

## Translation

# EC-Type Examination Certificate

- (1) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (2) No. of EC-Type Examination Certificate: **BVS 14 ATEX E 114 X**
- (3) Equipment: **Flameproof electric motors type D\*Ex\*\*\* \*\*\*/\*\*\*\* \*\***
- (4) Manufacturer: **Herforder Elektromotoren-Werke GmbH & Co. KG**
- (5) Address: **Goebenstraße 106, 32051 Herford, Germany**
- (6) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.
- (7) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 the Test and Assessment Report BVS PP 14.2163 EG.
- (8) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 General requirements**  
**EN 60079-1:2007 Flameproof enclosure "d"**  
**EN 60079-7:2007 Increased Safety "e"**  
**EN 60079-31:2009 Protection by Enclosure "t"**
- (9) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (10) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (11) The marking of the equipment shall include the following:

	<b>II 2G Ex d IIC T* Gb</b>	<b>resp.</b>	<b>Ex de IIC T* Gb</b>	<b>or</b>
	<b>II 2G Ex d IIB T* Gb</b>	<b>resp.</b>	<b>Ex de IIB T* Gb</b>	<b>or</b>
	<b>II 2D Ex tb IIIC T* °C Db</b>			

\*) See parameters

DEKRA EXAM GmbH  
 Bochum, dated 2014-07-18

Signed: Simanski

Certification body

Signed: Dr. Wittler

Special services unit

(13) Appendix to

(14) **EC-Type Examination Certificate  
BVS 14 ATEX E 114 X**

(15) 15.1 Subject and type

Flameproof electric motors type D\*Ex\*\*\* \*\*\*/\*\*\*\* \*\*

Type designation to D\*<sup>1)</sup>Ex<sup>\*2)\*2)\*2) \*3)\*3)\*3)/<sup>\*4)\*4)\*4) \*5)\*5)\*5)</sup></sup>

1): Explosion group

- B: Flameproof enclosure for group IIB
- C: Flameproof enclosure for group IIC
- D: Flameproof enclosure for group IIC and applicable in presence of combustible dust

2): Frame size

71	71 mm
80	80 mm
90	90 mm
100	100 mm
112	112 mm
132	132 mm
160	160 mm
180	180 mm
200	200 mm
225	225 mm

3): Identifier for Motor-variation

4): Quantity of poles

5): Identifier for temperature control

### 15.2 Description

The enclosure of the flameproof electric motor is made of cast iron and has a mounting place for terminal boxes.

The shaft will be fixed with ball bearings.

The shaft sealing of the flameproof electric motor is realised by non-metallic sealing rings made of viton for use in areas requiring EPL Db.

A terminal compartment in type of protection Flameproof enclosure "d", Increased safety "e" or Protection by enclosure "tb" or a direct cable entry is used for electrical connection of the motor. For electric power input into the motor compartment, separately certified cable glands or conductor bushings are used.

The cooling of the motor is realised by an external fan that is made of steel, aluminium or plastic. The fan can be driven by the electrical machine itself or by a separately certified forced ventilation motor.

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

For direct temperature monitoring the winding of the motor is equipped with temperature sensors (thermistors according DIN 44081 respectively DIN 44082). The sensors are connected in series.

Optionally the temperature at the bearings could be monitored separately by certified resistance thermometers (Pt100).

The sensors respectively the thermometers will be connected to a trigger unit which is certified for this purpose.

The maximum permissible ambient temperatures are -50 °C to 85 °C. This temperature range may be limited as a result of the selected terminal boxes and components, or the electrical design.

## 15.3 Parameters

### Electrical parameters

Circuits of the flameproof electric motors				
Rated voltage				
Frame size 71 - 225	up to	690	V AC	
Frame size 180 - 225	up to	1000	V AC	
Rated rotational speed	500	up to	3600	min <sup>-1</sup>
Rated rotational speed (with converter)	48	up to	6000	min <sup>-1</sup>
Frequency (mains)			50 / 60	Hz
Frequency (converter)				
Frame size 71 – 160	5	up to	100	Hz
Frame size 180 - 225	5	up to	87	Hz
Duty type	S1	up to	S9	

Rated power					
Frame size		50 Hz		60 Hz	
71	up to	0.55	kW	0.66	kW
80	up to	1.1	kW	1.3	kW
90	up to	2.2	kW	2.6	kW
100	up to	3	kW	3.6	kW
112	up to	4	kW	4.8	kW
132	up to	7.5	kW	9	kW
160	up to	18.5	kW	21	kW
180	up to	22	kW	26	kW
200	up to	37	kW	42	kW
225	up to	45.5	kW	52	kW

#### Monitoring circuit

Temperature sensors  
(ptc thermistors)

According to the specifications given in the certificate of the trigger unit and the electrical design.

Circuits of the resistance thermometer  
(Pt100)

According to the specifications given in the certificate of the trigger unit and the electrical design.

#### Thermal ratings

Type of protection	Explosiongroup	Lower limit	Upper limit
Ex d	IIC	-50 °C	60 °C
	IIB	-50 °C	85 °C
Ex de	IIB / IIC	-20 °C	60 °C
Ex tb	IIIC	-30 °C	85 °C

#### Ambient temperature range, temperature class and surface temperature

The electrical data, the temperature class, the surface temperature and the ambient temperature range of the respective version is determined by a routine test carried out by the manufacturer.

(16) Test and Assessment Report

BVS PP 14.2163 EG as of 2014-07-18

(17) Special conditions for safe use

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 of EN 60079-1:2007. For information of the dimensions of the flameproof joints contact the manufacturer.

Fasteners with a minimum yield stress of 640 N/mm<sup>2</sup> must be used for the closing of the flameproof enclosure.

Motors which have to be equipped with a direct temperature control must be monitored by a separate certified trigger unit.

If the electrical machine will be cooled by forced ventilation, it has to be assured that the electrical machine can only run if the ventilation is running.

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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 EXAM GmbH  
44809 Bochum, 2014-07-18  
BVS-Sit/Ma A20140509



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Certification body



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Special services unit