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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

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	Verified	Approved
Angelo Milanesi	Mirko Balaz	Fiorenzo Bregani

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

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

[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**

[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)
	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.

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[13] # Schedule

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

[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 ≥ 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)

Document n°	**Rev.**	**Dated**
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**

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.

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EXTENSION n. 01/07

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of the electrical characteristics, new temperature class for the motors of category 2 G and new maximum surface temperature for the motors of category 2 D.

Description of equipment and marking

Three-phase asynchronous motors type MAK 56 – 2, MAK 56 – 4, MAK 63 a-2, MAK 63 b-2, MAK 63 a-4, MAK 63 b-4, MAK 71 a-2, MAK 71 b-2, MAK 71 a-4 supplied by mains:

- ⟨Ex⟩ ***II 2 G*** ***Ex d IIB T6 or T5***
- ⟨Ex⟩ ***II 2 GD*** ***Ex d IIB T6 or T5 Ex tD A21 IP 66 T 85 °C or T 100 °C***
- ⟨Ex⟩ ***II 2 D*** ***Ex tD A21 IP 66 T 85 °C or T 100 °C***

Three-phase asynchronous motors type MAK 71 b-4 supplied by mains:

- ⟨Ex⟩ ***II 2 G*** ***Ex d IIB T5***
- ⟨Ex⟩ ***II 2 GD*** ***Ex d IIB T5 Ex tD A21 IP 66 T 100 °C***
- ⟨Ex⟩ ***II 2 D*** ***Ex tD A21 IP 66 T 100 °C***

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059.

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date 05 March 2007 - translation issued the 5th March 2007

prepared GEN – Bruno Pavanati

verified GEN – Mirko Balaz

approved GEN – Fiorenzo Bregani

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EXTENSION n. 01/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics

Motors series MAK 56

Motor type:	**MAK 56 - 2**		**MAK 56 - 4**	
Number of poles:	2		4	
Rated power [kW]:	0,12		0,09	
Rated voltage [V ± 5%]:	230 / 400		230 / 400	
Rated current [A]:	0,62 / 0,36		0,57 / 0,33	
Rated frequency [Hz]:	50		50	
Rated speed [rpm]:	2651		1345	
Power factor:	0,82		0,67	
Connection:	triangle / star		triangle / star	
Insulation class:	F		F	
Duty:	S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60
Class of temperature:	T6	T5	T6	T5
Max. surface temp. T [°C]:	85	100	85	100

Motors series MAK 63

Motor type:	**MAK 63 a-2**		**MAK 63 b-2**		**MAK 63 a-4**		**MAK 63 b-4**	
Number of poles:	2		2		4		4	
Rated power [kW]:	0,18		0,25		0,12		0,18	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		230 / 400	
Rated current [A]:	0,9 / 0,52		1,14 / 0,66		0,83 / 0,48		1,05 / 0,61	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	2795		2779		1337		1343	
Power factor:	0,74		0,77		0,68		0,70	
Connection:	triangle / star		triangle / star		triangle / star		triangle / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60
Class of temperature:	T6	T5	T6	T5	T6	T5	T6	T5
Max. surface temp. T [°C]:	85	100	85	100	85	100	85	100

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EXTENSION n. 01/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics *(follows)*

Motors series MAK 71

Motor type:	**MAK 71 a-2**		**MAK 71 b-2**		**MAK 71 a-4**		**MAK 71 b-4**
Number of poles:	2		2		4		4
Rated power [kW]:	0,37		0,55		0,25		0,37
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		230 / 400
Rated current [A]:	1,63 / 0,94		2,2 / 1,27		1,21 / 0,7		1,87 / 1,08
Rated frequency [Hz]:	50		50		50		50
Rated speed [rpm]:	2794		2812		1383		1383
Power factor:	0,76		0,81		0,77		0,73
Connection:	triangle / star		triangle / star		triangle / star		triangle / star
Insulation class:	F		F		F		F
Duty:	S1		S1		S1		S1
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40
Class of temperature:	T6	T5	T6	T5	T6	T5	T5
Max. surface temp. T [°C]:	85	100	85	100	85	100	100

The motors series MAK 56, MAK 63 and MAK 71 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 600 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

Constructive characteristics
Unchanged.

Report n. EX-A7006807

Descriptive documents (prot. EX-A7006820)

- Document. n. NDT MAK 56-71-2/4 IIB Rev. 1 (2 pg.) dated 01.03.2007
- Document. n. D-T-MAK 56÷71 IIB e IIC (2 pg.) dated 28.02.2007

One copy of all documents is kept in CESI files.

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EXTENSION n. 02/07

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of the electrical characteristics, new temperature class for the motors of category 2 G and new maximum surface temperature for the motors of category 2 D.

Description of equipment and marking

Three-phase asynchronous motors type MAK 80 a-2, MAK 80 b-2, MAK 80 a-4, MAK 90 S - 2, MAK 90 L - 2, MAK 90 S - 4, MAK 112 M - 2, MAK 132 Sb - 2 supplied by mains:

- ⟨Ex⟩ ***II 2 G*** ***Ex d IIB T6*** *or* ***T5***
- ⟨Ex⟩ ***II 2 GD*** ***Ex d IIB T6*** *or* ***T5*** ***Ex tD A21 IP 66 T 85 °C*** *or* ***T 100 °C***
- ⟨Ex⟩ ***II 2 D*** ***Ex tD A21 IP 66 T 85 °C*** *or* ***T 100 °C***

Three-phase asynchronous motors type MAK 80 b-4, MAK 90 L – 4, MAK 100 Lw – 2 supplied by mains:

- ⟨Ex⟩ ***II 2 G*** ***Ex d IIB T5***
- ⟨Ex⟩ ***II 2 GD*** ***Ex d IIB T5*** ***Ex tD A21 IP 66 T 100 °C***
- ⟨Ex⟩ ***II 2 D*** ***Ex tD A21 IP 66 T 100 °C***

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059.

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date 06 April 2007 - translation issued the 6th April 2007

prepared PRO – Bruno Pavanati

verified PRO – Mirko Balaz

approved CER – Fiorenzo Bregani

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EXT-CERT CE EQUIPM. E01-1

EXTENSION n. 02/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics

Motors series MAK 80

Motor type:	**MAK 80 a-2**		**MAK 80 b-2**		**MAK 80 a-4**		**MAK 80 b-4**
Number of poles:	2		2		4		4
Rated power [kW]:	0,75		1,1		0,55		0,75
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		230 / 400
Rated current [A]:	2,89 / 1,67		4,36 / 2,52		2,77 / 1,6		3,48 / 2,01
Rated frequency [Hz]:	50		50		50		50
Rated speed [rpm]:	2821		2808		1422		1399
Power factor:	0,84		0,83		0,65		0,71
Connection:	delta / star		delta / star		delta / star		delta / star
Insulation class:	F		F		F		F
Duty:	S1		S1		S1		S1
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +55	-20 ÷ +40	-20 ÷ +55	-20 ÷ +40	-20 ÷ +55	-20 ÷ +45
Class of temperature:	T6	T5	T6	T5	T6	T5	T5
Max. surface temp. T [°C]:	85	100	85	100	85	100	100

Motors series MAK 90

Motor type:	**MAK 90 S - 2**		**MAK 90 L - 2**		**MAK 90 S - 4**		**MAK 90 L - 4**	
Number of poles:	2		2		4		4	
Rated power [kW]:	1,5		2,2		1,1		1,5	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		230 / 400	
Rated current [A]:	5,24 / 3,03		7,61 / 4,4		4,67 / 2,7		5,95 / 3,45	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	2901		2890		1426		1421	
Power factor:	0,83		0,84		0,75		0,77	
Connection:	delta / star		delta / star		delta / star		delta / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Ambient temperature [°C]:	-20 ÷ -40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55	-20 ÷ +40	-20 ÷ +60	-20 ÷ -40	-20 ÷ +55
Class of temperature:	T6	T5	T6	T5	T6	T5	T6	T5
Max. surface temp. T [°C]:	85	100	85	100	85	100	85	100

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EXTENSION n. 02/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics *(follows)*

Motors series MAK 100, MAK 112and MAK 132

Motor type:	**MAK 100 Lw - 2**	**MAK 112 M - 2**		**MAK 132 Sb - 2**	
Number of poles:	2	2		2	
Rated power [kW]:	3	4		7,5	
Rated voltage [V ± 5%]:	230 / 400	230 / 400		230 / 400	
Rated current [A]:	10,57 / 6,11	13,42 / 7,76		24,07 / 13,9	
Rated frequency [Hz]:	50	50		50	
Rated speed [rpm]:	2894	2923		2910	
Power factor:	0,84	0,83		0,88	
Connection:	delta / star	delta / star		delta / star	
Insulation class:	F	F		F	
Duty:	S1	S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55
Class of temperature:	T5	T6	T5	T6	T5
Max. surface temp. T [°C]:	100	85	100	85	100

The motors series MAK 80, MAK 90, MAK 100, MAK 112 and MAK 132 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 600 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

Constructive characteristics
Unchanged.

Report n. EX-A7009753

Descriptive documents (prot. EX-A7009762)

- Document n. NDT MAK 80-132-ST1-IIB (2 pg.) dated 29.03.2007
- Document n. D-T-MAK 80÷112 IIB e IIC (2 pg.) dated 28.02.2007
- Document n. D-T-MAK 132 IIB e IIC (2 pg.) dated 28.02.2007
- Declaration of conformity n. D-CE-56/160 IIB (2 pg.) dated 20.09.2006

One copy of all documents is kept in CESI files.

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EXTENSION n. 03/07

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of electrical and constructional characteristics.

- New temperature class for the three-phase asynchronous motors of category 2 G.
- New maximum surface temperature for the three-phase asynchronous motors of category 2 D.
- New maximum working voltage for the three-phase asynchronous motors series 56 ÷ 160.
- New stator winding length for the three-phase asynchronous motor type MAK 90 L – 6.

Description of equipment and marking

Three-phase asynchronous motors type MAK 80 a-6, MAK 80 b-6, MAK 80 a-8, MAK 80 b-8, MAK 90 S - 6, MAK 90 L - 6, MAK 100 Lw - 4, MAK 100 Lx – 4 supplied by mains:

⟨Ex⟩	*II 2 G*	*Ex d IIB T6, T5, T4*
⟨Ex⟩	*II 2 GD*	*Ex d IIB T6, T5, T4 Ex tD A21 IP 66 T 85, T 100, T 125 °C*
⟨Ex⟩	*II 2 D*	*Ex tD A21 IP 66 T 85, T 100, T 125 °C*

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059.

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date 9 November 2007 - translation issued the 9th November 2007

prepared PRO – Bruno Pavanati

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EXTENSION n. 03/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics

Motors series MAK 80

Motor type:	**MAK 80 a-6**		**MAK 80 b-6**		**MAK 80 a-8**		**MAK 80 b-8**	
Number of poles:	6		6		8		8	
Rated power [kW]:	0,37		0,55		0,18		0,25	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		230 / 400	
Rated current [A]:	2,04 / 1,18		2,82 / 1,63		1,52 / 0,88		1,94 / 1,12	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	946		920		702		694	
Power factor:	0,66		0,73		0,58		0,60	
Connection:	delta / star		delta / star		delta / star		delta / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +55	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55	-20 ÷ +45	-20 ÷ +60
Class of temperature:	T6	T5	T5	T4	T6	T5	T5	T4
Max. surface temp. T [°C]:	85	100	100	125	85	100	100	125

Motors series MAK 90 and MAK 100

Motor type:	**MAK 90 S - 6**		**MAK 90 L - 6**	**MAK 100 Lw - 4**		**MAK 100 Lx - 4**	
Number of poles:	6		6	4		4	
Rated power [kW]:	0,75		1,1	2,2		3	
Rated voltage [V ± 5%]:	230 / 400		230 / 400	230 / 400		230 / 400	
Rated current [A]:	3,62 / 2,09		5,69 / 3,29	8,82 / 5,10		11,78 / 6,81	
Rated frequency [Hz]:	50		50	50		50	
Rated speed [rpm]:	928		944	1441		1431	
Power factor:	0,70		0,63	0,75		0,76	
Connection:	delta / star		delta / star	delta / star		delta / star	
Insulation class:	F		F	F		F	
Duty:	S1		S1	S1		S1	
Ambient temperature [°C]:	-20 ÷ +45	-20 ÷ +60	-20 ÷ +45	-20 ÷ +40	-20 ÷ +45	-20 ÷ +40	-20 ÷ +60
Class of temperature:	T5	T4	T5	T6	T5	T5	T4
Max. surface temp. T [°C]:	100	125	100	85	100	100	125

The motors series MAK 80, MAK 90, MAK 100, MAK 112 and MAK 132 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 600 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

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EXTENSION n. 03/07

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics *(follows)*

New maximum working voltage for the three-phase asynchronous motors series MAK 56 ÷ 160

The motors with temperature class T4 (T 125 °C) and/or T3 (T 155 °C) can be supplied with maximum working voltage of 1000 V.

Constructional characteristics

Motor type "MAK 90 L – 6" with temperature class T5 / T 100 °C:

- new stator winding of length 120 mm

Unchanged the other constructional characteristics of the motors series MAK 56 ÷ 160.

Warning label

Motors marked for Tamb > 40 °C
"The supply cable must be suitable for an operating temperature ≥ 90 °C"

Report n. EX-A7029760

Descriptive documents (prot. EX-A7029787)

- Document n. NDT MAK 56-160-GENST2-IIB (3 pg.)	dated	09.10.2007
- Document n. D-T-MAK 80÷112 IIB e IIC (2 pg.)	dated	28.02.2007
- Document n. 10100B-B-AP Rev. 7	dated	09.10.2007
- Document n. 10100B-C-AP Rev. 7	dated	09.10.2007
- Document n. 10100B-E-AP Rev. 7	dated	09.10.2007
- Document n. 10100B-F-AP Rev. 7	dated	09.10.2007

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EXTENSION n. 04/08

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of electrical and constructional characteristics.

- New temperature class for the motors of category 2 G.
- New maximum surface temperature for the motors of category 2 D.
- New maximum gaps for the flameproof non-threaded joints of the three-phase asynchronous motors series MAK 56 ÷ 160.
- New stator winding length for the three-phase asynchronous motors type MAK 132 Sa - 2, MAK 132 S – 4, MAK132 M - 4.

Marking

The three-phase asynchronous motors type MAK 100 Lw - 8, MAK 100 Lx - 8, MAK 112 M - 4, MAK 112 M - 6, MAK 112 M - 8, MAK 132 Sa - 2, MAK 132 M – 2, MAK 132 S – 4, MAK 132 M – 4, MAK 132 Mb - 4 supplied by mains and with the electrical characteristics as follows described, shall include the following:

⟨Ex⟩	*II 2 G*	*Ex d IIB T6, T5, T4*
⟨Ex⟩	*II 2 GD*	*Ex d IIB T6, T5, T4 Ex tD A21 IP 66 T 85, T 100, T 125 °C*
⟨Ex⟩	*II 2 D*	*Ex tD A21 IP 66 T 85, T 100, T 125 °C*

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date 14 May 2008 - translation issued the 14th May 2008

prepared PRO – Bruno Pavanati

verified PRO – Mirko Balaz

approved CER – Fiorenzo Bregani

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EXTENSION n. 04/08

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics

Motors series MAK 100 and MAK 112

Motor type:	**MAK 100 Lw - 8**	**MAK 100 Lx - 8**		**MAK 112 M - 4**		**MAK 112 M - 6**
Number of poles:	8	8		4		6
Rated power [kW]:	0,75	1,1		4		2,2
Rated voltage [V ± 5%]:	230 / 400	230 / 400		230 / 400		230 / 400
Rated current [A]:	4,5 / 2,6	6,02 / 3,48		14,57 / 8,42		9,07 / 5,24
Rated frequency [Hz]:	50	50		50		50
Rated speed [rpm]:	707	703		1434		957
Power factor:	0,588	0,613		0,806		0,757
Connection:	delta / star	delta / star		delta / star		delta / star
Insulation class:	F	F		F		F
Duty:	S1	S1		S1		S1
Ambient temperature [°C]:	-20 ÷ +50	-20 ÷ +50	-20 ÷ +60	-20 ÷ +45	-20 ÷ +60	-20 ÷ +50
Class of temperature:	T5	T5	T4	T5	T4	T5
Max. surface temp. T [°C]:	100	100	125	100	125	100

Motors series MAK 112 and MAK 132

Motor type:	**MAK 112 M - 8**		**MAK 132 Sa - 2[1]**		**MAK 132 Sa – 2[2]**		**MAK 132 M - 2**	
Number of poles:	8		2		2		2	
Rated power [kW]:	1,5		5,5		5,5		9,2	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400		400 / 690	
Rated current [A]:	7,61 / 4,4		18,30 / 10,58		18,44 / 10,66		16,61 / 9,59	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	707		2887		2916		2928	
Power factor:	0,673		0,87		0,854		0,882	
Connection:	delta / star		delta / star		delta / star		delta / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60	-20 ÷ +45	-20 ÷ +60
Class of temperature:	T5	T4	T5	T4	T6	T5	T6	T5
Max. surface temp. T [°C]:	100	125	100	125	85	100	85	100

[1] Stator winding length = 90 mm
[2] Stator winding length = 110 mm

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EXTENSION n. 04/08

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics *(follows)*

Motors series MAK 132

Motor type:	**MAK 132 M - 2**		**MAK 132 S - 4**		**MAK 132 M – 4**		**MAK 132 Mb - 4**	
Number of poles:	2		4		4		4	
Rated power [kW]:	11		5,5		7,5		8,8	
Rated voltage [V ± 5%]:	400 / 690		230 / 400		230 / 400		230 / 400	
Rated current [A]:	20,11 / 11,6		19,29 / 11,15		25,15 / 14,54		30,88 / 17,85	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	2903		1431		1444		1451	
Power factor:	0,895		0,825		0,843		0,807	
Connection:	delta / star		delta / star		delta / star		delta / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +45	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60
Class of temperature:	T5	T4	T5	T4	T5	T4	T5	T4
Max. surface temp. T [°C]:	100	125	100	125	100	125	100	125

The motors series MAK 80, MAK 90, MAK 100, MAK 112 and MAK 132 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 600 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

Constructional characteristics

Motors series MAK 56 ÷ 160

New maximum gaps for the flameproof non-threaded joints as reported in the descriptive documents annexed to this extension.

Unchanged the other constructional characteristics.

Motors series MAK 132

new stator winding length for the following type of motors with temperature class T5 / T 100 °C; T4 / T 125 °C:
- MAK 132 Sa - 2 = 90 mm
- MAK 132 S - 4 = 125 mm
- MAK 132 M - 4 = 170 mm

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EXTENSION n. 04/08

to EC-Type Examination Certificate CESI 06 ATEX 059

Warning label

Motors marked for Tamb > 40 °C
"The supply cable must be suitable for an operating temperature ≥ 90 °C"

Report n. EX-A8019204

Descriptive documents (prot. EX-A8019396)

- Document n. NDT MAK 56-160-GENST3-IIB (5 pg.)	dated	03.05.2008
- Document n. 10098B-AP-MA Rev. 6	dated	28.09.2006
- Document n. 10099B-AP-MA Rev. 6	dated	28.09.2006
- Document n. 10100B-AP-MA Rev. 3	dated	28.09.2006
- Document n. 10098B-A-AP-MA Rev. 8	dated	05.03.2008
- Document n. 10098B-IP-AP-MA Rev. 4	dated	05.03.2008
- Document n. 10099B-A-AP-MA Rev. 9	dated	05.03.2008
- Document n. 10099B-B-AP-MA Rev. 9	dated	05.03.2008
- Document n. 10099B-IP-AP-MA Rev. 4	dated	03.05.2008
- Document n. 10100B-A-AP-MA Rev. 10	dated	05.03.2008
- Document n. 10100B-B-AP-MA Rev. 11	dated	05.03.2008
- Document n. 10100B-C-AP-MA Rev. 11	dated	05.03.2008
- Document n. 10100B-D-AP-MA Rev. 10	dated	05.03.2008
- Document n. 10100B-E-AP-MA Rev. 11	dated	05.03.2008
- Document n. 10100B-F-AP-MA Rev. 9	dated	05.03.2008
- Document n. 10100B-IP-AP-MA Rev. 4	dated	05.03.2008
- Document n. 10041B-AP Rev. 5	dated	05.03.2008
- Document n. 10098B-ACC-AP Rev. 3	dated	05.03.2008
- Document n. 10098B-IP-AP Rev. 3	dated	05.03.2008
- Document n. 10099B-A-AP Rev. 6	dated	05.03.2008
- Document n. 10099B-B-AP Rev. 6	dated	05.03.2008
- Document n. 10099B-IP-AP Rev. 3	dated	05.03.2008
- Document n. 10099B-ACC-AP Rev. 3	dated	05.03.2008
- Document n. 10042B-AP Rev. 5	dated	05.03.2008
- Document n. 10099B-P-AP Rev. 4	dated	05.03.2008
- Document n. 10100B-A-AP Rev. 7	dated	05.03.2008
- Document n. 10100B-B-AP Rev. 8	dated	05.03.2008
- Document n. 10100B-C-AP Rev. 8	dated	05.03.2008
- Document n. 10025B-AP Rev. 4	dated	05.03.2008
- Document n. 10100B-D-AP Rev. 7	dated	05.03.2008
- Document n. 10100B-E-AP Rev. 8	dated	05.03.2008
- Document n. 10026B-AP Rev. 4	dated	05.03.2008
- Document n. 10100B-F-AP Rev. 8	dated	05.03.2008
- Document n. 10027B-AP Rev. 4	dated	05.03.2008
- Document n. 10100B-IP-AP Rev. 3	dated	05.03.2008
- Document n. 10100B-P-AP Rev. 4	dated	05.03.2008
- Document n. 10100B-ACC-AP Rev. 2	dated	05.03.2008
- Document n. 10098B-AP-BU	dated	05.03.2008

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EXTENSION n. 05/09

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of electrical and constructional characteristics.
- New temperature class for the three-phase asynchronous motors of category 2 G.
- New maximum surface temperature for the three-phase asynchronous motors of category 2 D.
- New stator winding length for the three-phase asynchronous motors type MAK 100 Lx - 6, MAK 132 Sb - 2, MAK 160 L - 2, MAK 160 Ma - 2, MAK 160 Mb - 2, MAK 160 L - 4, MAK 160 M - 6, MAK 160 L – 6.

Marking
The three-phase asynchronous motors type MAK 71 a - 6, MAK 71 b - 6, MAK 100 Lx - 6, MAK 132 Sb - 2, MAK 132 Ma - 6, MAK 160 Ma - 2, MAK 160 Mb - 2, MAK 160 L - 2, MAK 160 M - 4, MAK 160 L - 4, MAK 160 M - 6, MAK 160 L - 6, supplied by mains and with the electrical characteristics as follows described, shall include the following:

⟨Ex⟩	*II 2 G*	*Ex d IIB T5, T4*
⟨Ex⟩	*II 2 GD*	*Ex d IIB T5, T4 Ex tD A21 IP 66 T 100, T 125 °C*
⟨Ex⟩	*II 2 D*	*Ex tD A21 IP 66 T 100, T 125 °C*

The three-phase asynchronous motors type MAK 132 S – 6, supplied by mains and with the electrical characteristics as follows described, shall include the following:

⟨Ex⟩	*II 2 G*	*Ex d IIB T6, T5*
⟨Ex⟩	*II 2 GD*	*Ex d IIB T6, T5 Ex tD A21 IP 66 T 85, T 100 °C*
⟨Ex⟩	*II 2 D*	*Ex tD A21 IP 66 T 85, T 100 °C*

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date 10 February 2009 - translation issued the 10th February 2009

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EXTENSION n. 05/09

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics

Motors series MAK 71 and MAK 100

Motor type:	**MAK 71 a - 6**		**MAK 71 b - 6**		**MAK 100 Lx – 6**	
Number of poles:	6		6		6	
Rated power [kW]:	0,18		0,25		1,5	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400	
Rated current [A]:	1,15 / 0,67		1,6 / 0,93		6,81 / 3,94	
Rated frequency [Hz]:	50		50		50	
Rated speed [rpm]:	881		905		944	
Power factor:	0,704		0,661		0,714	
Connection:	delta / star		delta / star		delta / star	
Insulation class:	F		F		F	
Duty:	S1		S1		S1	
Stator winding length [mm]:	50		70		125	
Ambient temperature [°C]:	-20 ÷ +50	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60	-20 ÷ +40	-20 ÷ +60
Class of temperature:	T5	T4	T5	T4	T5	T4
Max. surface temp. T [°C]:	100	125	100	125	100	125

Motors series MAK 132 and MAK 160

Motor type:	**MAK 132 Sb - 2**		**MAK 132 S - 6**		**MAK 132 Ma - 6**		**MAK 160 Ma - 2**	
Number of poles:	2		6		6		2	
Rated power [kW]:	7,5		3		4		11	
Rated voltage [V ± 5%]:	400 / 690		230 / 400		230 / 400		400 / 690	
Rated current [A]:	14,19 / 8,2		12,68 / 7,33		16,97 / 9,81		20,96 / 12,11	
Rated frequency [Hz]:	50		50		50		50	
Rated speed [rpm]:	2900		969		967		2931	
Power factor:	0,87		0,706		0,714		0,89	
Connection:	delta / star		delta / star		delta / star		delta / star	
Insulation class:	F		F		F		F	
Duty:	S1		S1		S1		S1	
Stator winding length [mm]:	125		110		150		130	
Ambient temperature [°C]:	-20 ÷ +45	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55	-20 ÷ +50	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60
Class of temperature:	T5	T4	T6	T5	T5	T4	T5	T4
Max. surface temp. T [°C]:	100	125	85	100	100	125	100	125

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EXTENSION n. 05/09

to EC-Type Examination Certificate CESI 06 ATEX 059

Electrical characteristics *(follows)*

Motors series MAK 160

Motor type:	**MAK 160 Mb - 2**		**MAK 160 L - 2**		**MAK 160 M - 4**	
Number of poles:	2		2		4	
Rated power [kW]:	15		18,5		11	
Rated voltage [V ± 5%]:	400 / 690		400 / 690		400 / 690	
Rated current [A]:	27,52 / 15,9		32,83 / 18,97		22,84 / 13,2	
Rated frequency [Hz]:	50		50		50	
Rated speed [rpm]:	2937		2946		1462	
Power factor:	0,898		0,901		0,799	
Connection:	delta / star		delta / star		delta / star	
Insulation class:	F		F		F	
Duty:	S1		S1		S1	
Stator winding length [mm]:	180		215		160	
Ambient temperature [°C]:	-20 ÷ +50	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60	-20 ÷ +45	-20 ÷ +60
Class of temperature:	T5	T4	T5	T4	T5	T4
Max. surface temp. T [°C]:	100	125	100	125	100	125

Motors series MAK 160

Motor type:	**MAK 160 L - 4**		**MAK 160 M - 6**	**MAK 160 L - 6**	
Number of poles:	4		6	6	
Rated power [kW]:	15		7,5	11	
Rated voltage [V ± 5%]:	400 / 690		400 / 690	400 / 690	
Rated current [A]:	31,04 / 17,94		16,4 / 9,47	22,93 / 13,25	
Rated frequency [Hz]:	50		50	50	
Rated speed [rpm]:	1464		964	969	
Power factor:	0,789		0,78	0,787	
Connection:	delta / star		delta / star	delta / star	
Insulation class:	F		F	F	
Duty:	S1		S1	S1	
Stator winding length [mm]:	215		165	225	
Ambient temperature [°C]:	-20 ÷ +45	-20 ÷ +60	-20 ÷ +50	-20 ÷ +45	-20 ÷ +60
Class of temperature:	T5	T4	T5	T5	T4
Max. surface temp. T [°C]:	100	125	100	100	125

The motors series MAK 71, MAK 100, MAK 132 and MAK 160 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 600 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

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EXTENSION n. 05/09

to EC-Type Examination Certificate CESI 06 ATEX 059

Constructional characteristics

Motors series MAK 56 ÷ 160

New stator winding length for the following type of motors with temperature class T5 / T 100 °C; T4 / T 125 °C:

- MAK 100 Lx - 6 = 125 mm
- MAK 132 Sb - 2 = 125 mm
- MAK 160 Ma – 2 = 130 mm
- MAK 160 Mb – 2 = 180 mm
- MAK 160 L – 2 = 215 mm
- MAK 160 L – 4 = 215 mm
- MAK 160 M – 6 = 165 mm
- MAK 160 L – 6 = 225 mm

Unchanged the other constructional characteristics.

Warning label

Motors marked for Tamb > 40 °C
"The supply cable must be suitable for an operating temperature ≥ 90 °C"

Report n. EX-A9003881

Descriptive documents (prot. EX-A9003890)

- Document n. NDT MAK 56-160-GENST4-IIB (4 pg.)	dated	29.07.2008
- Document n. 10100B-C-AP-MA Rev. 12	dated	29.07.2008
- Document n. 10100B-E-AP-MA Rev. 12	dated	29.07.2008
- Document n. 10100B-F-AP-MA Rev. 10	dated	29.07.2008
- Document n. 10100B-C-AP Rev. 9	dated	29.07.2008
- Document n. 10100B-E-AP Rev. 9	dated	29.07.2008
- Document n. 10100B-F-AP Rev. 9	dated	29.07.2008

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EXTENSION n. 06/10

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20050 Macherio (MI) - Italy

Admitted variation: modification of electrical and constructional characteristics.

1) Modification of electrical characteristics
- new temperature class for the three-phase asynchronous motors of category 2 G.
- new maximum surface temperature for the three-phase asynchronous motors of category 2 D.
- new ambient temperature range for the three-phase and mono-phase asynchronous motors.

2) Modification of constructional characteristics
- new lengths and new achievements of the stator packets
- new lengths for the frames of the motors series MAK 160

Marking
The asynchronous motors series MAK 56 ÷ 160 shall include the following:

II 2 G *Ex d IIB T6, T5, T4, T3*

II 2 GD *Ex d IIB T6, T5, T4, T3* *Ex tD A21 IP 66* *T 85, T 100, T 125, T 155 °C*

II 2 D *Ex tD A21 IP 66* *T 85, T100, T125, T 155 °C*

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059.

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date 27 May 2010 - translation issued the 27th May 2010

prepared PRO – Bruno Pavanati

verified PRO – Mirko Balaz

approved CER – Fiorenzo Bregani

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EXTENSION n. 06/10

to EC-Type Examination Certificate CESI 06 ATEX 059

1) Electrical characteristics

1.1) New temperature class and new maximum surface temperature for the following type of self-cooled three-phase asynchronous motors supplied by mains.

Motors series MAK 63, MAK 71 and MAK 90

Motor type:	**MAK 63 B - 6**		**MAK 71 B – 4 ***		**MAK 90 S – 8**	
Number of poles:	6		4		8	
Rated power [kW]:	0,12		0,37		0,37	
Rated voltage [V ± 5%]:	230 / 400		230 / 400		230 / 400	
Rated current [A]:	1,19 / 0,69		1,73 / 1		2,98 / 1,72	
Rated frequency [Hz]:	50		50		50	
Rated speed [rpm]:	862		1410		944	
Power factor:	0,579		0,736		0,518	
Connection:	delta / star		delta / star		delta / star	
Insulation class:	F		F		F	
Duty:	S1		S1		S1	
Stator winding length [mm]:	70		70		80	
Ambient temperature [°C]:	-20 ÷ +40	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60	-20 ÷ +45	-20 ÷ +60
Class of temperature:	T5	T4	T6	T5	T5	T4
Max. surface temp. T [°C]:	100	125	85	100	100	125

* = wire diameter of the stator winding of 0,45 mm

Motors series MAK 132

Motor type:	**MAK 132 SA – 2#**		**MAK 132 SB - 2#**		**MAK 132 S – 4#**		
Number of poles:	2		2		4		
Rated power [kW]:	5,5		7,5		5,5		
Rated voltage [V ± 5%]:	400 / 690		400 / 690		400 / 690		
Rated current [A]:	11,1 / 6,42		14,15 / 18		11,64 / 6,73		
Rated frequency [Hz]:	50		50		50		
Rated speed [rpm]:	2921		2927		1454		
Power factor:	0,827		0,858		0,778		
Connection:	delta / star		delta / star		delta / star		
Insulation class:	F		F		F		
Duty:	S1		S1		S1		
Stator winding length [mm]:	90		125		125		
Ambient temperature [°C]:	-20 ÷ +45	-20 ÷ +60	-20 ÷ +50	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55	-20 ÷ +60
Class of temperature:	T6	T5	T5	T4	T6	T5	T4
Max. surface temp. T [°C]:	85	100	100	125	85	100	125

= new magnetic steel sheet used to make the stator packet

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EXTENSION n. 06/10

to EC-Type Examination Certificate CESI 06 ATEX 059

1) Electrical characteristics *(follows)*

Motors series MAK 132

Motor type:	**MAK 132 MB - 4**		**MAK 132 MB – 6**	**MAK 132 S – 8**	
Number of poles:	4		6	8	
Rated power [kW]:	8,8		5,5	2,2	
Rated voltage [V ± 5%]:	400 / 690		400 / 690	230 / 400	
Rated current [A]:	18,05 / 10,43		12,31 / 7,12	10,12 / 5,85	
Rated frequency [Hz]:	50		50	50	
Rated speed [rpm]:	1451		966	720	
Power factor:	0,795		0,751	0,683	
Connection:	delta / star		delta / star	delta / star	
Insulation class:	F		F	F	
Duty:	S1		S1	S1	
Stator winding length [mm]:	190		200	120	
Ambient temperature [°C]:	-20 ÷ +45	-20 ÷ +60	-20 ÷ +45	-20 ÷ +40	-20 ÷ +55
Class of temperature:	T5	T4	T5	T6	T5
Max. surface temp. T [°C]:	100	125	100	85	100

Motors series MAK 132 and MAK 160

Motor type:	**MAK 132 M - 8**	**MAK 160 MA - 8**		**MAK 160 MB – 8**		**MAK 160 L – 8**	
Number of poles:	8	8		8		8	
Rated power [kW]:	3	4		5,5		7,5	
Rated voltage [V ± 5%]:	230 / 400	400 / 690		400 / 690		400 / 690	
Rated current [A]:	13,89 / 8,03	10,23 / 5,91		13,25 / 7,66		17,92 / 10,36	
Rated frequency [Hz]:	50	50		50		50	
Rated speed [rpm]:	720	727		726		729	
Power factor:	0,666	0.663		0,689		0,687	
Connection:	delta / star	delta / star		delta / star		delta / star	
Insulation class:	F	F		F		F	
Duty:	S1	S1		S1		S1	
Stator winding length [mm]:	160	130		165		225	
Ambient temperature [°C]:	-20 ÷ +50	-20 ÷ +50	-20 ÷ +60	-20 ÷ +40	-20 ÷ +55	-20 ÷ +40	-20 ÷ +55
Class of temperature:	T5	T6	T5	T6	T5	T6	T5
Max. surface temp. T [°C]:	100	85	100	85	100	85	100

The motors series MAK 63, MAK 71, MAK 90, MAK 132 and MAK 160 above mentioned, can be manufactured, for the same rated power, with windings having different rated voltage (up to 690 V ± 5%) and/or with rated frequency of 60 Hz; all the other electrical characteristics are determined consequently.

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EXTENSION n. 06/10

to EC-Type Examination Certificate CESI 06 ATEX 059

1) Electrical characteristics *(follows)*

1.2) New ambient temperature range: -20 ÷ +80 °C.

The three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 with temperature class T3 and maximum surface temperature T 155 °C, as a function of de-rating table shown in the documents annexed to this extension, can operate with maximum ambient temperature of +80 °C.

1.3) Unchanged the other electrical characteristics of the motors series MAK 56 ÷ 160.

2) Constructional characteristics

2.1) New stator winding length for the following type of motors:

- MAK 63 B - 6	= 70 mm	temperature class T5 / T 100 °C; T4 / T 125 °C
- MAK 132 MB - 4	= 190 mm	temperature class T5 / T 100 °C; T4 / T 125 °C
- MAK 132 MB - 6	= 200 mm	temperature class T5 / T 100 °C
- MAK 160 MA - 8	= 130 mm	temperature class T6 / T 85 °C; T5 / T 100 °C
- MAK 160 MB - 8	= 165 mm	temperature class T6 / T 85 °C; T5 / T 100 °C
- MAK 160 L - 8	= 225 mm	temperature class T6 / T 85 °C; T5 / T 100 °C

2.2) New section of the wire stator winding, diameter from 0.425 mm to 0,45 mm, for the motor type MAK 71 B - 4 with temperature class T6 / T 85 °C; T5 / T 100 °C.

2.3) New quality of magnetic steel sheet used to make stator packets of the following types of motor:

- MAK 132 SA - 2	temperature class T6 / T 85 °C; T5 / T 100 °C
- MAK 132 SB – 2	temperature class T5 / T 100 °C; T4 / T 125 °C
- MAK 132 S – 4	temperature class T6 / T 85 °C; T5 / T 100 °C; T4 / T 125 °C

2.4) New lengths for the frames of the motors series MAK 160 as shown in the descriptive documents annexed to this extension.

2.5) Unchanged the other constructional characteristics of the motors series MAK 56 ÷ 160.

Warning label

Motors marked for Tamb > 40 °C
"The supply cable must be suitable for an operating temperature ≥ 90 °C"

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EXTENSION n. 06/10

to EC-Type Examination Certificate CESI 06 ATEX 059

Report n. EX-B0015035

Descriptive documents (prot. EX-B0015040)

- Document n. NDT MAK 56-160 B-EXT1-IIB (4 pg.)	dated	07.05.2010
- Document n. 10099B-A-AP Rev. 7	dated	07.02.2009
- Document n. 10099B-A-AP-MA Rev. 10	dated	07.02.2009
- Document n. 10100B-E-AP Rev. 10	dated	07.02.2009
- Document n. 10100B-E-AP-MA Rev. 13	dated	07.02.2009
- Document n. 10100B-F-AP Rev. 11	dated	27.02.2009
- Document n. 10100B-F-AP-MA Rev. 12	dated	27.02.2009
- Safety instructions MAK 56 – 160 IIB/IIC (6 pg.)	dated	12.2009

One copy of all documents is kept in CESI files.

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EXTENSION n. 07/11

to EC-Type Examination Certificate CESI 06 ATEX 059

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20846 Macherio (MB) - Italy

Admitted variation:
- update to EN 60079-0: 2009 and EN 60079-1: 2007 standards

Update to EN 60079-0: 2009 and EN 60079-1: 2007 standards

The three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 of category 2 G have been reviewed on the basis of the EN 60079-0: 2009 and EN 60079-1: 2007 standards.

The three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 of category 2 GD and 2D are not subject of this extension.

Marking

The three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 of category 2 G shall include the following:

II 2 G Ex d IIB T6, T5, T4, T3 Gb

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059.

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date 22 December 2011 - translation issued the 22nd December 2011

prepared PRO – Bruno Pavanati

verified PRO – Mirko Balaz

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EXTENSION n. 07/11

to EC-Type Examination Certificate CESI 06 ATEX 059

Description of equipment

The three-phase asynchronous motors series MAK 56 ÷ 160 have unchanged characteristics compared to those indicated in the certificate CESI 06 ATEX 059 and subsequent extensions.

The mono-phase asynchronous motors series MAK 56 ÷ 160, beginning from this extension, are made with capacitor external to the motor. The external capacitor, which is not matter of the present extension, shall be placed in safety area or, alternatively, shall be made according to one of the type of protection listed in the EN 60079-0.

Electrical characteristics

Unchanged.

Report n. EX-B1039677

Routine tests

Unchanged.

Descriptive documents (prot. EX-B1039686)

- Document n. NDT MAK 56-160 IIB/IIC-Gb (2 pg.)	dated	19.12.2011
- Document n. D-T-MAK 56÷160 IIB Gb (2 pg.)	dated	19.12.2011
- Declaration of conformity	dated	19.12.2011
- Safety instructions MAK 56 – 160 (6 pg.)	dated	12.2011

One copy of all documents is kept in CESI files.

Special conditions for safe use (X)

With the updating to the new standards the following special condition for safe use is added; moreover the X suffix is added to the certificate number, and beginning from this extension it becomes ***CESI 06 ATEX 059X****.*

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

Essential Health and Safety Requirements

Covered by the following standards:

- EN 60079-0: 2009 – General requirements
- EN 60079-1: 2007 – Flameproof enclosures "d"

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CESI

EXTENSION n. 08/12

to EC-Type Examination Certificate CESI 06 ATEX 059X

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

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20846 Macherio (MB) - Italy

Admitted variation
Constructional modification and new type of protection

New type of protection
The three-phase and mono-phase asynchronous motors series MAK 63 ÷ 160 can be also made with "Ex e" terminal box according to the EN 60079-7. 2007 standard.
The motors object of this constructional variation are identified by the letter **"e"** after the code of the motors series: **"MAKe"**

The three-phase and mono-phase asynchronous motors series MAKe 63 ÷ 160 shall include the following:

II 2 G **Ex d e IIB T6, T5, T4, T3 Gb**

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059X.

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Date 26 November 2012 - Translation issued the 26th November 2012

Prepared	**Verified**	**Approved**
Bruno Pavanati	Mirko Balaz	Fiorenzo Bregani

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EXTENSION n. 08/12

to EC-Type Examination Certificate CESI 06 ATEX 059X

Constructional characteristics

The three-phase and mono-phase asynchronous motors series MAK 63 ÷ 160 are made with terminal compartment "Ex e" separated of the motor enclosure "Ex d".
For the constructional details of the motors series MAK 63 ÷ 160 refer to the descriptive documents annexed.

Electrical characteristics

Mains supply (temperature classes T6, T5, T4 and T3)

Motors Series **MAKe**	**63 e 71**	**80, 90, 100, 112 e 132**	**160**
- Maximum rated voltage [V]:	400	630	800

Frequency converter supply (temperature class T3)

Motors Series **MAKe**	**63 e 71**	**80, 90, 100, 112 e 132**	**160**
- Maximum rated voltage [V]:	320	500	630

- Ambient temperature: -20 ÷ +75 °C
- Insulation class: F (Δt B) with temperature class T6, T5 e T4
  F (Δt F) with temperature class T3
  F (Δt B) with temperature class T3 and auxiliary terminals
- Degree of protection: IP 55 (EN 60035-5 and EN 60529)
- Maximum conductor cross-section: 2,5 mm^2 for terminal board M4 (motors size 63 and 71)
  6 mm^2 for terminal board M5 (motors size 80, 90, 100, 112 and 132)
  16 mm^2 for terminal board M6 (motors size 160)
- Other electrical characteristics: unchanged

Cable entries
The accessories used for cable entries and for the closing of the unused holes shall be subject of separate certification according to EN 60079-0 and EN 60079-7 standards and and guarantee a minimum degree of protection IP 55.

Report n. EX-B2036900

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.
The routine overpressure test on the motor enclosures type MAKe 63, MAKe 71, MAKe 80, MAKe 90, MAKe 100, MAKe 112, MAKe 132 and MAKe 160, shall be carried, with the static method according to the paragraph 15.1.3.1 of the EN 60079-1 standard, at the following pressure values:

- 1500 kPa on the motor enclosure size 63 and 71
- 1800 kPa on the motor enclosure size 80 and 90
- 1650 kPa on the motor enclosure size 100
- 1350 kPa on the motor enclosure size 112
- 3250 kPa on the motor enclosure size 132
- 2800 kPa on the motor enclosure size 160

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 .

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EXTENSION n. 08/12

to EC-Type Examination Certificate CESI 06 ATEX 059X

Descriptive documents (prot. EX-B2036918)

- Document n. NDT MAKe 63-160 IIB – Ex de Gb (4 pg.)	dated	20.05.2012
- Safety instructions MAKe 63-160 (16 pg.)	dated	01.2012
- Document n. D-T-MAKe 63-160 IIB	dated	25.05.2012
- Declaration of conformity IIB	dated	25.05.2012
- Document n. PMK-911C (6 pg.)	dated	25.05.2012
- Document n. E-DSC-120906	dated	06.09.2012
- Document n. E-10232 Rev. 6	dated	21.05.2012
- Document n. E-10229E Rev. 7	dated	31.05.2012
- Document n. E-10229 Rev. 7	dated	31.05.2012
- Document n. E-10100-M4 Rev. 7 (2 pg.)	dated	31.05.2012
- Document n. E-10232-AUX Rev. 3	dated	31.05.2012
- Document n. E-10239 Rev. 2	dated	21.05.2012
- Document n. E-10208 Rev. 7	dated	21.05.2012
- Document n. E-10208-IMB	dated	23.05.2011
- Document n. E-10223 Rev. 2	dated	21.05.2012
- Document n. E-10238 Rev. 1	dated	21.05.2012
- Document n. E-25PM-PROE-M4 Rev. 1	dated	24.04.2012
- Document n. E-10233 Rev.6	dated	04.07.2012
- Document n. E-10234 Rev.7	dated	04.07.2012
- Document n. E-10230E Rev.7	dated	17.07.2012
- Document n. E-10230 Rev.8	dated	17.07.2012
- Document n. E-10100-M5 Rev.6 (2 pg.)	dated	30.06.2012
- Document n. E-10233-AUCA Rev.3	dated	20.06.2012
- Document n. E-10234-AU Rev.3	dated	20.06.2012
- Document n. E-10157E Rev.2	dated	20.06.2012
- Document n. E-10159 Rev.2	dated	20.06.2012
- Document n. E-10201 Rev.4	dated	23.05.2012
- Document n. E-10200 Rev.7	dated	03.07.2012
- Document n. E-10201-IMB Rev.1	dated	24.04.2012
- Document n. E-10200-IMB Rev.2	dated	20.06.2012
- Document n. E-10224	dated	24.05.2011
- Document n. E-10239 Rev.1	dated	25.05.2012
- Document n. E-25PM-PROE-M5 Rev.1	dated	24.04.2012
- Document n. E-33PM-PROE Rev.2	dated	20.06.2012
- Document n. E-10235 Rev.9	dated	06.09.2012
- Document n. E-10027C-CH-160-2PM Rev.2	dated	06.09.2012
- Document n. E-10231E Rev.6	dated	06.09.2012
- Document n. E-10231 Rev.7	dated	06.09.2012
- Document n. E-10100-M6 Rev.5 (2 pg.)	dated	14.06.2012
- Document n. E-10235-AU Rev.3	dated	23.07.2012
- Document n. E-10157 Rev.2	dated	02.08.2012
- Document n. E-10504 Rev.5	dated	06.09.2012
- Document n. E-10504-IMB	dated	23.05.2011
- Document n. E-10527	dated	24.05.2011
- Document n. E-10240	dated	24.05.2011
- Document n. E-35PM-PROEM6 Rev. 3	dated	06.09.2012
- Document n. 18PM-PRO	dated	11.02.2006

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EXTENSION n. 08/12

to EC-Type Examination Certificate CESI 06 ATEX 059X

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.

- The external capacitor (for single-phase motors), which is not matter of the present extension, shall be placed in safety area or, alternatively, shall be made according to one of the type of protection listed in the EN 60079-0 standard suitable for the installation in hazardous area.

- When provided on the plate and in order to ensure the temperature class assigned to the motors, the latter shall operate in a range of variation of voltage "$U_n \pm 5\%$" (within "zone A" of the EN 60034-1 standard).

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. 09/14

to EC-Type Examination Certificate CESI 06 ATEX 059X

Equipment: Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20846 Macherio (MB) - Italy

Admitted variation
1) new ambient temperature ranges
2) constructional modifications
3) updating routine tests

1) New ambient temperature ranges
Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 with type of protection Ex d IIB: motor enclosure in communication with terminal box.
Three-phase and mono-phase asynchronous motors series MAKe 63 ÷ 160 with type of protection Ex d e IIB: motor enclosure Ex d separated from terminal box Ex e.
The motors above are manufactured by materials, components and accessory suitable to be used at ambient temperature ranges of -55 ÷ +80 °C and -40 ÷ +75 °C respectively.

Electrical characteristics

- Ambient temperature range:	-55 ÷ +80 °C (motor series MAK; type of protection Ex d) -40 ÷ +75 °C (motor series MAKe; type of protection Ex de)
- Limit other electrical characteristics:	unchanged

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059X.

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Date 17 April 2014 - Translation issued the 17th April 2014

Prepared	**Verified**	**Approved**
Bruno Pavanati	Mirko Balaz	Fiorenzo Bregani

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EXTENSION n. 09/14

to EC-Type Examination Certificate CESI 06 ATEX 059X

2) Constructional modifications

- New oversized terminal box for motors series MAK 56.

- New special shields reinforced for motors series MAKe 160.

- Uchanged the others constructional characteristics of the three-phase and mono-phase asynchronous motors series MAK 56 ÷ 16 and MAKe 63 ÷ 160.

Warning label

For ambient temperature -20 ÷ +40 °C (+80 °C)
"Use screws quality 8.8 UNI EN ISO 898-1"

For ambient temperature -40 ÷ +40 °C (+75 °C)
"Use screws quality A4-80 UNI EN ISO 3506-1"

For ambient temperature -55 ÷ +40 °C (+80 °C)
"Use screws quality A4-80 UNI EN ISO 3506-1"

- Uchanged the other warnings.

Report n. EX-B4010256

3) Routine tests

Motor enclosures series "MAK" type of protection Ex d; motor enclosure in communication with terminal box

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 series	Routine test pressures [kPa]	
	Tamb -20 °C	Tamb -55 °C
MAK 56	*	1800
MAK 63	1500	1750
MAK 71	1500	1750
MAK 80	*	1650
MAK 90	*	1650
MAK 100	1500	2150
MAK 112	1700	2100
MAK 132	1700	2100
MAK 160	1250	1650

* The manufacturer is exempted from the overpressure test on the motor enclosure series MAK 56, MAK 80 and MAK 90, since these enclosures have been submitted, with positive result, to an overpressure test at a pressure corresponding to 4 times the reference pressure and respectively:

- 3600 kPa on motor enclosure series MAK 56
- 3200 kPa on motor enclosures series MAK 80 and MAK 90

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EXTENSION n. 09/14

to EC-Type Examination Certificate CESI 06 ATEX 059X

3) Routine tests *(follows)*

Motor enclosures series "MAKe" type of protection Ex d e; motor enclosure Ex d separated from terminal box Ex e

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 series	Routine test pressures [kPa]	
	Tamb -20 °C	Tamb -40 °C
MAKe 63	1500	1750
MAKe 71	1500	1750
MAKe 80	*	1650
MAKe 90	*	1650
MAKe 100	1500	2150
MAKe 112	1700	2100
MAKe 132	1700	2100
MAKe 160	1400	2000
MAKe 160 with special shields	*	2000

* The manufacturer is exempted from the overpressure test on the motor enclosure series MAKe 80, MAK 90 and MAKe 160 with special shields reinforced, since these enclosures have been submitted, with positive result, to an overpressure test at a pressure corresponding to 4 times the reference pressure and respectively:

- 3200 kPa on motor enclosures series MAKe 80 and MAKe 90
- 3650 kPa on motor enclosure series MAKe 160 with special shields reinforced

Terminal boxes for motors series "MAKe" type of protection Ex e
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-B4010264)

- Document n. NDT MAK 56-160 IIB -55°C (6 pg.)	dated	19.03.2014
- Document n. 10143-N	dated	27.02.2009
- Document n. D-T-MAK 56-160 IIB GAS BT (2 pg.)	dated	20.03.2014
- Document n. E-10100B-D-AP Rev. 2	dated	27.09.2012
- Document n. EXT-10098B-AP	dated	12.05.2009
- Document n. EXT-10098B-A-AP Rev. 1	dated	07.09.2010
- Document n. EXT-10041B-AP	dated	28.05.2009
- Document n. EXT-10097B-P-AP	dated	22.09.2010
- Document n. EXT-10040B-AP-T	dated	07.09.2010
- Document n. EXT-10041B-AP-2	dated	25.03.2010
- Document n. EXT-10099B-B1-AP	dated	18.10.2010
- Document n. 10100B Rev. 1	dated	20.03.2014
- Document n. 10100B-B-AP Rev. 9	dated	20.09.2012
- Document n. 10100B-E-AP Rev. 11	dated	07.09.2010
- Document n. 10100B-F-AP Rev. 12	dated	07.09.2010
- Safety instructions Integrating low temperatures n. BT1 (2 pg.)	dated	03.2014

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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.

- The external capacitor (for single-phase motors), which is not matter of the present extension, shall be placed in safety area or, alternatively, shall be made according to one of the type of protection listed in the EN 60079-0 standard suitable for the installation in hazardous area.

- When provided on the plate and in order to ensure the temperature class assigned to the motors, the latter shall operate in a range of variation of voltage "$U_n \pm 5\%$" (within "zone A" of the EN 60034-1 standard).

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. 10/14

to EC-Type Examination Certificate CESI 06 ATEX 059X

Equipment: Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20846 Macherio (MB) - Italy

Admitted variation: constructional modifications and new electrical characteristics

Three-phase and mono-phase asynchronous motors series MAKe 80 ÷ 160 with type of protection Ex d e IIB: motor enclosure Ex d separated from terminal box Ex e.

The motors above indicated, by means of sealing the recess of the metal screws fixing the terminal board, can be supplied with new maximum rated voltages.

Electrical characteristics

Mains supply (temperature classes T6, T5, T4 and T3)

Motors Series **MAKe**	**80, 90, 100, 112 & 132**	**160**
- Maximum rated voltage [V]:	800	1000

Frequency converter supply (temperature class T3)

Motors Series **MAKe**	**80, 90, 100, 112 & 132**	**160**
- Maximum rated voltage [V]:	630	800

- Limit other electrical characteristics: unchanged

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059X.

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Date 3 December 2014 - Translation issued the 3rd December 2014

Prepared	**Verified**	**Approved**
Bruno Pavanati	Mirko Balaz	Fiorenzo Bregani

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EXTENSION n. 10/14

to EC-Type Examination Certificate CESI 06 ATEX 059X

Report n. EX-B4028725

Routine tests

Terminal boxes for motors series "MAKe" type of protection Ex e

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-B4028733)

- Document n. NTD CB 80-160 Ex e IIB/IIC (3 pg.)	dated	19.11.2014
- Safety instructions MAKe 63-160 IIB e IIC (16 pg.)	dated	01.2014
- Document n. E-10233R	dated	22.09.2014
- Document n. E-10234R	dated	22.09.2014
- Document n. E-10235R	dated	22.09.2014

One copy of all documents is kept in CESI files.

Special conditions for safe use (X)

Unchanged.

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. 11/15

to EC-Type Examination Certificate CESI 06 ATEX 059X

Equipment: Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160

Manufacturer: **EUROMOTORI S.r.l.**

Address: Via Cavour, 20846 Macherio (MB) - Italy

Admitted variation:
1) new type of protection and update to EN 60079-1: 2014 standard
2) constructional modifications
3) modification of the electrical characteristics and update ambient temperature
4) updating routine tests

1) New type of protection and update to EN 60079-1: 2014 standard
Three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160.
The motors above have been reviewed on the basis of the EN 60079-1: 2014 standard 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 and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160 shall include the following:

II 2 G Ex db IIB T6, T5, T4, T3 Gb *or* **II 2 G Ex db e IIB T6, T5, T4, T3 Gb**

II 2 D Ex tb IIIC T 85, T 100, T 125, T 155 °C Db

II 2 GD Ex db IIB T6, T5, T4, T3 Gb ; Ex tb IIIC T 85, T 100, T 125, T 155 °C Db *or*

II 2 GD Ex db e IIB T6, T5, T4, T3 Gb ; Ex tb IIIC T 85, T 100, T 125, T 155 °C Db

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 06 ATEX 059X.

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Date 17 September 2015 - Translation issued the 17th September 2015

Prepared	**Verified**	**Approved**
Bruno Pavanati	Mirko Balaz	Roberto Piccin

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EXTENSION n. 11/15

to EC-Type Examination Certificate CESI 06 ATEX 059X

2) Constructional modifications

Type of protection Ex tb
The three-phase and mono-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160 are made through constructive elements, gaskets and sealing rings, which make them suitable for the protection against the ingress of dust.

The motors size 56 are made with motor enclosure directly communicating with the terminal box, while in the motors size 63 ÷ 160 the motor enclosure is separated from terminal box.

In the motors of size 63 ÷ 160 of category "2GD", the terminal box can assume, alternatively, the type of protection Ex e or Ex db.

New version for the mono-phase asynchronous motors series MAK-M and MAKe-M
The new version of mono-phase asynchronous motors is made with external capacitor enclosures Ex db (Ex tb) positioned close to the terminal box and connected to it by means a fitting system.
The capacitor is completely sealed with sealant into enclosure which is made of machined steel bar with threaded cover.

New construction for three-phase and mono-phase asynchronous motors series MAK 160 and MAKe 160
The three-phase and mono-phase asynchronous motors series MAK 160 and MAKe 160 are made with bearing covers on D-end side and, only for category 2 G, 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 electrical characteristics for the mono-phase asynchronous motors series MAK-M and MAKe-M.
The mono-phase asynchronous motors series MAK-M and MAKe-M can be manufactured, for the same rated power, with windings having different rated voltage (from 48 V ± 5% up to 280 V ± 5%); all the other electrical characteristics, as well as the capacitors capacitance, are determined consequently.

Ambient temperature ranges
As a result of the constructional modifications object of this extension, the three-phase asynchronous motors series MAK 56 ÷ 160 and MAKe 63 ÷ 160 with type of protection Ex db, Ex db e and Ex tb, can be operate in the following ambient temperature range:

- Ambient temperature range: -55 ÷ +80 °C

The mono-phase asynchronous motors series MAK-M and MAKe-M, in function of the type of achievement, can be operate in the following ambient temperature ranges:

- Ambient temperature range:
  - -55 ÷ +80 °C (with capacitor in remote position)
  - -40 ÷ +80 °C (with external enclosure Ex db (Ex tb) and running capacitor)
  - -20 ÷ +80 °C (with external enclosures Ex db (Ex tb) and start and running capacitor)

- 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

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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

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 (temperature class T3, T 155 °C):
"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 motors with temperature class T3 (T 155 °C), T4 (T 125 °C) and for motors with temperature class T5 (T 100 °C) and T6 (T 85 °C) marked for Tamb > 40 °C:
"The supply cable must be suitable for an operating temperature ≥ 90 °C"

For motors without ventilation series MAK-WV, with temperature class T3 (T 155 °C) insulation class "t. F" and marked for Tamb > 60 °C:
"The supply cable must be suitable for an operating temperature ≥110 °C"

- Uchanged the other warnings.

Report n. EX-B5018820

4) Routine tests

Motor enclosures "Ex db"; motor enclosure in communication with terminal box

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 15.2.3.2 of the EN 60079-1 standard, at the following pressures:

Motor size	Routine test pressures [kPa]	
	Tamb -20 °C	Tamb -55 °C
56	*	1800
63	1500	1750
71	1500	1750
80	*	1650
90	*	1650
100	1500	2150
112	1650	2100
132	2200	2550
160	1250	1650

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EXTENSION n. 11/15

to EC-Type Examination Certificate CESI 06 ATEX 059X

4) Routine tests *(follows)*

* The manufacturer is exempted from the overpressure test on the motor enclosure size 56,80 and 90, since these enclosures have been submitted, with positive result, to an overpressure test at a pressure corresponding to 4 times the reference pressure and respectively:

  - 3900 kPa on motor enclosure size 56
  - 3200 kPa on motor enclosures size 80 and 90

Motor enclosures "Ex db" motor enclosure separated from terminal box

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
63	1500	1750
71	1500	1750
80	*	1650
90	*	1650
100	1500	2150
112	1650	2100
132	2200	2550
160	1400	2000

* The manufacturer is exempted from the overpressure test on the motor enclosure size 80 and 90, since these enclosures have been submitted, with positive result, to an overpressure test at a pressure of 3200 kPa, corresponding to 4 times the reference pressure.

Terminal boxes "Ex db" separated from motor enclosure

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
63 ÷ 71	1300	1750
80 ÷ 100	1300	1750
112 ÷132	1300	1750
160	1300	1750

Terminal boxes "Ex e" separated from motor enclosure

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.

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EXTENSION n. 11/15

to EC-Type Examination Certificate CESI 06 ATEX 059X

Descriptive documents (prot. EX-B5018825)

- Document n. NDT MAK 56-160 P IIB Rev. 0 (10 pg.)	dated	23.06.2015
- Document n. 9.09/15 Rev. 0	dated	09.09.2015
- Document n. 10319 Rev. 5	dated	28.11.2014
- Document n. 10353 Rev. 3	dated	15.06.2015
- Document n. 10354 Rev. 3	dated	16.06.2015
- Document n. E-10100B-POLVERI Rev. 0	dated	20.05.2009
- Document n. E-10099B-POLVERI Rev. 0	dated	20.05.2009
- Document n. 10343 Rev. 2	dated	01.12.2014
- Document n. 10345 Rev. 1	dated	01.12.2014
- Document n. 10334 Rev. 0	dated	21.12.2012
- Document n. 10336 Rev. 0	dated	22.12.2012
- Document n. 10327 Rev. 0	dated	17.12.2012
- Document n. 10329 Rev. 0	dated	18.12.2012
- Document n. 10321 Rev. 1	dated	28.11.2014
- Document n. 10320 Rev. 1	dated	28.11.2014
- Document n. 10625 Rev. 2	dated	10.09.2015
- Document n. 10627 Rev. 1	dated	01.12.2014
- Document n. 10307 Rev. 2	dated	12.02.2013
- Document n. 10308 Rev. 2	dated	12.02.2013
- Document n. 10500 Rev. 3	dated	09.07.2015
- Document n. 10711-160 Rev. 0	dated	09.07.2015
- Document n. MORS-BART-250615 Rev. 0	dated	25.06.2015
- Document n. ME-10100-2CPA Rev. 0	dated	15.05.2013
- Document n. ME-10100-MONO-SCMA Rev. 0	dated	15.05.2013
- Document n. ME-10100-DIMA Rev. 1	dated	17.09.2013
- Document n. ME-10100-CPA Rev. 0	dated	15.05.2013
- Document n. IST-75-29 Rev. 0 (39 pg.)	dated	07.11.2013
- Safety instruction MAK 56-160 e MAKe 63-160 IIB / IIC (21 pg.)	dated	05.2015
- Document n. D-T-MAK56-160P Rev. 0 (3 pg.)	dated	20.05.2015
- Facsimile Declaration of conformity n. CE-56/160-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.

- When the supply voltage tolerance is not ± 10%, than on the name plate is provided indication of the range of voltage variation "U_n ± 5%" (within "zone A" of the IEC 60034-1 standard).

- 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.

- In the version of the mono-phase motors with external capacitor in remote position, this last shall be made according to one of the type of protection listed in the EN 60079-0 standard taking into account the environmental conditions or shall be placed in safety area.

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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

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