



IECEX Certificate of Conformity

Certificate No: IECEX IBE 18.0006X Issue No: 2
Date of Issue: 2019-03-27 Page 3 of 6
Manufacturer: ARMANO Messtechnik GmbH
Am Gewerbepark 9
08344 Grünhain-Beierfeld
Germany

Additional Manufacturing location(s):

ARMANO Messtechnik GmbH
Manometerstraße 5
46487 Wesel
Germany

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 apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
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
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical 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 Report:

[DE/IBE/ExTR18.0027/00](#)

[DE/IBE/ExTR18.0027/01](#)

[DE/IBE/ExTR18.0027/02](#)

Quality Assessment Report:

[NL/DEK/QAR12.0056/05](#)



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Ex ia IIC T6...T1 Gb

Ex ib IIC T6...T1 Gb

Ex ia IIIC T80 °C...T440 °C Da

Ex ia IIIC T80 °C...T440 °C Db

Ex ib IIIC T80 °C...T440 °C Db

Approved for issue on behalf of the IECEx
Certification Body:

Dipl.-Ing. Alexander Henker

Position:

Head of Certification Body

Signature:
(for printed version)

Date:

2019-03-27

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 the [Official IECEx Website](#).

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Certification Body
Fuchsmühlenweg 7
09599 Freiberg
Germany





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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The temperature sensors are used for registration, control and threshold monitoring of process temperatures and are intended for use in explosion hazard areas of zone 0 or 1 and 20 or 21.

The temperature sensors are implemented as resistance thermometers or thermocouples, which transform the temperature at the measurement point into an electrical parameter (resistance, voltage). In combination with appropriate transmitters temperatures in the range of -196 °C...+600 °C (resistance thermometer) or, resp., -40 °C...+1800 °C (thermocouples) can be registered.

The temperature sensors are implemented in type of protection flameproof enclosure "d" or protection by enclosure "t". They consist of a replaceable transducer with potted lead wires and a flameproof connection head with integrated terminal or electronic transmitter. Both components are connected via a neck tube and a screw joint. The measuring end of the transducer equipped with a protection tube is inserted into the process.

There are types which are designed in type of protection intrinsic safety "i". Also the combination of intrinsic safety and flameproof enclosure or intrinsic safety and protection by enclosure is possible.

Optionally the sensors are equipped with a process display.

Technical data:

maximum voltage U_i :	30 V
maximum current I_i :	250 mA
maximum power P_i :	
gas explosive atmospheres:	1.9 W
dust explosive atmospheres:	650 mW, $T_{amb} < 70\text{ °C}$ 550 mW, $T_{amb} \geq 70\text{ °C...+85 °C}$
ambient temperature at connection head:	-40 °C...+85 °C

The permitted power P_i depends on the used power supply, the maximum ambient temperature and the temperature class assigned. The maximum permissible surface temperature can be taken from the operating instructions.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- For compliance with the above mentioned temperature class / maximum surface temperature at the connection head, the maximum power dissipation P_{max} must not be exceeded. This must be guaranteed under fault conditions by adequate means (e.g. a fuse connected in series to the consumer).
- The permissible media temperature depends on the maximum permissible input power P_i , the temperature class assigned and the ambient temperature range. The ambient temperature range is determined by the components used. Additional information can be found in the operating instructions.
- For equipment variants with ambient temperature $> 60\text{ °C}$ heat-resistant gable glands and connection cables (min. 95 °C) must be used.



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- By means of the process, higher or lower operating temperature can occur at the measuring tip; however, the permissible service temperature at the connection head must not be exceeded. This has to be ensured by the customer under the respective operational conditions by means of an adequate length of the transducer and the protection armature. Referring to this, the length of the neck tube must be selected so that heating or cooling of the connection head by means of the process is negligible.
- Flameproof joints are not intended to be repaired.
- The operator must ensure that the devices are installed in the protection tubes in such a way that protection class IP67 is guaranteed and that no zone entrainment can occur.
- Unused cable glands must be closed with blanking elements certified according to the type of protection.
- If the wall thickness of a protective tube is between 0.2 mm and 1 mm, the devices must not be exposed to environmental stresses which could adversely affect the partition wall.
- Built-in electronic components (transmitters, digital displays) in devices with Ex i type of protection must have their own certificate. The conditions as well as the intrinsically safe parameter of the corresponding certificate must be met.
- The types TPTMiXiAo(T), TTeMiXiAo(T) may only be used if they are installed in a suitable housing.
- For thermocouples with an earthed measuring point, the intrinsically safe circuits must be regarded as galvanically connected to the earth potential from a safety perspective and potential equalisation must exist throughout the entire process of setting up the intrinsically safe circuits. In addition, special conditions according to EN/IEC 60079-14 must be observed for the connection.
- Sensors using light metal housing parts (e.g. connection heads made of aluminium or protection tubes made of titanium) must be installed in applications requiring an EPL Ga or Da in such a way that sparks due to impact and friction between the light metal and steel are excluded (except stainless steel if the presence of rust particles can be excluded).



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The manufacturer's name has been changed.



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INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx IBE 18.0006X Issue No: 2 Certificate history:
Status: Current Issue No. 2 (2019-03-27)
Date of Issue: 2019-03-27 Page 1 of 6 Issue No. 1 (2018-08-16)
Issue No. 0 (2018-07-18)

Applicant: **ARMANO Messtechnik GmbH**
Am Gewerbepark 9
08344 Grünhain-Beierfeld
Germany

Equipment: thermocouples and resistance thermometer types TPtHrXiA(T), TPtSrXiA(T),
TTeHrXiA(T), TPtMiXiAo(T), TTeSrXiA(T), TTeMiXiAo(T), TPtHrXdA(T), TPtSrXdA(T),
TTeHrXdA(T), TTeSrXdA(T), TPtPAXd(T) and TTePAXd(T)

Optional accessory:

Type of Protection: Flameproof enclosure "d", Intrinsic safety "i" and Protection by enclosure "t"

Marking:
TPtHrXiA(T), TPtSrXiA(T), TTeHrXiA(T), TTeSrXiA(T):

Ex ia IIC T6...T1 Ga

Ex ia IIC T6...T1 Ga/Gb

Ex ia IIC T6...T1 Gb

Ex ib IIC T6...T1 Gb

Ex ia IIIC T80 °C...T440 °C Da

Ex ia IIIC T80 °C...T440 °C Da/Db

Ex ia IIIC T80 °C...T440 °C Db

Ex ib IIIC T80 °C...T440 °C Db

TPtHrXdA(T), TPtSrXdA(T), TTeHrXdA(T), TTeSrXdA(T), TPtPAXd(T), TTePAXd(T):

Ex ia db IIC T6...T1 Ga

Ex db IIC T6...T1 Ga/Gb

Ex ia/db IIC T6...T1 Ga/Gb

Ex db IIC T6...T1 Gb

Ex ia tb IIIC T80 °C...T440 °C Da

Ex tb IIIC T80 °C...T440 °C Db

Ex ia/tb IIIC T80 °C...T440 °C Da/Db

TPtMiXiAo(T), TTeMiXiAo(T):

Ex ia IIC T6...T1 Ga