

APPLICATION OF THE EC REGULATION nr.640/2009 to MOTOVARIO electric motors

The EC Regulation nr.640/2009 implementing Directive 2009/125/EC establishes the efficiency classes for the electric motors that it's possible to put on the EU market for the first time and it clearly defines the applicable electric motor characteristics. Furthermore on last January 6th 2014 EU Regulation nr.4/2014 has been published, narrowing some applicability conditions. These modifications will be effective on July 27th 2014

1. DEADLINES

There are 3 deadlines.

June 16th 2011: IE2 efficiency class for electric motors with nominal power equal to or greater than 0,75 kW;

January 1st 2015: IE3 efficiency class for electric motors with nominal power equal to or greater than 7,5 kW. The efficiency class can be kept IE2 if motors are put in service with inverter supply (f.i.: Drivon or Smartdrive);

January 1st 2017: IE3 efficiency class for electric motors with nominal power equal to or greater than 7,5 kW. The efficiency class can be kept IE2 if motors are put in service with inverter supply (f.i.: Drivon or Smartdrive);

A. Scozzafava Controlled		A . Bolletta – R. Tosto Approved	
3	References to non-UE regulations canceled		18/12/2015
2	Next deadlines added, applicability rules modified according to the new UE regulation nr. 4/2014, clarifications on integral gearmotors and motoinverters added		05/06/2014
1	Modified Motovario application for compact gearmotors		15/06/2011
0	Issue		27/04/2011
Rev.	Reason		Date
Drafting: MOTOVARIO S.p.A. QUALITY MANAGEMENT		This document is the property of MOTOVARIO S.p.A. that will protect its own rights under terms of law.	

2. FIELD OF APPLICATION

Table taken from the text of the EC Regulation nr. 640/2009 and subsequent modifications with UE Regulation nr.4/2014

<p>The regulation applies to : <i>(all the expressed conditions must be verified)</i></p>	<p>The regulation does not apply to : <i>(it is sufficient to verify just one of the expressed conditions)</i></p>
<ul style="list-style-type: none"> • Single-polarity three-phase 50 Hz and/or 60 Hz induction motors with: <ul style="list-style-type: none"> ○ 2, 4, 6 poles ○ rated voltage up to 1000 V ○ continuous duty operation (S1) 	<ul style="list-style-type: none"> • motors completely integrated into a product of which the energy performance cannot be tested independently from the product (e.g.: gear, pump, fan, compressor); • motors for short-time duty (S2) or intermittent duty (S3) (*); • motors specifically designed to operate: <ul style="list-style-type: none"> ○ wholly immersed in a liquid ○ at altitudes exceeding 4000 m above the sea-level (it was 1000 m above the sea level in EC Reg.nr.640/2009); ○ where ambient air temperatures exceeds 60°C (it was 40°C in EC Reg.nr.640/2009); ○ in a maximum operating temperature above 400°C; ○ where ambient air temperatures are less than -30°C (it was -15°C in EC Reg.nr.640/2009); ○ if water-cooled, where the water coolant temperature at the inlet to a product is less than 0°C (it was 5°C in EC Reg.nr.640/2009) or exceeding 25°C (it was 32°C in EC Reg.nr.640/2009); • motors for potentially explosive atmospheres (ATEX - Directive 94/9/EC) • brake motors

Application to MOTOVARIO electric motors

<p>The regulation applies to :</p> <p><i>(all the expressed conditions must be verified)</i></p>	<p>The regulation does not apply to :</p> <p><i>(it is sufficient to verify just one of the expressed conditions):</i></p>
<ul style="list-style-type: none"> all the single-polarity three-phase 50 Hz and/or 60 Hz induction motors with: <ul style="list-style-type: none"> 2, 4, 6 poles continuous duty operation (S1) 	
	<ul style="list-style-type: none"> motors with rated output less than 0,75 kW monophase motors dual-polarity motors motors with 8 poles or more ATEX motors brake motors DRdrives and MOTOVARIO motors, T and TS series with 2, 4 and 6 poles, rated output equal to or exceeding 0,75 kW for S2 duty 60 min (*) MOTOVARIO motors for low ambient temperatures (from -40°C to -15 °C)

NOTE -

As in both the following cases it's possible to test the energy performance (efficiency) of the motors separately from the product in which they are integrated,

1) motors in integral gearmotors are included in EC Regulation nr.640/2009, without any exceptions comparing with flanged gearmotors.

2) motors in Smartdrive and Drivon motoinverters are included in EC Regulation nr.640/2009.

3. TECHNICAL DOCUMENTATION REQUIREMENTS FOR THE ELECTRIC MOTOR

Abstract from Paragraph 2 of ANNEX I of the EC Regulation n.640/2009

"As regards the **technical documentation**, the information must be provided in the order as presented in points 1 to 12. The exact wording used in the list does not need to be repeated. It may be displayed using graphs, figures or symbols rather than text:

1. nominal efficiency (η) at the full, 75% and 50% rated load and voltage (V_N);
2. efficiency level : "IE2" or "IE3";
3. year of manufacture;
4. manufacturer's name or trade mark, commercial registration number and place of manufacturer;
5. product's model number;
6. number of poles of the motor;
7. rated power output(s) or range of rated power output (kW);
8. rated input frequency(s) of the motor (Hz);
9. rated voltage(s) or range of rated voltage (V);
10. rated speed(s) 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:
 - I. altitudes above sea-level;
 - II. ambient air temperatures, including for motors with air cooling;
 - III. water coolant temperature at the inlet to the product;
 - IV. maximum operating temperature;
 - V. potentially explosive atmospheres.

The information referred to in points 1, 2 and 3 shall be durably marked on or near the rating plate of the motor."

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"From June 16th 2011, the information on motors set out in points 1 to 12 shall be visibly displayed on:

- a) the technical documentation of motors;
- b) the technical documentation of products in which motors are incorporated;
- c) **free access websites of manufacturers of products in which motors are incorporated."**


APPLICATION TO MOTOVARIO MOTORS

The required information is given as follows :

Points a) and b): the information *1 to 10 and 12* appears on the rating plate as shown in the following page; *point 11* information present (N.B: *not inserted yet*) in the manual for the use and maintenance of electric motors.

Point c) *the information 1-2-4-5-6-7-8-9-10-11-12* on the website in the catalogue and/or in the manual for the use and maintenance of electric motors; *point 3*: not applicable.


MOTOVARIO THREE-PHASE MOTOR NAMEPLATE



MOTOVARIO

HEREDITY OF MOTION

EN60034-1



1

2

made in ITALY

3~mot. (3)

(19)brake (20) Nm

(21)

I.Cl.(4) Tamb (5) °C IP (6) S (7)

IMB (8)

○ IC41(9)

(10)

kg (11)


○

A030000

△/λ V	Hz	kW	min ⁻¹	cosφ	△/λ A
(12)	(13)	(14)	(15)	(16)	(17)
(18)					
(12)	(13)	(14)	(15)	(16)	(17)
(18)					

Via Quattro Passi 1/3 - 41043 - Formigine (MO) - ITALY

EXAMPLE OF COMPILATION

		EN60034-1				14-5627891	
MOTOVARIO®		made in ITALY				0012	
3~mot. TH80B4		brake		Nm			
I.Cl. F Tamb 40 °C IP 55 S 1		IMB 14					
○ IC41 1		kg		○			
△/λ V	Hz	kW	min ⁻¹	cosφ	△/λ A		
230/400	50	0.75	1410	0.77	3.10/1.77		
IE2 - 79.6% (4/4) - 79.7% (3/4) - 75.8% (2/4)							
265/460	60	0.75	1740	0.72	2.74/1.58		
IE2 - 82.5% (4/4) - 81.9% (3/4) - 79.7% (2/4)							
Via Quattro Passi 1/3 - 41043 - Formigine (MO) - ITALY							

DRIVES THREE-PHASE MOTOR NAMEPLATE



member of MOTOVARIO group



made in CHINA

1

2

3

mot. (3)

I.Cl. (4)

Tamb (5)

°C

IP (6)

S (7)

IMB (8)

IC41 (9)

(10)

kg (11)

△/λ V

Hz

kW

min⁻¹

cosφ

△/λ A

(12)

(13)

(14)

(15)

(16)

(17)

18

(12)

(13)

(14)

(15)


(16)

(17)


18

Via Quattro Passi 1/3 - 41043 - Formigine (MO) - ITALY

EXAMPLE OF COMPILATION



member of MOTOVARIO group



made in CHINA

XXXXXXXXXX

XXXXXXXXXX

3~mot. TH80B4

I.Cl. F

Tamb 40

°C

IP 55

S 1

IMB 14

○

IC41 1

kg

○

△/λ V	Hz	kW	min ⁻¹	cosφ	△/λ A
230/400	50	0,75	1410	0,77	3,10/1,77
IE2-79,9% (4/4) -79,7% (3/4) -75,8% (2/4)					
277/480	60	0,75	1740	0,72	2,74/1,58
IE2-82,5% (4/4) -81,9% (3/4) -79,7% (2/4)					

Via Quattro Passi 1/3 - 41043 - Formigine (MO) - ITALY

- (1) Year of manufacture – job order number (*point 3 of the documentation required by the Regulation 640/2009*)
- (2) Serial number
- (3) Motor type ID (series/size/number of poles)
- (4) Insulation class
- (5) Maximum operating ambient air temperature
- (6) Protection degree
- (7) Duty

- (8) Type of construction
- (9) Cooling method (*)
- (10) Additional option notes (see below)
- (11) Motor mass (only if > 30 kg)
- (12) Motor voltage (depending on the connection)
- (13) Power supply frequency [Hz]
- (14) Rated output [kW]
- (15) Rated speed [rpm]
- (16) Rated output factor
- (17) Rated current (depending on the connection) [A]
- (18) IE2 or IE3 abbreviation (depending on the type of motor and only if applicable) followed by the 4/4, 3/4, 2/4 performance values of the rated output. *(points 1 and 2 of the documentation required by the Regulation 640/2009)*

ADDITIONAL OPTION NOTES (10)

- H1 anti-condensate heaters for 110V voltage
- H2 anti-condensate heaters for 230V voltage
- TR execution for damp environment
- LT execution for low temperatures
- HT execution for high temperatures
- 3B n. 3 bimetallic thermoprotectors
- 3P n. 3 thermistors (PTC)
- A backstop device (counterclockwise rotation allowed)
- B backstop device (clockwise rotation allowed)
- E encoder
- V flywheel
- HC quick connection

(*) In the case of UL/CSA version motor, the cooling method is specified through the following abbreviations:

TEFC = (T)otally (E)nclosed (F)an (C)ooled - corresponding to IC411 (self-ventilated motor)

TENV = (T)otally (E)nclosed (N)ot (V)entilated - corresponding to IC410 (motor without ventilation)

TEBC = (T)otally (E)nclosed (B)lower (C)ooled - corresponding to IC416 (servo-ventilated motor)

4. REFERENCE MARKET

The EC Regulation no. 640/2009 **forbids the placing on the market of the motors described in par.1, which shall not be less efficient than IE2 or IE3 in the EU market only.**

In other words an European Union manufacturer **will be allowed to keep placing on markets other than the EU one even motors** forbidden in the EU market; the **only condition for such motors is the compliance with the applicable national regulations.**

If a state which is not a member of the European Union recognizes the enforceability of the EC Regulation no. 640/2009, the prohibition on placing shall apply and it sentry into force shall vary according to the states.

5. PLACING ON THE MARKET / PUTTING INTO SERVICE

The Directive 2009/125/EC, which the EC Regulation no. 640/2009 refer to, defines:

Placing on the market = *making a product available for the first time on the Community market with a view to its distribution or use within the Community, whether for reward or free of charge and irrespective of the selling technique.*

Putting into service = *the first use of a product for its intended purpose by an end-user in the Community.*

Paragraph 1 of the Art. 1 of the EC Regulation no. 640/2009 states :

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

According to the interpretation of ANIE Federazione Nazionale Imprese Elettrotecniche ed Elettroniche (National Federation of Electrotechnical and Electronic Enterprises), which refers to EU Guidelines, the dates of June 16th 2011, January 1st 2015, January 1st 2017 refer to the sole marketing of motors.

According to ANIE, the statement regarding the putting into service in paragraph 1 of the Art 1 relates to the ultimate purpose of the Regulation which is to enhance the energy efficiency and the environmental protection level of the energy-related products put into service.

ANIE has already published on its website a memo reporting this interpretation taken from the guidelines of the European Union.

The documents testifying the date of placing on the market are the Order Confirmations (delivery date) and the transport documents.

In other words the following is necessary:

1. **MOTOVARIO SPA shall not issue order confirmation for EU clients relating to motors forbidden by EU Regulation;**
2. **the date of the relevant transport documents shall not be after the deadline date of the EU Regulation.**

6. SALE TO SUBSIDIARIES

Subsidiaries are companies different from MOTOVARIO SPA, but the interpretation of the sale from SPA to subsidiaries as placing on the market might be the object of controversy as they are grey area owing to the trademark sharing.

Concerning this, TUV suggests verifying the relationship between us and subsidiaries so that our role of manufacturers and their role of distributors are defined. This is to exclude that European subsidiaries can be interpreted as mandatories of MOTOVARIO SpA, and in this case the placing on the market would be the sale to them.

After examining the social object of the different subsidiaries, our Law Firm has **confirmed that subsidiaries can sell motors forbidden by Regulation on the EU market even after the deadlines** since their sale is not the placing on the market but just following marketing.

According to the Law Firm, the fact that subsidiaries are juridical entities other than MOTOVARIO SPA is enough to secure us against potential controversy.

The Law Firm has ensured that **the important thing is that the invoicing to subsidiaries is executed on shipment and there is no consignment. This even goes against any licensees that may use or trademark (see Austria) and that therefore must not have forbidden motors on consignment after the deadline.**

To sum up, the rules to be respected by SPA are:

- I. **no issue of order confirmations for EU clients relating to motors forbidden by EU Regulation;**
- II. **the date of the relevant transport documents must not be after the deadline;**
- III. **invoicing to subsidiaries must be executed on shipment and there must be no consignment.**

For completeness, I remind that Directive 2009/125/EC, which the EC Regulation no. 640/2009 refers to, states the following in the Art.2:

.....
.....

6) manufacturer = *the natural or legal person who manufactures products covered by this directive and is responsible for their conformity with this directive in view of their being placed on the market or put into service under the manufacturer's own name or trademark or for the manufacturer's own use. In the absence of a manufacturer as defined in the first sentence of this point or of an importer as defined in the point 8, any natural or legal person who places on the market or puts into service products covered by this directive shall be considered a manufacturer;*

7) authorized representative = *the natural or legal person established in the Community who has received a written mandate from the manufacturer to perform on his behalf all or part of the obligations and formalities connected with this directive;*

8) importer = *the natural or legal person established in the Community who places a product from a third country on the Community market in the course of his business;*

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