



IECEx Certificate of Conformity

CESI

Prot: B1009732

Annex to certificate: IECEx CES 10.0023X Issue No.0 of 2011-03-15

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

Electrical Apparatus: Three-phase and single-phase asynchronous motors supplied by mains or inverter, series MAK 56, MAK 63, MAK 71, MAK 80, MAK 90, MAK 100, MAK 112, MAK 132, MAK 160

Description of equipment

Three-phase and single-phase asynchronous motors series MAK 56, MAK 63, MAK 71, MAK 80, MAK 90, MAK 100, MAK 112, MAK 132 and MAK 160 supplied by mains or by frequency converter.

The motors are all made of grey cast iron with motor enclosure directly communicating with the terminal box.

The criteria for identification of types of the three-phase and single-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 8 poles: three-phase motor, centre height 56-63-71-80-90-100-112-132-160 at 2, 4, 6, 8 poles.
- motor type **MAK-M 56-63-71-80-90-100-112-132-160** from 2 to 6 poles : single-phase motor, centre height 56-63-71-80-90-100-112-132-160 at 2, 4, 6, poles.

* **WV** in case of motors without fan.

The complete identification of all type of three-phase and single-phase asynchronous motors is detailed in the manufacturer documentation.

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

Electrical characteristics

Mains supply:

- Maximum voltage: 1000 V (three-phase)
250 V (single-phase)
- Maximum rated power: 0,25 ÷ 37 kW
- Rated frequency: 50 / 60 Hz
- Insulation class: F (t. F for T3 and T 155 °C)
(with t. B for T6, T5, T4 and T 85 °C, T 100 °C, T125 °C)
- Duty: S1 ÷ S8
- Rated speed: 250 ÷ 3600 rpm
- Degree of protection: IP 66 (IEC 60034-5 and IEC 60529)
- Ambient temperature range: -20 ÷ +80 °C (+40 °C; +45 °C;and +80 °C)



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Electrical characteristics (follows)

Temperature classes or maximum surface temperatures for the motors

T6 (T 85 °C), T5 (T 100 °C), T4 (T 125 °C), T3 (T 155 °C) as a function of the ambient temperature and of the electrical characteristics as indicated in the technical note n. E-NTD MAK 56-160 IIB.

Temperature class in function of the ambient temperature can be:

- 20 ÷ +40 °C for T6 (T 85 °C) or T5 (T 100 °C) or T4 (T 125 °C) or T3 (T 155 °C)
- 20 ÷ +45 °C for T6 (T 85 °C) or T5 (T 100 °C) or T4 (T 125 °C) or T3 (T 155 °C)
- 20 ÷ +50 °C for T6 (T 85 °C) or T5 (T 100 °C) or T4 (T 125 °C) or T3 (T 155 °C)
- 20 ÷ +55 °C for T5 (T 100 °C) or T4 (T 125 °C) or T3 (T 155 °C)
- 20 ÷ +60 °C for T5 (T 100 °C) or T4 (T 125 °C) or T3 (T 155 °C)
- 20 ÷ +65 °C for T3 (T 155 °C)
- 20 ÷ +70 °C for T3 (T 155 °C)
- 20 ÷ +75 °C for T3 (T 155 °C)
- 20 ÷ +80 °C for T3 (T 155 °C)

Inverter supply:

- Maximum voltage: 660 V
- Frequency range: 5 ÷ 87 Hz
- Maximum peak voltage: 930 V
- Number of poles: 2 and 4
- Maximum rated speed: 3600 rpm
- Duty: S9

Motors supplied by frequency converter (temperature class T3, T 155 °C)

The three-phase asynchronous motors supplied by frequency converter show the rating data on a supplementary plate and shall be provided, inside the stator winding, with thermal detectors (PTC thermistors or "Klickson" bimetallic sensors) 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; the resetting of the supply shall not be automatic.

Forced ventilation by auxiliary motor (temperature class T3, T 155 °C)

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

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



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Installation Conditions

The cable entry devices used on the enclosure shall be suitably certified.
The accessories used for cable entries and for the unused holes shall be subject of a separate certification according to the applicable standards:

- in execution Ex d IIB
- and for the equipment with dust protection 'tD' the accessories used for cable entries and for unused holes shall guarantee the degree of protection IP66 according to IEC 60034-5 and IEC 60529 standards.

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

Warning label

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

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

"Warning - Do not open when an explosive atmosphere may be present"

In case of disassembling of terminal box

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

For motors supplied by frequency converter:

"Caution - Winding protected with PTC thermistors"

or

"Caution - Winding protected with bimetallic sensors"

In case of use of space heaters:

"Caution – Inside space heaters"

For motors with temperature class T3 (T 155 °C) T4 (T 125 °C) and motors with temperature class T5 (T 100 °C) T6 (T 85 °C) marked for Tamb > 40 °C:

"The supply cable must be suitable for an operating temperature ≥ 90 °C"