IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx PTB 13.0010**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 3	Issue 2 (2016-09-27) Issue 1 (2015-02-03) Issue 0 (2013-03-14)
Date of Issue:	2021-05-10		

Applicant: **Brüel & Kjær Vibro GmbH**
Leydheckerstr. 10
64293 Darmstadt
Germany

Equipment: **Displacement measuring chain, type ds822**

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: Ex ia IIC T6 ... T1 Ga/Gb or
Ex ia IIC T6 ... T1 Gb or
Ex ia IIIC T71 °C ... T168 °C Db

Approved for issue on behalf of the IECEx Certification Body: **Dr.-Ing. F. Lienesch**

Position: **Head of department "Explosion Protection in Sensor Technology and Instrumentation"**

Signature:
(for printed version)

Date: 19.5.21

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

IECEx Certificate of Conformity

Certificate No.: **IECEx PTB 13.0010**

Date of issue: 2021-05-10

Issue No: 3

Manufacturer: **Brüel & Kjær Vibro GmbH**
Leydheckerstr. 10
64293 Darmstadt
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

DE/PTB/ExTR13.0014/00
DE/PTB/ExTR15.0009/00
DE/PTB/ExTR16.0038/00
DE/PTB/ExTR16.0038/01

Quality Assessment Report:

DE/PTB/QAR11.0003/05

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

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 or dust atmospheres.

For further information see schedule.

SPECIFIC CONDITIONS OF USE: NO

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- 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

IECEx Certificate of Conformity

Additional information:
For thermal and electrical specifications reference is made to the Annex.

Annex:

COCA13.0010-03.pdf

Applicant: Brüel & Kjær Vibro GmbH

Electrical apparatus: Displacement measuring chain, type ds822

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.

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100, 38116 Braunschweig, Germany
Postfach 33 45, 38023 Braunschweig, Germany
Telephone +49 531 592-0, Telefax +49 531 592-3605

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 V
I_i = 140 mA
P_i = 840 mW

Terminal side:

L_i = negligibly low
C_i = 12 nF

or

Sensor side:

L_i = 3.8 mH
C_i = 76 nF

Marking:

Ex ia IIC T6 ... T1 Ga/Gb **or**
Ex ia IIC T6 ... T1 Gb **or**
Ex ia IIIC T71 °C ... T168 °C Db

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100, 38116 Braunschweig, Germany
Postfach 33 45, 38023 Braunschweig, Germany
Telephone +49 531 592-0, Telefax +49 531 592-3605