



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx CES 14.0001X issue No.:0 Certificate history:

Status: Current

Date of Issue: 2014-05-28 Page 1 of 3

Applicant: **Euromotori S.r.l.**
Via Cavour s.n.c.
I- 20846 Macherio (MB)
Italy

Electrical Apparatus: Three-phase asynchronous motors supplied by mains or inverter, series MAK 180 - 250
and MAKe 180 - 250
Optional accessory:

Type of Protection: Flameproof enclosures 'd'; increased safety "e" for terminal box

Marking: Ex d IIB T4, T3 Gb or
Ex de IIB T4, T3 Gb

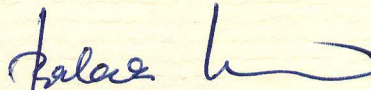
Approved for issue on behalf of the IECEx
Certification Body:

Mirko Balaz

Position:

Head of IECEx CB

Signature:
(for printed version)


28-5-2014

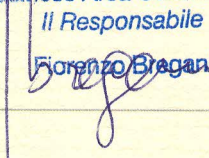
Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

CESI
Centro Elettrotecnico
Sperimentale Italiano S.p.A.
Via Rubattino 54
20134 Milano
Italy

CESI

CESI S.p.A.
Testing & Certification Division
Business Area Certification
Il Responsabile

Lorenzo Bregani



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Manufacturer: **Euromotori S.r.l.**
Via Cavour s.n.c.
I- 20846 Macherio (MB)
Italy

Additional Manufacturing location
(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2007-10 Edition: 5	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
[IT/CES/ExTR14.0003/00](#)

Quality Assessment Report:
[IT/CES/QAR09.0005/04](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Three-phase asynchronous motors series MAK/MAKe 180, MAK/MAKe 200, MAK/MAKe 225 e MAK/MAKe 250 supplied by mains or inverter.

The three-phase asynchronous motors series MAK and MAKe are made of grey cast iron and, for the purposes of the safety execution, by motor enclosure separated from the terminal box by means of cable bushings.

The series MAK identifies the motors with motor enclosure and terminal box with type of protection "Ex d".

The series MAKe identifies the motors with motor enclosure with type of protection "Ex d" and the terminal box with type of protection "Ex d e".

The criteria for identification of types of three-phase asynchronous motors series MAK/MAKe 180 ÷ 250 are defined as follows:

- motor type **MAK*/MAKe* 180-200-225-250** from 2 to 24 poles: three-phase motor, centre height 180-200-225-250, at 2;4;6;8;10;12;16;18;24 poles or at double polarity 2/4 ÷ 10/16 poles.
- ***D** in case of double speed motor with constant torque; **V** in case of double speed motor with quadratic torque; **WV** in case of motors without fan; **FV** in case of motors with forced ventilation.

See annex for further description.

CONDITIONS OF CERTIFICATION: YES as shown below:

- The flamepaths are specified in the manufacturer drawings. For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.
- For motors with the terminal box designed to Increased Safety "e" type of protection as specified in IEC 60079-7, the clearance distances shown in table 1 shall be duly considered.

Prot: B4014829

Annex to certificate:
Applicant:

IECEx CES 14.0001X Issue No.0 of 2014-05-28
Euromotori S.r.l.

Electrical Apparatus:

Via Cavour s.n.c.; I-20846 Macherio (MB) - Italy
Three-phase asynchronous motors supplied by mains or inverter, series MAK 180 - 250 and MAKE 180 - 250

Description of equipment

Three-phase asynchronous motors series MAK/MAKE 180, MAK/MAKE 200, MAK/MAKE 225 e MAK/MAKE 250 supplied by mains or inverter.

The three-phase asynchronous motors series MAK and MAKE are made of grey cast iron and, for the purposes of the safety execution, by motor enclosure separated from the terminal box by means of cable bushings.

The series MAK identifies the motors with motor enclosure and terminal box with type of protection "Ex d".

The series MAKE identifies the motors with motor enclosure with type of protection "Ex d" and the terminal box with type of protection "Ex d e".

The criteria for identification of types of three-phase asynchronous motors series MAK/MAKE 180 ÷ 250 are defined as follows:

- motor type **MAK*/MAKE* 180-200-225-250** from 2 to 24 poles: three-phase motor, centre height 180-200-225- 250, at 2;4;6;8;10;12;16;18;24 poles or at double polarity 2/4 ÷ 10/16 poles.

***D** in case of double speed motor with constant torque; **V** in case of double speed motor with quadratic torque; **WV** in case of motors without fan; **FV** in case of motors with forced ventilation.

The complete identification of all type of three-phase asynchronous motors is detailed in the technical note annexed to this test report.

The motors can be equipped with auxiliary devices (heaters, thermal detectors, etc.).

Possible anticondensate heaters installed inside the motors can have a maximum power of 200 W.

Electrical characteristics

mains supply:

- Maximum rated voltage: 1000 V
800 V (only for motors series MAKE 180)
- Maximum rated power: 90 kW
- Rated frequency: 50 / 60 Hz
- Insulation class: F (t. F) with temperature class T3
F (t. B) with temperature class T4
- Duty: S1 ÷ S8
- Rated speed: 230 ÷ 3600 rpm
- Degree of protection: IP 55 or IP 66
- Ambient temperature: -20 ÷ +40 °C (+60 °C) for temperature class T4, T3
-50 ÷ +40 °C (+60 °C) for temperature class T4, T3
-20 ÷ +40 °C (+80 °C) for temperature class T3
-50 ÷ +40 °C (+80 °C) for temperature class T3

The three-phase asynchronous motors series MAK/MAKE 180 can be used for a minimum Tamb of -55 °C.

The minimum ambient temperature is function of the motor constructional characteristics as indicated in the technical documentation.

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Electrical Apparatus:

Via Cavour s.n.c.; I-20846 Macherio (MB) - Italy
Three-phase asynchronous motors supplied by mains or inverter, series MAK 180 - 250 and MAKe 180 - 250

Electrical characteristics (follows)

Inverter supply:

- Maximum rated voltage: 1000 V (Ex d)
800 V (Ex d e)
630 V (Ex d e; only for motors series MAKe 180)
- Maximum peak voltage: 1400 V
- Frequency range: 5 ÷ 60 Hz (for motors 2 poles constant torque)
5 ÷ 87 Hz (for motors 4 poles constant torque)
5 ÷ 50 Hz (for motors 2 and 4 poles quadratic torque)
- Maximum rated speed: 3600 rpm
- Duty: S9
- Ambient temperature:
 - Type of protection Ex d: -20 ÷ +40 °C (+60 °C) for temperature class T4, T3
-50 ÷ +40 °C (+60 °C) for temperature class T4, T3
-20 ÷ +40 °C (+80 °C) for temperature class T3
-50 ÷ +40 °C (+80 °C) for temperature class T3
 - Type of protection Ex d e: -20 ÷ +40 °C (+60 °C) for temperature class T4, T3 with ins. class F (t.B)
-50 ÷ +40 °C (+60 °C) for temperature class T4, T3 with ins. class F (t.B)

The three-phase asynchronous motors supplied by inverter show the rating data on a supplementary plate and shall be provided, inside the stator winding, with thermal detectors (PTC, Klixson, PT100) for temperature control.

The PTC or Klixson thermal detectors are calibrated for cut off the supply at 130 °C for the temperature class T3 and at 120 °C for the temperature class T4; the protection circuit connected with the PT 100 thermal detectors shall be calibrated for an intervention at 130 °C for the temperature class T3 and at 120 °C for the temperature class T4.

The resetting of the supply shall not be automatic.

Forced ventilation by auxiliary motor:

The operation of the primary motor shall be interlocked to the correct operation of the forced ventilation.

Installation Conditions

The cable entry devices used on the enclosure shall be suitably certified.

The accessories used for cable entries and for the unused holes shall be subject of a separate certification according to the applicable standards:

- **motors with type of protection Ex d:** IEC 60079-0 and IEC 60079-1;
- **motors with type of protection Ex d e:** IEC 60079-0 and IEC 60079-7 and guarantee a minimum degree of protection IP 55.

If cylindrical threads are used the coupling between the cable gland and terminal box shall be provided with block to prevent loosening.



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CESI

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Electrical Apparatus:

Via Cavour s.n.c.; I-20846 Macherio (MB) - Italy
Three-phase asynchronous motors supplied by mains or inverter, series MAK 180 - 250 and MAKe 180 - 250

Warning labels

"At every disassembly the grease must be renewed on the joints"

For ambient temperature $-20 \div +40$ °C (+80 °C)

"Use screws quality 8.8 ISO 898-1"

For ambient temperature $-50 \div +40$ °C (+80 °C)

"Use screws quality A4-70 UNI EN ISO 3506-1"

For ambient temperature $-55 \div +40$ °C (+80 °C)

"Use screws quality A4-70 UNI EN ISO 3506-1"

In case of disassembling of terminal compartment

"Warning – Use the identical special screws supplied by the manufacturer"

In case of use of space heaters:

"Caution – Inside space heaters"

For motors supplied by frequency converter:

"Caution - Winding protected with PTC thermistors"

or

"Caution - Winding protected with bimetallic sensors"

or

"Caution - Winding protected with PT 100 detectors. Calibrate at 130 °C" **for temperature class T3**

"Caution - Winding protected with PT 100 detectors. Calibrate at 120 °C" **for temperature class T4**

For temperature class T4:

"The supply cable must be suitable for an operating temperature not less than 90 °C"

For temperature class T3:

motors fed by mains:

"The supply cable must be suitable for an operating temperature not less than 100 °C"

motors fed by inverter:

"The supply cable must be suitable for an operating temperature not less than 110 °C"

For motors provided with drain valves

"Keep closed the drain devices during operation of the motor"