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Schema di certificazione

ATEX CESI

Il CESI è stato autorizzato
dal governo italiano ad
operare quale organismo di
certificazione di apparecchi
e sistemi destinati a essere
utilizzati in atmosfera
potenzialmente esplosiva
con D.M. 1/3/1983, D.M.
19/6/1990, D.M. 20/7/1998,
D.M. 27/9/2000 e D.M.
02/02/2006

CERTIFICATE



EC-TYPE EXAMINATION CERTIFICATE

- [1] **EC-TYPE EXAMINATION CERTIFICATE**
- [2] **Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 94/9/EC**
- [3] **EC-Type Examination Certificate number:**

CESI 11 ATEX 052X
- [4] **Equipment:** Three-phase asynchronous motors series MAK 180 ÷ 250 and
MAKe 180 ÷ 250
- [5] **Manufacturer:** **EUROMOTORI S.r.l.**
- [6] **Address:** Via Cavour, 20846 Macherio (MB) - Italy
- [7] This equipment or protective system and any acceptable variation thereto is specified in the
schedule to this certificate and the documents therein referred to.
- [8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of
23 March 1994, certifies that this equipment or protective system has been found to comply
with the Essential Health and Safety Requirements relating to the design and construction of
equipment and protective systems intended for use in potentially explosive atmospheres given
in Annex II to the Directive.
- The examination and test results are recorded in confidential report n. EX-B1023948.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by
compliance with:

EN 60079-0: 2009; EN 60079-1: 2007; EN 60079-7: 2007
- [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or
protective system is subject to special conditions for safe use specified in the schedule to this
certificate.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and
tests of the specified equipment or protective system in accordance to the Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this
equipment or protective system. These are not covered by this certificate.
- [12] The marking of the equipment or protective system shall include the following:
- Ex II 2 G Ex d IIB T4, T3 Gb Ex II 2 G Ex d e IIB T4, T3 Gb**

This certificate may only be reproduced in its entirety and without any change, schedule included.

Date 14 September 2011 - Translation issued the 14th September 2011

Prepared

Bruno Pavanati

Verified

Mirko Balaz

Approved

Fiorenzo Bregani

CESI S.p.A. ✓
Testing & Certification Division

Schedule

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[14] **EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 052X**

[15] **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 the 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;12;16;24 poles or at double polarity 2/4 ÷ 8/24 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 certificate.

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 note annexed to this certificate.

For the other electrical characteristics refer to the technical note annexed to this certificate.

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Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 052X

[15] Description of equipment (*follows*)

Inverter supply:

- Maximum rated voltage:	1000	V (Ex d)
	800	V (Ex e)
	630	V (Ex 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 4,6,8 poles constant torque)
	5 ÷ 50	Hz (for motors 2,4,6,8 poles quadratic torque)
- Maximum rated speed:	3600	rpm
- Duty:	S9	

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, Klaxon, PT100) for temperature control.

The thermal detectors are calibrated for an operation temperature of 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 operation temperature of 130 °C for the temperature class T3 and at 120 °C for the temperature class T4.

The operation of the thermal detector shall guarantee the disconnection of the supply; 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.

Cable entries

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

motors with type of protection Ex d: EN 60079-0 and EN 60079-1;

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

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

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

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Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 052X

[15] Description of equipment (*follows*)

Warning label

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

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

"Use screws quality 8.8 UNI EN ISO 898-1"

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

"Use screws quality A4-80 UNI EN ISO 3506-1"

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

"Use screws quality A4-80 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:

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

For motors provided with drain valves

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

[16] Report n. EX-B1023948

Routine tests

The manufacturer shall carry out the routine tests prescribed at paragraph 16 of the EN 60079-1 standard and at paragraph 7 of the EN 60079-7 standard.

This certificate may only be reproduced in its entirety and without any change, schedule included.

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Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 052X

[16] Report n. EX-B1023948

Motor enclosures

With reference to the minimum ambient temperature, the routine overpressure test shall be carried out on the motor enclosures, with the static method according to paragraph 15.1.3.1 of the EN 60079-1 standard, at the following pressures:

Motor size	Test pressures [kPa]		
	Tamb -20 °C	Tamb -50 °C	Tamb -55 °C
180	1750	N/A	2150
200	1750	2150	N/A
225	1750	2400	N/A
250	*	2400	N/A

* The manufacturer is exempted from the overpressure test on the motor enclosure, since this enclosure has been submitted, with positive result, to an overpressure test at a pressure of 4600 kPa, corresponding to 4 times the reference pressure.

Terminal boxes

With reference to the minimum ambient temperature, the routine overpressure test shall be carried out on the terminal box, with the static method according to paragraph 15.1.3.1 of the EN 60079-1 standard, at the following pressure:

Terminal box for motor size	Test pressures [kPa]		
	Tamb -20 °C	Tamb -50 °C	Tamb -55 °C
180	*	N/A	1650
200 ÷ 250	*	1750	N/A

* The manufacturer is exempted from the overpressure test on the terminal boxes, since the terminal boxes have been submitted, with positive result, to an overpressure test at a pressure corresponding to 4 times the reference pressure and respectively:

- 2800 kPa on terminal box for motor size 180
- 3400 kPa on terminal box for motors size 200 ÷ 250

The dielectric test with applied voltage shall be performed at $2U + 1000$ V with a minimum value of 1500 V between the supply terminals and earth (U = rated voltage) on the "Ex e" terminal box .

Descriptive documents (prot. EX-B1023966)

- Document n. 10100-M4 Rev. 7 (2 pg.)	dated	25.05.2011
- Document n. 10231 Rev. 7	dated	25.05.2011
- Document n. 10231E Rev. 6	dated	25.05.2011
- Document n. 10235	dated	17.03.2009
- Document n. 10235AU Rev. 3	dated	25.05.2011
- Document n. 10240	dated	24.05.2011
- Document n. 10500 Rev. 2	dated	25.05.2011
- Document n. 10504T	dated	23.05.2011
- Document n. 10511 Rev. 3	dated	25.05.2011
- Document n. 10523	dated	27.09.2008
- Document n. 10527	dated	24.05.2011
- Document n. 10531-IIB Rev. 3	dated	25.05.2011

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Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 11 ATEX 052X

Descriptive documents (prot. EX-B1023966) follows

- Document n. 10531-IIC Rev. 4	dated	25.05.2011
- Document n. 10532	dated	25.05.2011
- Document n. 10535T	dated	25.05.2011
- Document n. 10542 Rev. 2	dated	25.05.2011
- Document n. 10554	dated	15.09.2009
- Document n. 10564 Rev. 1	dated	25.05.2011
- Document n. 10588 Rev. 3	dated	25.05.2011
- Document n. 10601VA	dated	25.05.2011
- Document n. 10601WV	dated	25.05.2011
- Document n. 10605-M8 Rev. 2 (2 pg.)	dated	25.05.2011
- Document n. 10606 Rev. 2	dated	25.05.2011
- Document n. 10606E Rev. 2	dated	25.05.2011
- Document n. 10607 Rev. 3	dated	25.05.2011
- Document n. 10608	dated	03.12.2009
- Document n. 10615	dated	25.02.2011
- Document n. 10711	dated	25.05.2011
- Document n. 10712	dated	25.05.2011
- Document n. 10713	dated	25.05.2011
- Document n. 10714	dated	25.05.2011
- Document n. 10715	dated	25.05.2011
- Document n. 10716 Rev. 1	dated	25.05.2011
- Document n. 10722	dated	25.05.2011
- Document n. 10727	dated	25.05.2011
- Document n. 10728	dated	25.05.2011
- Document n. 18PM-PRO	dated	11.02.2006
- Document n. 35PM-PRO2 Rev. 3	dated	25.05.2011
- Document n. D-T-MAK 180-250 IIB GAS (6 pg.)	dated	25.05.2011
- Document n. E-10100-M6 Rev. 5 (2 pg.)	dated	25.05.2011
- Document n. E-10229 Rev. 7	dated	25.05.2011
- Document n. E-10229E Rev. 7	dated	25.05.2011
- Document n. E-10238 Rev. 1	dated	25.05.2011
- Document n. PMK-911CK (6 pg.)	dated	25.05.2011
- Document n. NDT MAK 180-250 IIB-Gb (17 pg.)	dated	19.06.2011
- Document n. E-DSC-M18M35	dated	25.05.2011
- Document n. CE-e-180/250-IIB-Gb	dated	25.05.2011
- Document n. CE-180/250-IIB-Gb	dated	25.05.2011
- Document n. E-250511B (2 pg.)	dated	25.05.2011
- Safety instructions MAK-MAKe 180-250 IIB e IIC (15 pg.)	dated	05.2011

One copy of all documents is kept in CESI files.

[17] Special conditions for safe use (X)

The flamepaths are specified in the manufacturer drawings. For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.

[18] Essential Health and Safety Requirements

Covered by the following standards:

- EN 60079-0: 2009 - General requirements
- EN 60079-1: 2007 - Flameproof enclosures "d"
- EN 60079-7: 2007 - Type of protection by increased safety "e"

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EXTENSION n. 01/15

to EC-Type Examination Certificate CESI 11 ATEX 052X

Equipment: Three-phase asynchronous motors series MAK 180 ÷ 250 and MAKe 180 ÷ 250**Manufacturer:** EUROMOTORI S.r.l.**Address:** Via Cavour, 20846 Macherio (MB) - Italy**Admitted variation:**

- 1) new type of protection and update to EN 60079-0: 2012 and EN 60079-1: 2014 standards
- 2) constructional modifications
- 3) modification of the ambient temperature
- 4) updating routine tests

1) New type of protection and update to EN 60079-0: 2012 and EN 60079-1: 2014 standards

Three-phase asynchronous motors series MAK 180 ÷ 250 and MAKe 180 ÷ 250.

The motors above have been reviewed on the basis of the EN 60079-0: 2012 and EN 60079-1: 2014 standards and can also be made with dust-tight enclosures with protection level "tb" (EPL "Db") for group "II" category "2 D".

Marking

The three-phase asynchronous motors series MAK 180 ÷ 250 and MAKe 180 ÷ 250 shall include the following:

- II 2 G Ex db IIB T4, T3 Gb or II 2 G Ex db e IIB T4, T3 Gb
 II 2 D Ex tb IIIC T 125, T 155 °C Db
 II 2 GD Ex db IIB T4, T3 Gb ; Ex tb IIIC T 125, T 155 °C Db or
 II 2 GD Ex db e IIB T4, T3 Gb ; Ex tb IIIC T 125, T 155 °C Db

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 11 ATEX 052X.

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Date 11 September 2015 - Translation issued the 11th September 2015**Prepared**

Bruno Pavanati

Verified

Mirko Balaz

Approved

Roberto Piccin

CESI S.p.A.
Testing & Certification Division
Business Area Certification
II Responsabile
(Roberto Piccin)

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EXTENSION n. 01/15

to EC-Type Examination Certificate CESI 11 ATEX 052X

2) Constructional modifications

Type of protection Ex tb

The three-phase asynchronous motors series MAK 180 ÷ 250 and MAKe 180 ÷ 250 are made through constructive elements, gaskets and sealing rings, which make them suitable for the protection against the ingress of dust.

The motors are all made with motor enclosure separated from terminal box by means of cable bushings.

New cable bushings for the three-phase asynchronous motors series MAK and MAKe 200, 225, 250

The three-phase asynchronous motors series MAK and MAKe 200, 225, 250 are made with new cable bushings M55 for cable sections up to 50 mm².

New construction for three-phase asynchronous motors series MAK 180 and MAKe 180 of category 2 G

The three-phase asynchronous motors series MAK 180 and MAKe 180 are made with new reinforced cover for the terminal box.

Type of protection Ex e

Use of new terminals, object of separate certification, for the auxiliary connections.

3) Electrical characteristics

Modification of the ambient temperature ranges

As a result of the constructional modifications object of this extension, the three-phase asynchronous motors series MAK 180 ÷ 250 and MAKe 180 ÷ 250 with type of protection Ex db, Ex db e and Ex tb, can be operate in the following ambient temperature ranges:

- Ambient temperature range:
 - 20 ÷ +40 °C (+60 °C) for temperature class T4 (T 125 °C), T3 (155 °C)
 - 55 ÷ +40 °C (+60 °C) for temperature class T4 (T 125 °C), T3 (155 °C)
 - 20 ÷ +40 °C (+80 °C) for temperature class T3 (155 °C)
 - 55 ÷ +40 °C (+80 °C) for temperature class T3 (155 °C)

The three-phase asynchronous motors of category 2 GD and 2 D with drain valve can be used for a minimum Tamb of -50 °C.

- Degree of protections:

- for motors of category 2 G:* IP 55 or IP 66
- for motors of category 2 GD and 2 D:* IP 66

- Limit other electrical characteristics: unchanged

Cable entries

The cable entry devices used on the enclosure shall be suitably certified and shall guarantee the minimum degree of protection as indicated on motor plate.

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

- in execution Ex db IIB or Ex e IIB for the terminal box in execution Ex db IIB or Ex db e IIB respectively;
- in execution Ex tb IIIC for the terminal box in execution Ex tb IIIC

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EXTENSION n. 01/15

to EC-Type Examination Certificate CESI 11 ATEX 052X

Warning label

“At every disassembly renewed the joints with grease type*”

* The type of grease is in function of ambient temperature and of type of protection

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 (T 155 °C)

“Caution - Winding protected with PT 100 detectors. Calibrate at 120 °C” for temperature class T4 (T 125 °C)

For temperature class T4 (T 125 °C):

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

For temperature class T3 (T 155 °C):

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

- Uchanged the other warnings.

Report n. EX-B5018845

4) Routine tests

The manufacturer shall carry out the routine tests prescribed at paragraph 16 of the EN 60079-1 standard and at paragraph 7 of the EN 60079-7 standard.

Motor enclosures

With reference to the minimum ambient temperature, the routine overpressure test shall be carried out on the motor enclosures and on the cable bushings, with the static method according to paragraph 15.2.3.2 of the EN 60079-1 standard, at the following pressures:

Motor size	Routine test pressures [kPa]	
	Tamb -20 °C	Tamb -55 °C
180	1750	2150
200	1750	2150
225	1750	2400
250	*	2400

* The manufacturer is exempted from the overpressure test on the motor enclosure, since this enclosure has been submitted, with positive result, to an overpressure test at a pressure of 4600 kPa, corresponding to 4 times the reference pressure.

EXTENSION n. 01/15

to EC-Type Examination Certificate CESI 11 ATEX 052X

4) Routine tests (follows)

Terminal boxes

With reference to the minimum ambient temperature, the routine overpressure test shall be carried out on the terminal box, with the static method according to paragraph 15.2.3.2 of the EN 60079-1 standard, at the following pressures:

Terminal box for motor size	Routine test pressures [kPa]	
	Tamb -20 °C	Tamb -55 °C
180	1300	1750
200 ÷ 250	*	1750

* The manufacturer is exempted from the overpressure test on the terminal box, since the terminal box has been submitted, with positive result, to an overpressure test at a pressure of 3400 kPa, corresponding to 4 times the reference pressure.

The dielectric test with applied voltage shall be performed at $2U + 1000$ V with a minimum value of 1500 V between the supply terminals and earth (U = rated voltage) on the "Ex e" terminal boxes.

Descriptive documents (prot. EX-B5018852)

- Document n. NDT MAK 180-250 P IIB Rev. 0 (6 pg.)	dated	23.06.2015
- Document n. 9.09/15 Rev. 0	dated	09.09.2015
- Document n. 10717 Rev. 2	dated	16.05.2015
- Document n. 10652 Rev. 1	dated	08.12.2014
- Document n. 10654 Rev. 1	dated	08.12.2014
- Document n. 10625 Rev. 2	dated	10.09.2015
- Document n. 10627 Rev. 1	dated	01.12.2014
- Document n. E-55PM-PRO Rev. 0	dated	08.02.2013
- Document n. PMK – M55 Rev. 0 (6 pg.)	dated	25.05.2015
- Document n. 10500 Rev. 3	dated	09.07.2015
- Document n. 10711 Rev. 1	dated	09.07.2015
- Document n. MORS-BART-250615 Rev. 0	dated	25.06.2015
- Safety instruction MAK e MAKe 180-250 IIB / IIC (18 pg.)	dated	05.2015
- Document n. D-T-MAK180-250P Rev. 0 (4 pg.)	dated	20.05.2015
- Facsimile Declaration of conformity n. CE-180/250-IIB-Gb/Db Rev. 0 (5 pg.)	dated	25.05.2015

One copy of all documents is kept in CESI files.

Special conditions for safe use (X)

- The flamepaths are specified in the manufacturer drawings. For information regarding the dimensions of the flameproof joints the manufacturer shall be contacted.
- For the painted/coated motors to be installed in places with presence of dust shall be taken into account the risk of electrostatic charges able to activate propagating brush discharges.
- For installation in places with presence of dust, when the motors are made without flange, the D-end sealing ring shall be protected from light by a device supplied by the manufacturer.
- For the installation of motors without ventilation, when the cooling is provided by a fan directly coupled to the motor (method IC 418), the final user shall ensure the temperature class of motor.

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to EC-Type Examination Certificate CESI 11 ATEX 052X

Essential Health and Safety Requirements

Covered by the following standards:

- EN 60079-0: 2012 + A11: 2013 - General requirements
- EN 60079-1: 2014 - Flameproof enclosures "d"
- EN 60079-7: 2007 - Type of protection by increased safety "e"
- EN 60079-31: 2014 - Equipment dust ignition protection by enclosure "t"