CNEX-GLOBAL

[1] EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] EU-Type Examination Certificate Number: **CNEX 17 ATEX 0004 X Issue 9**

[4] Equipment : **Three-phase asynchronous motors series 1MB..53… (see Schedule)**

[5] Manufacturer : **Innomotics GmbH**

[6] Address : **Vogelweiherstrasse 1-15, 90441 Nürnberg, Germany**

[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] CNEX-Global B.V., Notified Body number 2614, in accordance with Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 No. **P23049IA-CS**

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

EN IEC 60079-0:2018	**EN 60079-1:2014**	**EN 60079-7:2015**
EN IEC 60079-7:2015/A1:2018	**EN 60079-11:2012**	**EN 60079-31:2014**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to specific conditions for use specified in the schedule to this certificate.

[11] This EU – Type examination certificate relates only to the design of the specified equipment or protective system. Further requirements of the Directive apply to the manufacture 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:
See Schedule.

Certification officer : Hou Yandong **Signature:**
Date of issue : 2023-12-15

Certification Body: CNEX-Global B.V., Utrechtseweg 310-B42, 6812 AR Arnhem, The Netherlands

PRODUCTS RvA C 615

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE No. CNEX 17 ATEX 0004 X Issue 9

Report: 23049

[15] Description of equipment:

Asynchronous three-phase induction motors model 1MB**53***, with self-ventilated cooling or forced-air cooled (acc. to CQST/CNEX-Global agreement), squirrel-cage rotor and seated with roller bearings (antifriction bearings). The cast iron enclosure of the motor is constructed in type of explosion protection flameproof enclosure ‘db’ for explosive gas atmospheres and in type of explosion protection ‘tb’ for explosive dust atmospheres. The terminal box can be constructed in type of explosion protection flameproof enclosure ‘db’ or in type of explosion protection increased safety ‘eb’, for explosive gas atmospheres and in type of explosion protection ‘tb’ for explosive dust atmospheres. The motors can be operated direct-on-line or through a frequency converter.

Nomenclature for model 1MB1553-1EA40-2AA4:

1MB - Motor family designation

1 - Motor size: 1 = acc. to IEC up to shaft height 280
5 = acc. to IEC above shaft height 280

5 - Production line: 5 = Global line, 8 = Global Line special insulation system

5 - Protection type: 5 = motor: Ex db

3 - Efficiency: 3 = IE3,
6 = Reduced starting current 600 % with positive tolerance / 50 Hz only / in combination up to +55 °C / output power might be reduced / efficiency class might be reduced to IE2
7 = Reduced starting current 700 % with positive tolerance / 50 Hz only / in combination up to +55 °C / output power might be reduced

1E - Frame size: 0C = 071, 0D = 080, 0E = 090, 1A = 100, 1B = 112, 1C = 132, 1D = 160, 1E = 180, 2A = 200, 2B = 225, 2C = 250, 2D = 280, 3A = 315, 3B = 355

A - Number of poles: A = 2, B = 4, C = 6, D = 8

4 - Core length: 0/1 = Short, 2/3 = Medium, 4/5 = Long, 6/7/8 = “S/M/L” increased output
9 = Special output

0-2 - Voltage, connections and frequency:
0-1 = 50 Hz 230 VY
0-2 = 50 Hz 400 VY
0-4 = 50 Hz 400 VΔ
1-7 = 60 Hz 220 VΔ/380 VY
1-8 = 60 Hz 230 VΔ/400 VY
2-1 = 50 Hz 220 VΔ/380 VY, 60 Hz 440 VY
2-2 = 50 Hz 230 VΔ/400 VY, 60 Hz 460 VY
2-3 = 50 Hz 240 VΔ/415 VY, 60 Hz 480 VY
2-7 = 50 Hz 500 VY
3-0 = 60 Hz 380 VΔ/660 VY
3-1 = 60 Hz 400 VΔ/690 VY
3-3 = 50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ

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Nomenclature (continued):

3-4 = 50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ

3-5 = 50 Hz 415 VΔ, 60 Hz 480 VΔ

4-0 = 50 Hz 500 VΔ

9-0 = Voltage for converter operation or non-standard winding

A - Mounting type:

A = IM B3, T = IM B6, U = IM B7, V = IM B8, D = IM V6, C = IM V5

F = IM B5, G = IM V1, H = IM V3, J = IM B35, W = IM V15, K = IM B14,

L = IM V19, M = V18, N = IM B34, Y = IM V35

A - Winding protection:

A = Without winding protection

B = 3 PTC thermistors for tripping

C = 6 PTC thermistors for alarm and tripping

H = 3 PT100 resistance thermometers

J = 6 PT100 resistance thermometers

K = 1 PT1000 resistance thermometers

L = 2 PT1000 resistance thermometers

Q = 3 PT100 resistance thermometers (3-wire connection)

R = 6 PT100 resistance thermometers (3-wire connection)

4 - Position of terminal box:

4 = On top, 5 = On right hand side, 6 = On left hand side,

7 = Connection box bottom

Ex markings for explosive Gas atmospheres:

II 2 G Ex db IIA/IIB/IIC T4-T6 Gb or **Ex db eb IIA/IIB/IIC T4-T6 Gb**

Additional Ex markings for explosive Gas atmospheres (only for models FS 315 and FS 355):

II 2 G Ex db ib IIA/IIB/IIC T4 Gb

Ex markings for explosive Dust atmospheres:

II 2 D Ex tb IIIA/IIIB/IIIC Txxx °C Db

Notes: The marking Txxx °C indicates optional values. For T4 the coding will be T130 °C, for T5 the coding will be T95 °C, for T6 the coding will be T80 °C. Lower temperature codes for Dust can be applied if covered by Test reports under the terms of the CQST / CNEX-Global agreement with the manufacturer

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Report: 23049

Electrical Data:

Rated power …… : 0.12 kW to 460 kW

The electrical parameters per motor model are detailed in the Test Report Cover Sheet. (ref. P23049IA-CS).

Mounting Instructions:

See manufacturer's instructions.

Installation Instructions:

All cable entry devices and blanking elements shall be certified in a suitable type of explosion protection with respect of the type of explosion protection of the terminal box (e.g. increased safety ''eb''), with an IP rating minimum equal to the motor IP rating, suitable for the conditions of use and correctly installed. Unused apertures shall be closed with suitable certified blanking elements.

Optional encoders can be applied on the motor sizes FS100 - FS355, shall be ATEX certified, suitable for the conditions of use, correctly installed and maintaining the assigned Ingress Protection level.

Optional brake systems can be applied on the motor sizes FS71 - FS200, shall be ATEX certified, suitable for the conditions of use, correctly installed and maintaining the assigned Ingress Protection level.

See manufacturer's instructions.

Routine tests:

Detailed in the Test Report Cover document. (P23049IA-CS).

[16] Descriptive Documents:

Detailed in the Test Report Cover document. (P23049IA-CS).

[17] Specific Conditions for Use:

The ambient temperature range is limited to -40 °C … +60 °C for FS71 to FS355.

For ambient temperatures above +40 °C up to +60 °C, a derating of the power output (between -4% and -18%) can be applicable to avoid the exceeding of the thermal limiting temperature. The derating shall ensure that the maximum allowed internal and external temperatures are not exceeded.

For absolute temperatures higher than +70 °C at the entry point or +80 °C at the branching point of the conductors, the information that heat-resistant cables have to be applied, shall be marked on the motor.

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[17] Specific Conditions for Use (continued):

The efficiency class IE3 is only guaranteed for motor models 1MB**53*** and 1MB**57*** (with reduced starting current 700 %). The efficiency class IE3 is not guaranteed in all cases for motor model 1MB**56*** (with reduced starting current 600 %). The use of the motor model 1MB**56*** is only allowed when in compliance with local legislation in the country of application.

For repair of the flameproof joints due regard must be given to the structural specifications provided by the manufacturer. Repair in compliance with the values in Tables 1 and 2 of EN 60079-1 is not allowed.

Motor winding and bearing temperature control with PT100 elements in Ex ib circuits is only allowed for FS315 and FS355, constructed in Ex db ib IIA/IIB/IIC T4-T6 Gb. These Ex ib circuits shall be connected in auxiliary terminal boxes (Ex db) to external intrinsic safe ('ib') circuits from suitable certified Ex ib equipment.

The terminal boxes for the motors shall be:

- suitable ATEX certified terminal boxes in type of explosion protection flameproof enclosure 'db' or in type of explosion protection increased safety ''eb'', or
- suitable terminal boxes in type of explosion protection increased safety ''eb'', that are covered by third-party test reports, with their suitability proven by routine temperature measurements in combination with the intended motor type, and
- with an IP rating minimum equal to the motor IP rating, suitable for the conditions of use and correctly installed.

For duty types other than S1, the motor temperature shall be monitored by the resistance thermometers, or PTC-thermistors, in the stator windings. These devices have to be connected to suitable tripping units that have been functionally tested for this purpose.

Frequency converter supply of the motor is only allowed by using a voltage-source converter with pulse width modulation. The frequency converter parameters as listed in the manufacturer's instructions must strictly be followed.

Frequency converter supplied motors can apply a thermal utilization F/F for up to 110% of the rated power at an ambient temperature of maximum +40 °C.

Optional anti-condensation heaters and heating systems can be installed inside the flameproof motor enclosures, but they shall not be energized when the motor is running.

Alternatively external fan systems can be used for motor sizes FS225 - FS355 instead of the shaft mounted fan. The suitability of the combination of motor and external fan system must be confirmed by relevant temperature measurements performed under the control of the certification body.

[17] Specific Conditions for Use (continued):

An alternative low noise axial fan, complying with the requirements of the relevant EN standards as applied for the motor, can optionally be installed on the 2-pole motor sizes FS160 - FS355. The suitability of the combination of motor and low noise axial fan must be confirmed by relevant temperature measurements under the control of the certification body.

Alternative, non-standard shaft ends can be added to the motor. The suitability of the combination of motor and non-standard shaft ends must be confirmed by the certification body.

Use only motor cover bolts with minimum yield stress of 450 N/mm².

All electrical connections shall be tightened with the tightening torques specified in the manufacturer's instructions.

[18] Essential Health and Safety Requirements:

The Essential Health and Safety Requirements are covered by the standards listed at item [9].

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in ANNEX III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

Additional Information:

The enclosure of the asynchronous three-phase induction motors model 1MB**53***, successfully passed the tests for the Ingress Protection level IP65 to EN 60529 / EN 60034-5. The IP degree can be specified from IP55 to IP66, depending on motor variation and client request.

The motors covered by this certificate are manufactured at the following locations:

- Location 1: Innomotics s.r.o., branch Elektromotory Mohelnice
  Nádražní 395/25, CZ-789 85 Mohelnice, Czech Republic
- Location 2: Innomotics s.r.o., branch Elektromotory Frenstat
  Markova 952, CZ-744 01 Frenstat, Czech Republic.

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Report: 23049

Details of changes for issue 2:

Addition of plastic fans acc.to approval drawings of motor assembly.

Addition of motor mounting type IM V35 (all mounting types defined in MLFB at 14th digit).

Addition of special insulation system defined in MLFB at 5th digit by “8”.

Correction of certificate documentation regarding reduced starting current for +55°C ambient (where needed).

Details of changes for issue 3:

Editorial changes in the text regarding assigned power per motor model.

Details of changes for issue 4:

Update of standards to EN IEC 60079-0:2018 and EN IEC 60079-7:2015/A1:2018.

Change of fan material.

Changes in the type-designation.

Change in manufacturing processes.

Changes in Instructions.

Details of changes for issue 5:

Change of models covered by this certificate.

Details of changes for issue 6:

Change of models covered by this certificate.

Details of changes for issue 7:

Change to include Ex ib circuits for PT-100 sensors in motor models FS315 and FS355.

Addition of models 1MB1553-0EC4, 1MB1553-1AC4 and 1MB1553-1BC2.

Removal of Ex tc.

Details of changes for issue 8:

Minor changes in construction and documentation

Minor manufacturing process changes

Correction of editorial error in certification documentation.

Details of changes for issue 9:

Namechange to Innomotics GmbH.