

Orientation

SIMOTICS XP 1MB1 Explosion-Proof Motors

Technical specifications

General information

Ex motors in vertical type of construction with shaft extension pointing down must have a protective cover.

Operating Instructions (Compact) are supplied as standard with explosion-proof motors in English and German. Translations are also available in all the other official EU languages as well as in Russian and Chinese.

For all explosion-proof motors, designs according to UL and CSA are not possible.

Motor connection

Certified metric cable glands/sealing plugs are included in the scope of supply of 1MB1 motors.

The certificates for the motors for hazardous areas are stored with the documentation in the selection tool DT Configurator.

Certified motor protection switches/tripping units must always be used for motor protection, see Catalog IC 10.

Zone 1 with type of protection Ex e II increased safety "e"

See Catalog D 81.1 · January 2012.

Zone 1 with type of protection Ex de IIC explosion-proof enclosure "d"

See Catalog D 83.1.

Type of protection Ex nA for use in Zone 2

- Standard version for paint film thicknesses < 200 µm Ex nA IIC T3 Gc. For further information about paint and paint film thicknesses, see Chapter 1, from page 1/14 onwards.
- Optional version for paint film thicknesses > 200 µm to < 2 mm Ex nA IIB T3 Gc (order code **B31**). For further information about paint and paint film thicknesses, see Chapter 1, from page 1/14 onwards.
- For design for Zone 2 for converter operation ³⁾, see Catalog D 81.1 · January 2012

1MB1, 1LA or 1LG motors are modified for this purpose in the "Non-sparking" design and are suitable for use in hazardous areas of Zone 2 for temperature classes T1 to T3. The maximum surface temperature that can occur during operation must lie below the limit temperature of the respective temperature class. The ventilation system must be in accordance with IEC/EN 60079-0. The motors are equipped with an external grounding terminal. The terminal box is similar to the Ex e design.

Please inquire in the case of:

- Utilization according to temperature class 155 (F)
- For pole-changing versions

For motors in the "Non-sparking" version, a conformity declaration is available from a recognized testing authority.

Ambient temperature –20 °C to +60 °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

The rating plate or the extra rating plate contains the text:

 II 3G Ex nA IIC T3 Gc

Number of the "Conformity statement"

Type of protection Ex tb IIIC and Ex tc IIIB for use in Zones 21 and 22

The distinction between Zones 21 and 22 is as follows:

- Ex tb IIIC acc. to IEC/EN 60079-31 ¹⁾ for Zone 21
- Design for Zone 21 ²⁾, as well as Zone 22 for conductive dust (IP65) for line operation (1MB101, 1MB151, 1MB161)
- Ex tc IIIB acc. to IEC/EN 60079-31 ¹⁾ for Zone 22
- Version for Zone 22 for non-conductive dust (IP55) for line operation (1MB102, 1MB152, 1MB162)
- For design for Zone 21/22 for converter operation see Catalog D 81.1 · January 2012

The 1MB1 motors are modified for this purpose for use in zones subject to dust explosion hazards. The surface temperature is ≤ 120 °C ⁴⁾ at rated duty.

An external grounding terminal and a metal external fan are fitted to the motors.

Pole-changing versions are not possible for Zone 21 – they are possible for Zone 22 on request.

Certification:

- Zone 21: EC type-examination certificate (ATEX) and EC Declaration of Conformity
- Zone 22: conformity declaration and EC Declaration of Conformity

Identification on the rating plate:

- Zone 21:  II 2D Ex tb IIIC T120 °C Db ⁴⁾
- Zone 22:  II 3D Ex tc IIIB T120 °C Dc ⁴⁾

Ambient temperature –20 °C to +60 °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

Type of protection Ex nA/Ex tc for use in Zone 2/22

The motors must be ordered with:

- Design for Zone 2 and 22 for non-conductive dust for line operation – Order code **B30**

Zone 2/22:  II 3G Ex nA IIC T3 Gc

 II 3D Ex tc IIIB T120 °C Dc ⁴⁾

Converter operation

See Catalog D 81.1 · January 2012.

¹⁾ Zone 21 only up to frame size 315 L.

²⁾ Zone 21 includes conductive and non-conductive dust.

³⁾ Not possible for 1MB1.

⁴⁾ IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5, 1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C

Technical specifications (continued)**VIK version**

VIK = Verband der Industriellen Energie- und Kraftwirtschaft e.V.
(German Association of the Energy and Power Supply Industry)

- **VIK standard version** – 1LE1 + order code **C02**
"VIK" identification on rating plate.
→ Product spectrum catalog section 2.
- **VIK-Ex n version** – 1MB1.3 + order code **C02**
"VIK" and "Ex nA IIC T3 Gc" marking on the rating plate according to Directive 94/9/EC (ATEX).
→ Product spectrum in this catalog section.

Both versions include technology for Zone 2 to type of protection Ex nA IIC T3 Gc. Motors up to frame size 355 can be supplied in accordance with the technical requirements of the VIK recommendation.

Minimum efficiency class:

- VIK standard version:
IE3 from 7.5 kW in accordance with legal requirements.
- VIK Ex n version:
At least IE2 in accordance with March 2011 edition of VIK recommendation.

Notes:

- 8-pole motors or all motors < 0.75 kW are still possible as these motors are outside the output range specified for IE stamping.
- Please inquire about converter operation in all cases.
- Motors in VIK design with mounted technology (brake, rotary pulse encoder and separately driven fan) are not compatible with Zone 2. Designs for Zone 21/22 are not possible.
- VIK motors 1LA/1LG: See Catalog D 81.1 · January 2012.

Ex certification EAC for the Eurasian customs union (Russia, Belarus and Kazakhstan)

EAC = Eurasian Conformity

For the import and commissioning of explosion-proof motors in the Eurasian customs union, approval is required from a named Russian testing authority.

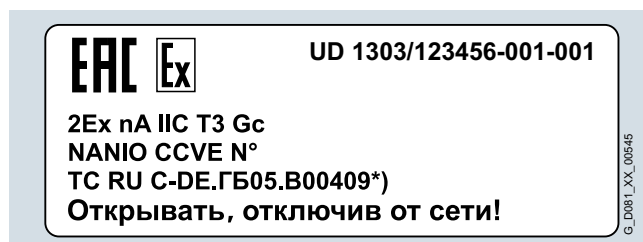
"Ex certificate EAC for the Eurasian customs union"

Order code **D35**

The explosion-proof motors in this catalog section all have Eurasian ex certification except for the following:

- 1MB10, frame sizes 80 and 90
- 1MB15/6, frame sizes 225 to 315, in type of protection Ex tb

When motors are ordered with order code **D35**, they are fitted with an extra rating plate displaying the logo "EAC Ex" and the Russian Ex marking.



Example: Extra rating plate

The logo "EAC Ex" is also displayed on the packaging sticker. The motor must have an "EAC Ex certificate", although the certificate does not generally have to be shipped with the motor. The customs authorities use the motor article number to check the motor certification.

A copy of the EAC Ex certificate must be in the client's possession before the motor is commissioned.

The certificates are available in the SIOS (Siemens Industry Online Support) and the Drive Technology Configurator (DT Configurator).

Coolant temperature

Coolant temperature –40 to +40 °C for explosion-proof motor

For all 1MB10 motors, frame sizes 100 to 160 and 1MB15/6, frame sizes 100 to 315 in explosion protection types Ex nA or Ex t (Zone 21/22), the operating ambient temperature range can be optionally increased to –40 °C. Extensive technical measures are necessary in this case.

Order code **D03**

Order code **D03** is not possible in combination with order code **H02** "Vibration-proof version".