds +60 °C
  - at a maximum operating temperature above 400 °C
  - where the ambient temperature is below -30 °C for any motor or below 0 °C for a motor with water cooling
  - as a brake motor
  - as a motor for explosive atmospheres (ABB stamps IE-class according to IEC60034-30-1)

## Efficiency values and IE classes

Commission regulation EC 640/2009 efficiency classes at 100% load 50 Hz based on IEC60034-30.

Rated output kW	IE1 (Standard efficiency)			IE2 (High efficiency)			IE3 (Premium efficiency)		
	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole
0.75	72.1	72.1	70.0	77.4	79.6	75.9	80.7	82.5	78.9
1.1	75.0	75.0	72.9	79.6	81.4	78.1	82.7	84.1	81.0
1.5	77.2	77.2	75.2	81.3	82.8	79.8	84.2	85.3	82.5
2.2	79.7	79.7	77.7	83.2	84.3	81.8	85.9	86.7	84.3
3	81.5	81.5	79.7	84.6	85.5	83.3	87.1	87.7	85.6
4	83.1	83.1	81.4	85.8	86.6	84.6	88.1	88.6	86.8
5.5	84.7	84.7	83.1	87.0	87.7	86.0	89.2	89.6	88.0
7.5	86.0	86.0	84.7	88.1	88.7	87.2	90.1	90.4	89.1
11	87.6	87.6	86.4	89.4	89.8	88.7	91.2	91.4	90.3
15	88.7	88.7	87.7	90.3	90.6	89.7	91.9	92.1	91.2
18.5	89.3	89.3	88.6	90.9	91.2	90.4	92.4	92.6	91.7
22	89.9	89.9	89.2	91.3	91.6	90.9	92.7	93.0	92.2
30	90.7	90.7	90.2	92.0	92.3	91.7	93.3	93.6	92.9
37	91.2	91.2	90.8	92.5	92.7	92.2	93.7	93.9	93.3
45	91.7	91.7	91.4	92.9	93.1	92.7	94.0	94.2	93.7
55	92.1	92.1	91.9	93.2	93.5	93.1	94.3	94.6	94.1
75	92.7	92.7	92.6	93.8	94.0	93.7	94.7	95.0	94.6
90	93.0	93.0	92.9	94.1	94.2	94.0	95.0	95.2	94.9
110	93.3	93.3	93.3	94.3	94.5	94.3	95.2	95.4	95.1
132	93.5	93.5	93.5	94.6	94.7	94.6	95.4	95.6	95.4
160	93.8	93.8	93.8	94.8	94.9	94.8	95.6	95.8	95.6
200- 375	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8

## Rating plate marking

Rating plate information includes an IE class stamp according to lowest efficiency value based on the voltage, frequency and power combination at 100%, 75% and 50% loads. For IE2 motors, a compulsory IE2-VSD sticker is needed.

ABB		CE		IE3		IEC60034-1	
3- Motor		M3BP 100MLA 2 IMB3/IM1001		2015			
1059383-10		No. 3G1F1526272013		Ins. cl. F		IP 55	
V	Hz	kW	r/min	A	cos φ	Duty	
690 Y	50	3	2895	3.2	0.92	S1	
400 D	50	3	2895	5.4	0.92	S1	
415 D	50	3	2901	5.2	0.92	S1	
440 D	60	3	3492	5	0.92	S1	
460 D	60	3	3500	4.8	0.91	S1	
IE3-50Hz-87.1%(100%)-87.9%(75%)-87.3%(50%) / IE1-60Hz-84.5%(100%)							
Product code		3GBP101410-ADL					
6206-2Z/C3		6205-2Z/C3		42 kg			

## Comparison with other efficiency schemes and standards

IEC standards IEC 60034-30-1 (efficiency classes) and IEC 60034-2-1 (efficiency measurement methods) represent an important step on the road to global harmonization of requirements relating to induction motor efficiency levels, making comparisons easier. The work to achieve harmonized standards continues.

## ABB motors and EU MEPS

We believe that EU/Turkish MEPS need to be based on international (IEC) standards or equivalent (CSA, IEEE), and that all these standards should be accepted testing methods. EU/Turkish MEPS standards or regulations together with the registration requirement should not act as a barrier to market entry or affect free trade and fair competition. In our opinion, EU/Turkish MEPS should be targeted at mainstream products: there is generally no ecological justification for including niche products in the coverage of MEPS.