

Translation

EU-Type Examination Certificate

Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014

EU-Type Examination Certificate Number: **BVS 25 ATEX E 021 X** Issue: **00**

Equipment: **Flameproof electric motors type D*Ex 63 **/*** ***

Manufacturer: **Herforder Elektromotoren-Werke GmbH & Co. KG**

Address: **Goebenstraße 106, 32051 Herford, Germany**

This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 25.2047 EU.

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

EN IEC 60079-0:2018

General requirements

EN 60079-1:2014

Flameproof enclosure "d"

EN IEC 60079-7:2015 + A1:2018

Increased Safety "e"


EN 60079-31:2014

Protection by Enclosure "t"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:

	II 2G Ex db IIC T* Gb	or	Ex db eb IIC T* Gb
	II 2G Ex db IIB T* Gb	or	Ex db eb IIB T* Gb
	II 2D Ex tb IIIC T* C Db	or	Ex tb IIB T* C Db

* See clause "Parameters"

DEKRA Testing and Certification GmbH
Bochum, 2025-05-12

Signed: Oliver Brumm

Managing Director

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15 Product description

15.1 Subject and type

Flameproof electric motors type D*1)Ex 63 **2)/***3) *4)

<u>Asterisk</u>	<u>Description</u>
1	Explosion Group B: IIB C: IIC D: IIIB / IIIC
2	Motor version code (package length and efficiency) LH: Version with package length L and efficiency code H KH: Version with package length K and efficiency code H
3	Number of poles
4	Temperature monitoring code K: PTC thermistor T: Thermal switch / bimetal switch

15.2 Description

The enclosures of the flameproof electric motors are made of cast iron.

The terminal box is casted on directly. The shaft is supported by ball bearings.

For the electrical connection of the motor, the terminal box is optionally designed in the type of protection flameproof enclosure "d" or increased safety "e" respectively protection by enclosure "t".

In the variant with terminal box in type of protection increased safety "e", the motor compartment is separated from the terminal compartment by a separately certified line bushing.

The motors are connected via separately certified cable glands suitable for this purpose.

The cooling of the motor is realised by an external fan that is made of plastic. The fan is driven by the electrical machine itself.

Optionally a space heater can be mounted inside the stator housing.

For direct temperature control the windings of the motor is equipped with PTC-thermistors which are connected in series. The sensors are connected to a suitable trigger unit. Optionally, the temperature monitoring of the windings can also be realized with thermal switches / bimetal switches.

The maximum permissible ambient temperature range is -30 °C to 85 °C. This temperature range may be limited as a result of the selected terminal boxes and components, or the electrical design.

The electric motors are suitable for operation on the 50/60 Hz mains as well as for operation with a voltage intermediate circuit inverter with pulse width modulation in the frequency range of 5-100 Hz.

Parameters

Electrical parameters

Circuits of the flameproof electric motors

Rated voltage ¹⁾		up to	690	V AC
Rated power		up to	0.3	kW
Rated rotational speed	500	up to	3600	min ⁻¹
Rated rotational speed (with converter)	60	up to	6000	min ⁻¹
Frequency (mains)			50 / 60	Hz
Frequency (converter)	5	up to	100	Hz
Duty type	S1	up to	S9	
Class of insulation			F	

- ¹⁾ In case of converter-fed: Voltage of the fundamental wave measured at the motor terminals. This voltage must not be decreased by 10 %, taken into account the minimum converter input voltage and the voltage drop caused by the supply line and an optional sinus filter.

Monitoring circuits

Temperature sensors (ptc thermistors)	According to the specifications given in the certificate of the trigger unit and the electrical design.
Bimetal switch	According to the specifications given in the certificate of the trigger unit and the electrical design.

Electrical parameters (converter)

Voltage intermediate circuit inverter with pulse width modulation (PWM)

Maximum permitted input voltage	Rated voltage of the motor	V
Minimum switching frequency (for low-voltage 2-level converter)	4	kHz
Current limiting value	1.5x I _N	
Maximum overload time / permitted time for operation below the minimum output frequency ²⁾	60	s
Output frequency	up to 100	Hz

- ²⁾ After each overload period, a cooling period is required and must be in minimum 3 times the overload time.
During the cooling period, the motor current and torque must remain below the limit of permitted continuous loadability.

Thermal ratings

Type of protection	Ambient temperature		
	Explosion Group	Lower limit	Upper limit
Ex db	IIC	-30 °C	60 °C
	IIB	-30 °C	85 °C
Ex db eb	IIB / IIC	-30 °C	60 °C
Ex tb	IIIB / IIIC	-30 °C	85 °C

The stated ambient temperature ranges may be limited as a result of the selected terminal box, components, sealing materials or by the electrical ratings. The permissible ambient temperature range is marked on the name plate.

Ambient temperature range, temperature class and surface temperature

Temperature class	T6 up to T4
Surface temperature	up to 135° C

The values valid for the respective construction are indicated on the name plate and the datasheet of the motor.

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17 Specific Conditions of Use

- 17.1 The lengths of the flameproof joints are in parts longer and the gaps of the flameproof joints are in parts smaller than the values of table 2 and 3 of EN 60079-1:2014. For information of the dimensions of the flameproof joints contact the manufacturer.
- 17.2 Parts that have to meet the requirements of flameproof enclosure have to be fastened by means of steel screws of strength category 10.9 (900 N/mm²) minimum.
- 17.3 If the motor is not coated by the manufacturer, one of the following conditions must be observed when applying the coating / coating system:
- Group I and Group II:
- Surface resistance $\leq 1 \text{ G}\Omega$ measured at (50 +/- 5% rel. humidity) or
 - Surface resistance $\leq 100 \text{ G}\Omega$ measured at (30 +/- 5% rel. humidity) or
 - Breakdown voltage $\leq 4 \text{ kV}$ or
 - Layer thickness $\leq 200 \mu\text{m}$
- Group III:
- Surface resistance $\leq 1 \text{ G}\Omega$ measured at (50 +/- 5% rel. humidity) or
 - Surface resistance $\leq 100 \text{ G}\Omega$ measured at (30 +/- 5% rel. humidity) or
 - Breakdown voltage $\leq 4 \text{ kV}$
- 17.4 If the motor has to be controlled by PTC-thermistors, these sensors have to be connected to a trigger unit suitable for this purpose.
- 17.5 In case of converter supply:
- The rotating electrical machine must be operated with a voltage source converter with pulse width modulation regarding the electrical parameters according to clause 15 "Parameters".
- Before setting-up operation, it must be ensured that no inverter-related overvoltages with a peak value of more than 1350 V occur at the motor terminals.

18 Essential Health and Safety Requirements


Met by compliance with the requirements mentioned in item 9.

19 Remarks and additional information

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2025-05-12
BVS-Hn A 20250133 / 343645800


Managing Director