



(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: 1

(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 16-26055.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012 + A11:2013 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 IIC T168 °C Db**

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, June 23, 2016

On behalf of PTB:



Dr.-Ing. T. Horn
Oberregierungsrat



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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: 1**

(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.

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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:

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

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Modifications

- Compilation of the specifications from the original certificate including 1st and 2nd supplement
- Adaption to the current state of the standards
- Alteration of the marking (specification of the temperature class range T6 ... T1, instead of only T6)
- Extension of the permissible range of the ambient temperature to – 55 °C and revision of the temperature specifications in the tables given above
- For this purpose: Introduction of a new casting compound to fulfill the requirements for the extended temperature range to – 55 °C
- Revision of the type label (application of A11:2013) and the operating instructions manual

(16) Test Report PTB Ex16-26055

(17) Specific conditions of use

none

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, June 23, 2016

On behalf of PTB:



Dr.-Ing. T. Horn
Oberregierungsrat

