



(1) **EU-TYPE-EXAMINATION CERTIFICATE**  
**(Translation)**

(2) Equipment or Protective Systems Intended for Use in  
Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

**PTB 12 ATEX 2011**

**Issue: 2**

(4) Product: Displacement measuring chain, type ds822

(5) Manufacturer: Brüel & Kjær Vibro GmbH

(6) Address: Leydheckerstr. 10, 64293 Darmstadt, Germany

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the 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 Test Report PTB Ex 21-21012.

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

**EN IEC 60079-0:2018**

**EN 60079-11:2012**

**EN 60079-26:2015**

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction 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.

(12) The marking of the product shall include the following:

 **II 1/2 G Ex ia IIC T6...T1 Ga/Gb or II 2 G Ex ia IIC T6...T1 Gb or**  
**II 2 D Ex ia IIIC T71 °C...T168 °C Db**

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, May 12, 2021

On behalf of PTB:

  
Dr.-Ing. F. Lienesch  
Direktor und Professor



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EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

(13)

## SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 12 ATEX 2011 , Issue: 2**

(15) Description of Product

The displacement measuring chain of type ds822 is used for the contactless measurement of displacements on machines according to the eddy-current principle. It consists of a sensor, type ds822.ds..., an oscillator, type ds822.od... and /or an extension cable, type ds822.ec... .

The equipment is intended for the installation in potentially explosive gas/vapour-air or dust-air atmospheres.

Category-1/2-equipment (EPL Ga/Gb)

The cable of the sensor, type ds822.ds... or the extension cable, type ds822.ec... is led through a partition separating areas from each other where equipment of category 2 or 1 resp. EPL Ga/Gb is required.

The oscillator, type ds822.od... is installed in hazardous areas where category-2- equipment resp. EPL Gb is required.

For relationship between equipment category, temperature class and the permissible ambient temperature ranges or surface temperatures of the sensor and the oscillator, reference is made to the following table:

| Temperature class | Permissible range of the ambient temperature category-1/2 G-equipment (EPL Ga/Gb) |               | Permissible surface temperature category-2 D-equipment (EPL Db) |            |
|-------------------|---|---------------|---|------------|
|                   | Sensor / extension cable  | Oscillator    | Sensor / extension cable  | Oscillator |
| T6                | -55 ... 53 °C   | -55 ... 61 °C | 71 °C   | 91 °C      |
| T5                | -55 ... 65 °C   | -55 ... 76 °C | 83 °C   | 106 °C     |
| T4                | -55 ... 93 °C   | -55 ... 79 °C | 111 °C  | 109 °C     |
| T3                | -55 ... 145 °C  | -55 ... 79 °C | 163 °C  | 109 °C     |
| T2                | -55 ... 150 °C  | -55 ... 79 °C | 168 °C  | 109 °C     |
| T1                | -55 ... 150 °C  | -55 ... 79 °C | 168 °C  | 109 °C     |

For applications requiring category-1- equipment, the process pressure of the media shall range from 0.8 to 1.1 bar. In case of a deviation from these operating conditions at the sensor, it shall be considered, that the temperature rise of the sensor does not exceed 19 K and that the operating company is responsible for the safe operation of the system as regards pressures/temperatures of the media used.

**SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 12 ATEX 2011 , Issue: 2**

Category-2-equipment (EPL Gb)

The displacement measuring chain, type ds822 is installed in hazardous areas where category-2- equipment resp. EPL Gb is required.

For relationship between equipment category, temperature class and the permissible ambient temperature ranges or surface temperatures of the sensor and the oscillator, reference is made to the following table:

| Temperature class | Permissible range of the ambient temperature category-2 G-equipment (EPL Gb) |               | Permissible surface temperature category-2 D-equipment (EPL Db) |            |
|-------------------|--|---------------|---|------------|
|                   | Sensor / extension cable   | Oscillator    | Sensor / extension cable  | Oscillator |
| T6                | -55 ... 67 °C  | -55 ... 61 °C | 85 °C   | 91 °C      |
| T5                | -55 ... 82 °C  | -55 ... 76 °C | 100 °C  | 106 °C     |
| T4                | -55 ... 117 °C   | -55 ... 79 °C | 135 °C  | 109 °C     |
| T3                | -55 ... 150 °C   | -55 ... 79 °C | 168 °C  | 109 °C     |
| T2                | -55 ... 150 °C   | -55 ... 79 °C | 168 °C  | 109 °C     |
| T1                | -55 ... 150 °C   | -55 ... 79 °C | 168 °C  | 109 °C     |

Electrical data

Voltage supply ..... type of protection Intrinsic Safety Ex ia IIC  
 only for connection to a certified intrinsically safe circuit

Maximum values

$U_i = 28 \text{ V}$   
 $I_i = 140 \text{ mA}$   
 $P_i = 840 \text{ mW}$

Terminal side:

$L_i = \text{negligibly low}$   
 $C_i = 12 \text{ nF}$

or

Sensor side:

$L_i = 3.8 \text{ mH}$   
 $C_i = 76 \text{ nF}$

## SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 12 ATEX 2011 , Issue: 2

### Changes with respect to previous editions:

- Adaption to the current state of standards
- Extension of the marking for dust by the range of maximum surface temperatures
- Adaptation of the type label regarding the marking
- Adaptation of the operating instructions regarding the updated state of standards and marking
- Alternative ceramic cap "Rapal 100" of the manufacturer "Rauschert GmbH & Co. KG" or cap made of aluminium oxide by "Hilgenberg-Ceramics GmbH & Co. KG"
- Alternative digital switch "MMBFJ110" from "Fairchild Semiconductor" due to a component discontinuation
- Adaptation of the circuit diagrams regarding the aforementioned modification
- Extension of the assembling variations to expand the measuring ranges
- Alternative plug and bushing of the manufacturer "Lemo Elektronik GmbH"
- Alternative PCB of the coil holder and omission of the coil carrier
- Change of the design of the cable integration at the sensor

(16) Test Report      PTB Ex 21-21012

(17) Specific conditions of use

none


(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, May 12, 2021

On behalf of PTB:

  
Dr.-Ing. F. Lienesch  
Direktor und Professor

