

# CESI

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iscrizione CCIAA 00793580150

Registro Imprese di Milano  
Sezione Ordinaria  
N. R.E.A. 429222  
P.I. IT00793580150

Schema di certificazione

# CESI-ATEX

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



## [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 06 ATEX 059**

[4] Equipment: Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160

[5] Manufacturer: **EUROMOTORI S.r.l.**

[6] Address: Via Cavour, 20050 Macherio (Milano), 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- A6025123.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0: 2006 EN 60079-1: 2004 EN 61241-1: 2004 IEC 61241-0: 2004**

[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:

II 2G Ex d IIB T4 or T3

II 2GD Ex d IIB T4 or T3, Ex tD A21 IP66 T125°C or T155°C

II 2D Ex tD A21 IP66 T125°C or T155°C

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Date 29/09/2006 - Translation issued the 29/09/2006

Prepared  
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Verified  
Mirko Balaz

Approved  
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**CESI**  
Centro Elettrotecnico Sperimentale Italiano  
Giacinto Motta SpA  
Business Unit GENERAZIONE  
Il Responsabile

[13]

## Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE n. CESI 06 ATEX 059**

[15] **Description of equipment**

The type identification criteria of the three-phase and mono-phase asynchronous motors series MAK 56, MAK 63, MAK 71, MAK 80, MAK 90, MAK 100, MAK 112, MAK 132 and MAK 160 are defined as follows:

- motor type **MAK 56-63-71-80-90-100-112-132-160** from 2 to 24 poles; three-phase motor, centre height 56-63-71-80-90-100-112-132-160 at 2;4;6;8;12;16;24 poles or at double polarity.
- motor type **MAK ..-M** (.. = 56-63-71-80-90-100-112-132-160) from 2 to 8 poles : mono-phase motor, centre height 56-63-71-80-90-100-112-132-160 at 2,4,6,8 poles.

The motors, subject to this certificate, are all made with a motor enclosure directly communicating with the terminal box.

The complete identification of all type of three-phase and mono-phase asynchronous motors are reported in the technical notes annexed to this certificate.

### Electrical characteristics

#### *Mains supply*

Type of motor	MAK 56	MAK 63	MAK 71
- maximum power [kW]:	0.55	1.1	1.5
- maximum voltage [V]:	250 V (mono-phase) – 660 V (three-phase)		
- frequency [Hz]:	50/60		
- duty:	S1 / S9		
- insulation class:	F ( Δt B)		
- Ambient temperate [°C]:	- 20 ÷ +60		

#### *Mains supply*

Type of motor	MAK 80	MAK 90	MAK 100	MAK 112	MAK 132	MAK 160
- maximum power [kW]:	2.2	4.0	5.5	15.0	18.5	37.0
- maximum voltage [V]:	250 V (mono-phase) – 660 V (three-phase)					
- frequency [Hz]:	50/60					
- duty:	S1 / S9					
- insulation class:	F ( Δt B)					
- Ambient temperate [°C]:	- 20 ÷ +60					

- Degree of protections:

for motors of category 2 G: IP 55

for motors of category 2 GD and 2 D: IP 66

The others electrical characteristics are reported in the documents annexed to this certificate.

Possible anticondensate heaters installed inside the motors can have a maximum power of 80 W.

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[13]

## Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 06 ATEX 059

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[15] Description of equipment (*follows*)

### *Temperature classes or maximum surface temperatures*

The motors series MAK can be made for the following temperatures.

- |  |                      |
|--|----------------------|
| - motors of category II 2 G supplied by mains:                           | T4 or T3             |
| - motors of category II 2 G supplied by frequency converter:             | T3                   |
| - motors of category II 2 D and II 2 GD supplied by mains:               | T 125 °C or T 155 °C |
| - motors of category II 2 D and II 2 GD supplied by frequency converter: | T 155 °C             |
| - motors unventilated or with forced ventilation:                        | T3; T 155 °C         |

### Motors supplied by frequency converter

- |                          |  |
|--------------------------|--|
| - Maximum rated voltage: | 660 V  |
| - Maximum peak voltage:  | 930 V  |
| - Frequency range:       | 5 ÷ 60 Hz (for motors 2p = 2)<br>5 ÷ 100 Hz (for motors 2p = 4,6,8...24) |

The three-phase asynchronous motors supplied by frequency converter report the electrical operating characteristics on a suitable label and they are equipped, inside the stator winding, with thermal detectors (PTC thermistors) for temperature control.

The operation of thermal detectors, in case of anomalous operation of the motor, shall guarantee the disconnection of the supply at a maximum of 155 °C for the motors with temperature class T3.

The resetting of the supply shall not be automatic.

### Forced ventilation by auxiliary motor

The three-phase asynchronous motors unventilated or with forced ventilation are used in duty S1 and they are equipped, inside the stator winding, with thermal detectors (PTC thermistors) calibrated for a maximum operating temperature of 155 °C.

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:

**motor of category 2 G:** EN 60079-0 and EN 60079-1;

**motor of category 2GD and 2D:** EN 60079-0, EN 60079-1 and EN 61241-1 and guarantee a minimum degree of protection IP 66 according to EN 60034-5 and EN 60529 standards.

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

[13] **Schedule**

[14] **EC-TYPE EXAMINATION CERTIFICATE n. CESI 06 ATEX 059**

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[15] **Description of equipment (follows)**

**Warning label**

“Restore silicone grease at every opening”

“Use screws quality 8.8 UNI EN 20898”

**For motors supplied by frequency converter:**

“Winding protected with PTC thermistors”

**In case of use of anticondensate heaters:**

“Caution – energized resistors”

**For motors with temperature class T3:**

“The supply cable must be suitable for an operating temperature  $\geq 90$  °C”

[16] **Report n. EX-A6025123**

**Routine test**

The manufacturer shall carry out the routine tests prescribed at paragraph 27 of the EN 60079-0 standard and at the paragraph 16 of the EN 60079-1 standard.

The routine overpressure test on the motor enclosure type MAK 160 shall be carried out at 18 bar with the static method according to the paragraph 15.1.3.1 of the EN 60079-1 standard.

The manufacturer is exempted from overpressure test on the motor enclosures type MAK 56, MAK 63, MAK 71, MAK 80, MAK 90, MAK 100, MAK 112 and MAK 132, since they have been submitted, with positive result, to an overpressure test at a pressure corresponding to 4 times the reference pressure.

**Descriptive documents (prot. EX-A6025350)**

<b>Document n°</b>	<b>Rev.</b>	<b>Dated</b>
MAK 56 IIB II2 GD (5 pages) – Safety instructions	1	28 -09-06
NTD MAK 56 IIB (4 pages)	1	28 -09-06
D-T-MAK 56 IIB (2 pages)	1	28 -09-06
10098B-AP	6	28 -09-06
10098B-A-AP	6	28 -09-06
10098B-WV-AP	2	28 -09-06
10098B-IP-AP	2	28 -09-06

**follows**

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[13]

## Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 06 ATEX 059

### Descriptive documents (*follows*)

Document n°	Rev.	Dated
10098B-CP-AP	2	28 -09-06
10098B-2CP-AP	2	28 -09-06
10098B-MONO-AP	1	28 -09-06
10041B-AP	4	28 -09-06
10098B-ACC-AP	2	28 -09-06
10071B-1-AP	3	28 -09-06
10098B-MDT-AP	1	28 -09-06
10098B-IMB-AP	1	28 -09-06
MAK 63-71 IIB II2 GD (5 pages) - Safety instructions	1	28 -09-06
NTD-MAK 63-71 IIB (5 pages)	1	28 -09-06
D-T-MAK 63-71 IIB (2 pages)	1	28 -09-06
10099B-AP	6	28 -09-06
10099B-A-AP	5	28 -09-06
10099B-B-AP	5	28 -09-06
10099B-WV-AP	2	28 -09-06
10099B-IP-AP	2	28 -09-06
10099B-CP-AP	2	28 -09-06
10099B-2CP-AP	2	28 -09-06
10099B-MONO-AP	1	28 -09-06
10042B-AP	4	28 -09-06
10099B-ACC-AP	2	28 -09-06
10099B-P-AP	3	28 -09-06
10071B-2-AP	3	28 -09-06
10099B-MDT-AP	1	28 -09-06
10099B-IMB-AP	1	28 -09-06
Instruction for use MAK 80÷160 IIB (6 pages)	1	28 -09-06
D-T MAK 80-112 IIB (2 pages)	1	28 -09-06
D-T MAK 132-160 IIB (2 pages)	1	28 -09-06
NTD MAK 80 – 160 IIB (9 pages)	1	28 -09-06
10100B-AP	3	28 -09-06
10100B-A-AP	6	28 -09-06
10100B-B-AP	6	28 -09-06
10100B-C-AP	6	28 -09-06
10100B-D-AP	6	28 -09-06
10100B-E-AP	6	28 -09-06

**follows**

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[13]

## Schedule

[14] **EC-TYPE EXAMINATION CERTIFICATE n. CESI 06 ATEX 059**

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### Descriptive documents (*follows*)

Document n°	Rev.	Dated
10100B-F-AP	6	28 -09-06
10100B-WV-AP	2	28 -09-06
10100B-IP-AP	2	28 -09-06
10100B-CP-AP	2	28 -09-06
10100B-2CP-AP	2	28 -09-06
10100B-MONO-AP	1	28 -09-06
10025B-AP	3	28 -09-06
10026B-AP	3	28 -09-06
10027B-AP	3	28 -09-06
10100B-ACC-AP	1	28 -09-06
10100B-P-AP	3	28 -09-06
10071B-3-AP	3	28 -09-06
10100B-MDT-AP	1	28 -09-06
10100B-IMB-AP	1	28 -09-06

One copy of all documents is kept in CESI files.

[17] **Special conditions for safe use**

None.

[18] **Essential Health and Safety Requirements**

Assured by the conformity to the Standards.