



**CABINET OF MINISTERS OF UKRAINE**  
**RESOLUTION**

**No. 157 of 27 February 2019**  
**Kyiv**

**On Approval of the Technical Regulation on Ecodesign  
Requirements for Electric Motors**

In accordance with [Article 5](#) of the Law of Ukraine ‘On Technical Regulations and Conformity Assessment’, the Cabinet of Ministers of Ukraine hereby **resolves**:

1. Approve the [Technical Regulation on ecodesign requirements for electric motors](#) as attached hereto.
2. The State Agency on Energy Efficiency and Energy Saving shall ensure the implementation of the [Technical Regulation](#) approved by this Resolution.
3. The attached amendment shall be introduced to [the list of types of products subject to state market surveillance by state market surveillance authorities](#), approved by the Resolution of the Cabinet of Ministers of Ukraine No. 1069 of 28 December 2016 (Official Journal of Ukraine, 2017, No. 50, p. 1550).
4. This Resolution shall enter into force after six months following its publication.

**Prime Minister of Ukraine**

**VOLODYMYR GROYSMAN**

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**APPROVED**  
**by the Resolution of the Cabinet of Ministers of Ukraine**  
**No. 157 of 27 February 2019**

**TECHNICAL REGULATION**  
**on Ecodesign Requirements for Electric Motors**

**General provisions**

1. This Technical Regulation establishes ecodesign requirements for placing on the market and for putting into service of electric motors, including where integrated in other products.

This Technical Regulation is based on the Commission Regulation (EC) No. 640/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for electric motors.

2. For the purpose of this Technical Regulation the terms shall have the following meaning:

1) ‘squirrel cage motor’ means an electric motor with no brushes, electric current commutator, slip rings or DC power source;

2) ‘brake motor’ means an electric motor equipped with a brake unit operating directly on the motor shaft;

3) ‘motor’ means an electric single speed, three-phase 50 Hz squirrel cage induction motor that:

has two to six poles;

has a rated voltage of UN up to 1 kV;

has a rated output PN between 0,75 kW and 375 kW;

is rated on the basis of continuous duty operation;

4) ‘pole’ means the total number of magnetic north and south poles produced by the rotating magnetic field of the motor. The number of poles determines the base speed of the motor;

5) ‘variable speed drive’ means an electronic power converter that continuously adapts the electrical power supplied to the electric motor in order to control the mechanical power output of the motor according to the torque-speed characteristic of the load (being driven by the motor), by adjusting the three-phase 50 Hz power supply to a variable frequency and voltage supplied to the motor;

6) ‘continuous duty operation’ means the capability of an electric motor with an integrated cooling system to operate at nominal load without interruption below its rated maximum temperature rise;

7) ‘phase’ means the type of configuration of the mains electrical supply.

Other terms used herein shall have meanings set out in the Laws of Ukraine ‘[On Technical Regulations and Conformity Assessment](#)’, ‘[On State Market Surveillance and Control of Non-Food Products](#)’, ‘[On Standardization](#)’ and in the [Technical Regulation establishing a framework for the setting of ecodesign requirements for energy-related products](#), approved by the Resolution of the Cabinet of Ministers of Ukraine of 3 October 2018 No. 804 (Official Journal of Ukraine, 2018, No. 80, p. 2678).

3. This Technical Regulation shall not apply to:

- 1) motors designed to operate wholly immersed in a liquid;
- 2) motors completely integrated into a product (for example gear, pump, fan or compressor) of which the energy performance cannot be tested independently from the product;
- 3) motors specifically designed to operate:
  - at altitudes exceeding 4 thous. metres above sea-level;
  - where ambient air temperatures exceed 60°C;
  - in maximum operating temperature above 400°C;
  - where ambient air temperatures are less than –30°C for any motor or less than 0°C for a motor with liquid cooling;
  - in a product where the liquid coolant temperature at the inlet is less than 0°C or exceeding 32°C;
  - in potentially explosive environments as defined in the Resolution of the Cabinet of Ministers of Ukraine of 28 December 2016 [No. 1055](#) “On approval of the Technical Regulation for equipment and protective systems intended for use in potentially explosive atmospheres” (Official Journal of Ukraine, 2017, No. 8, p. 236);
- 4) brake motors (except as regards the information requirements of Annex 1, [subpoints 3 to 6](#) and [12](#) of point 2).

### **Ecodesign Requirements**

4. The ecodesign requirements for electric motors are set out in [Annex 1](#).
5. In two years after this Technical Regulation has come into force, all motors with a rated output of 7,5 to 375 kW referred to in [Annex 1](#) shall not be less efficient than the IE3 efficiency level, or meet the IE2 efficiency level for electric motors equipped with a variable speed drive.
6. The product information requirements are as set out in Annex 1, [point 2](#) and shall be applied no later than two years after this Technical Regulation has come into force.
7. Compliance with ecodesign requirements shall be measured and calculated in accordance with requirements set out in [Annex 2](#).

### **Conformity Assessment**

8. Conformity of electric motors with the requirements of this Technical Regulation shall be assessed by applying the internal design control procedure or the management system conformity assessment procedure set out, respectively, in [Annexes 3](#) or [4](#) to the Technical Regulation establishing a framework for the setting of ecodesign requirements for energy-related products, approved by the Resolution of the Cabinet of Ministers of Ukraine No 804 of 3 October 2018 (Official Journal of Ukraine, 2018, No 80, p. 2678).

### **State Market Surveillance**

9. Verification of motors conformity with the requirements of this Technical Regulation in the course of state market surveillance shall be made in accordance with the requirements set out in [Annex 3](#).

### **Indicative Benchmarks**

10. The indicative benchmarks for the best-performing motors are indicative rates of motors with rated efficiency at the IE3 level, equipped with a variable speed drive.

### **Correlation Table**

11. The correlation table between the provisions of the Commission Regulation (EC) No. 640/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for electric motors, and this Technical Regulation is set out in [Annex 4](#).

**ECODESIGN REQUIREMENTS  
for electric motors**

**Motor efficiency requirements**

1. The nominal minimum efficiency requirements for motors are set out in [Tables 1](#) and [2](#).

Table 1

Nominal minimum efficiencies for IE2 efficiency level (50 Hz)

Rated output power, kW	Number of poles		
	two	four	six
0,75	77,4	79,6	75,9
1,1	79,6	81,4	78,1
1,5	81,3	82,8	79,8
2,2	83,2	84,3	81,8
3	84,6	85,5	83,3
4	85,8	86,6	84,6
5,5	87	87,7	86
7,5	88,1	88,7	87,2
11	89,4	89,8	88,7
15	90,3	90,6	89,7
18,5	90,9	91,2	90,4
22	91,3	91,6	90,9
30	92	92,3	91,7
37	92,5	92,7	92,2
45	92,9	93,1	92,7
55	93,2	93,5	93,1

75	93,8	94	93,7
90	94,1	94,2	94
110	94,3	94,5	94,3
132	94,6	94,7	94,6
160	94,8	94,9	94,8
200 up to 375	95	95,1	95

Table 2

Nominal minimum efficiencies for IE3 efficiency level (50 Hz)

Rated output power, kW	Number of poles		
	two	four	six
0,75	80,7	82,5	78,9
1,1	82,7	84,1	81
1,5	84,2	85,3	82,5
2,2	85,9	86,7	84,3
3	87,1	87,7	85,6
4	88,1	88,6	86,8
5,5	89,2	89,6	88
7,5	90,1	90,4	89,1
11	91,2	91,4	90,3
15	91,9	92,1	91,2
18,5	92,4	92,6	91,7
22	92,7	93	92,2
30	93,3	93,6	92,9

37	93,7	93,9	93,3
45	94	94,2	93,7
55	94,3	94,6	94,1
75	94,7	95	94,6
90	95	95,2	94,9
110	95,2	95,4	95,1
132	95,4	95,6	95,4
160	95,6	95,8	95,6
200 up to 375	95,8	96	95,8

### **Product information requirements**

2. The following product information shall be visibly displayed in the technical documentation:

- 1) nominal efficiency ( $\eta$ ) at the full, 75 % and 50 % rated load and voltage (UN);
- 2) efficiency level IE2 or IE3;
- 3) the year of manufacture;
- 4) manufacturer's name or trade mark, commercial registration number and place of manufacturer (e-mail address, website, contact phone numbers);
- 5) product's model number;
- 6) number of poles of the motor;
- 7) the rated power output (kW);
- 8) the rated input frequency of the motor (Hz);
- 9) the range of rated voltage (V);
- 10) the rated speed or range of rated speed (rpm);
- 11) information relevant for disassembly, recycling or disposal at end-of-life;
- 12) information on the range of operating conditions for which the motor is specifically designed:
  - altitude above sea-level;
  - ambient air temperature range, at which a motor with air cooling operates in a given mode;
  - liquid coolant temperature at the inlet to the product;
  - maximum operating temperature;

potentially explosive operating environment.

The above information may be displayed using graphs, figures or symbols rather than text.

The information referred to in **subpoints 1, 2 and 3** of this point shall be durably marked on or near the rating plate of the motor.

The information on motors set out in **subpoints 1 to 12** of this point shall be visibly displayed on:

the technical documentation of motors;

the technical documentation of products in which motors are incorporated;

free access websites of manufacturers of motors;

free access websites of manufacturers of products in which motors are incorporated.

Where the rating plate size of the motor does not allow to include all the information referred to in **point 1**, only the nominal efficiency ( $\eta$ ) at rated load and the rated voltage (UN) shall be displayed.

The information listed in **subpoints 1 to 12** of this point does not need to be published on motor manufacturer's free access website for tailor-made motors with special mechanical and electrical design. In two years after this **Technical Regulation** has come into force, for motors with a rated output of 0,75 to 375 kW, information on the mandatory requirement to equip motors, which do not meet the IE3 efficiency level with a variable speed drive, shall be visibly displayed on the rating plate and technical documentation of the motor.

Manufacturers shall provide information in the technical documentation on any specific precautions that must be taken when motors are assembled, installed, maintained or used with variable speed drives, including information on how to minimise electrical and magnetic fields from variable speed drives.

3. In this Annex the terms below shall be used in the following meaning:

'nominal minimum efficiency' ( $\eta$ ) means the efficiency at full rated load and voltage without tolerances.

'tolerance' means the maximum allowable variation in test measurement result of any given motor compared to the declared value on the rating plate or in the technical documentation.



**Measurement and calculation  
METHODS**

1. For the purposes of compliance to the ecodesign requirements for electric motors, measurements and calculations shall be made using methods set out in national standards, compliance to which grants presumption of motors conformity with the Technical Regulation on Ecodesign Requirements for Electric Motors.

2. The efficiency level of the motor, as specified in [Annex 1](#) to the Technical Regulation on Ecodesign Requirements for Electric Motors, shall be determined at rated output power (PN), rated voltage (UN), and rated frequency (fN).

3. The total energy loss shall be determined by measurement of total losses, or summation of separate losses in an electric motor.

**REQUIREMENTS**  
**for verifying conformity of motors with the requirements of the [Technical Regulation on Ecodesign Requirements for Electric Motors](#) during state market surveillance**

1. Allowable tolerances referred to in this Annex are only applied by state market surveillance authorities and shall not be used by the manufacturer or importer to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

2. Conformity verification of electric motors with the requirements of the [Technical Regulation on Ecodesign Requirements for Electric Motors](#) (hereinafter referred to as Technical Regulation) is made by market surveillance authorities with regard for the following:

1) one motor per model shall be tested;

2) the motor model shall be considered to comply with the requirements of the Technical Regulation, if:

performance indicators in the technical documentation and the values used to calculate these indicators are not more favourable for the manufacturer or importer than the results of the corresponding measurements;

the declared values meet any requirements laid down in the Technical Regulation, and the product information provided by the manufacturer or importer does not contain values that are more favourable for the manufacturer or importer than the declared values;

when an electric motor is checked by market surveillance authorities, the readings of relevant parameters and values are within the allowable tolerances indicated in the [Table 1](#);

3) if the results referred to in the [second](#) or [third indent](#) of subpoint 2 of this point are not achieved, the model shall be considered not to comply with the requirements of the Technical Regulation;

4) if the result referred to in the [fourth indent](#) of subpoint 2 of this point is not achieved:

for models, produced in quantities of less than five units yearly, the model shall be considered not to comply with the requirements of the Technical Regulation;

for models, produced in quantities of five or more units yearly, state market surveillance authorities shall select three additional water pumps of the same model for testing. The model shall be considered to comply with the requirements of the Technical Regulation if the arithmetical mean for these three motors is within the allowable tolerances indicated in the [Table 1](#);

5) if the result referred to in the [third indent](#) of subpoint 4 of this point is not achieved, the model shall be considered not to comply with the requirements of the Technical Regulation.

3. State market surveillance authorities shall use the measurement and calculation methods set out in [Annex 2](#) to the Technical Regulation.

State market surveillance authorities shall use only allowable tolerances indicated in the [Table 1](#), taking into account the requirements set out in [subpoints 1 to 5](#) of point 2 of this Annex. No other tolerances, such as those set out in national standards that are identical to the European harmonised standards or in any other measurement method, shall be applied.

## Allowable tolerances

Parameters	Electric motors with an output of 0,75 to 150 kW	Electric motors with an output of 150 to 375 kW
Total losses (1- $\eta$ )	no more than 15% of the value set out in <a href="#">Annex 1</a> to the Technical Regulation	no more than 10% of the value set out in <a href="#">Annex 1</a> to the Technical Regulation

**CORRELATION TABLE**  
**of the provisions of Commission Regulation (EC) No 640/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for electric motors and of the **Technical Regulation on Ecodesign Requirements for Electric Motors****

Provisions of the Commission Regulation (EC)	Provisions of the <b>Technical Regulation</b>
Point 1 of Article 1	point 1
Point 2 of Article 1	point 3
First indent of Article 2	first indent of point 2
Point 1 of Article 2	fourth indent of point 2
Point 2 of Article 2	sixth indent of point 2
Point 3 of Article 2	second indent of point 2
Point 4 of Article 2	eighth indent of point 2
Point 5 of Article 2	fifth indent of point 2
Point 6 of Article 2	seventh indent of point 2
Point 7 of Article 2	third indent of point 2
Article 3	points 4 to 6
Article 4	point 8
Article 5	point 9
Article 6	point 10
Article 7	
Article 8	
Annex I	Annex 1
Annex II	Annex 2

Annex III

Annex IV

Annex 3

Annex 4

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**APPROVED**  
**by the Resolution of the Cabinet of Ministers of Ukraine**  
**No. 157 of 27 February 2019**

**AMENDMENT**  
**to be introduced to the list of types of products subject to state**  
**market surveillance by state market surveillance authorities**

The [list](#) shall be supplemented with point 45 to read as follows:

“45. Electric motors	Resolution by the Cabinet of Ministers of Ukraine No. 157 of 27 February 2019 ‘On Approval of the Technical Regulation on Ecodesign Requirements for Electric Motors’	State Service of Ukraine on Food Safety and Consumer Protection”.
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