

IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx TUN 18.0012X

Issue No: 0

Certificate history:

Issue No. 0 (2018-12-14)

Status: Current

Page 1 of 4

Date of Issue: 2018-12-14

Applicant: WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30, 63911 Klingenberg
Germany

Equipment: Thermometer TR... (resistance sensor) resp. TC... (thermocouple element)
Optional accessory:

Type of Protection: Protection by increased safety "e", Protection by "n", Protection by enclosure "t"

Marking:
Ex eb IIC T6...T1 Gb or Ex eb IIC + CH4 T6...T1 Gb resp.
Ex ec IIC T6...T1 Gc or Ex ec IIC + CH4 T6...T1 Gc resp.
Ex nA IIC T6...T1 Gc or Ex nA IIC + CH4 T6...T1 Gc resp.
Ex tb IIIC TX °C Db or Ex tc IIIC TX °C Dc
For details see attachment


Approved for issue on behalf of the IECEx
Certification Body:

Christian Roder

Position:

Head of IECEx Certification Body

Signature:
(for printed version)


2018-12-14

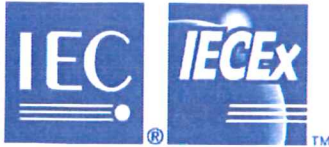
Date:

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](http://www.iecex.com).

Certificate issued by:

TÜV NORD CERT GmbH
Hanover Office
Am TÜV 1, 30519 Hannover
Germany


TUV NORD



IECEX Certificate of Conformity

Certificate No: IECEX TUN 18.0012X Issue No: 0
Date of Issue: 2018-12-14 Page 2 of 4
Manufacturer: WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30, 63911 Klingenberg
Germany

Additional Manufacturing location(s):
WIKA Instrumentation (Suzhou) Co., Ltd.
81.Tayuan Road, SND Suzhou
215011, Jiangsu
China

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 : 2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

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/TUN/ExTR18.0017/00](#)

Quality Assessment Report:

[DE/BVS/QAR07.0010/12](#)



IECEX Certificate of Conformity

Certificate No: IECEx TUN 18.0012X

Issue No: 0

Date of Issue: 2018-12-14

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

General product information:

Subject and Type:

X	-	XXXX	-	X...X
a		bcd *	-	*...*

The asterisks "*" are not ex-relevant.

a Series:

TR (resistance sensor) / TC (thermocouple element)

b A = ATEX, I = IECEX, N = NAMUR, Z = Non-Ex

All other letters of alphabet and numbers 0 till 9 excluded the letters N and Z are reserved characters for other approvals additional to ATEX and IECEX

c E = Ex e

N = Ex nA

T = Ex t (only in combination with other type of ignition protection like Ex e or Ex nA)

d Gas zones Dust zones

C = Zone 1 G = Zone 21

D = Zone 2 H = Zone 22

Description:

The thermometer type TR... (resistance sensor) resp. TC... (thermocouple element) consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermowire, with the temperature sensor inside which is embedded in a ceramic powder, in a heat resistant casting compound, a cement compound or a thermal conductance paste.

The thermometer type TR.../TC... will be mounted to a certified enclosure (IECEX TUN 18.0010U) manufactured by WIKA series 1/4000, series 7/8000 or series 5/6000. The enclosure and covers are made of stainless steel or aluminum. The cover could be optionally provided with a glass lens (window).

Alternatively the thermometers TR.../TC... can be mounted to other suitable certified enclosures in accordance with the applicable requirements of IEC 60079-0, IEC 60079-7, IEC 60079-15 and IEC 60079-31

Optionally, a suitable certified transmitter respectively a suitable certified current loop indicator may be placed inside the enclosure.

The maximum surface temperature at the tip of the probe respectively at the tip of the thermowell is the same as media temperature plus 4 K

The permissible ambient temperatures are depending on the marking of the temperature class, the used enclosure and the assembly with an optionally transmitter and/or a digital display. In this case the special conditions for safe use must be considered. The lower temperature limit is -40 °C for the thermometer type TR.... (resistance sensor) or TC.... (thermocouple); for special versions -60 °C. This also applies to the thermometer type TR.... (resistance sensor) or TC.... (thermocouple), which is installed in a certified housing (IECEX TUN 18.0010U) of the



IECEX Certificate of Conformity

Certificate No: IECEx TUN 18.0012X

Issue No: 0

Date of Issue: 2018-12-14

Page 4 of 4

WIKA series 1/4000, 7/8000 or 5/6000

For the connection of a thermometer and a transmitter and /or a digital display the minor values of the ambient temperature limits and the temperature class with the highest cipher is valid.

As the case may be a thermowell with a proper minimum wall thickness may be used.

Electrical data:

See attachment to IECEx TUN 18.0012X

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The alternatively used enclosures, optionally suitable transmitters or suitable digital displays shall be provided with their own certification in accordance to IEC 60079-0, IEC 60079-7, IEC 60079-15 and IEC 60079-31. The installation conditions, the electrical connection values, the temperature class respectively the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding certification and shall be considered.
2. Other blanking elements as well as cable glands, if used, have to be separately assessed and certified in accordance with IEC 60079-7, IEC 60079-15 and IEC 60079-31. In the end-use application the degree of protection min IP54 / IP6X shall be maintained in accordance with IEC 60079-0 and in compliance with IEC 60529.
3. The temperature resistance of the connecting cables, the connection heads, the cable entries and if necessary the blanking connectors shall be at least as high as the maximum permissible ambient temperature and shall be at least as low as the minimum permissible ambient temperature.
4. A reverse heat flow from the process exceeding the permissible ambient temperature of the transmitter, the digital display or the enclosure is not allowed and shall be avoided by a suitable thermal insulation or a suitable neck length of the tubing.
5. The cable sensor shall be fitted with kink protection and strain relief. They must be connected to ground through their installation. For tube type cable probes (without MI-Cable), the temperature range of the wire insulation shall be considered for operating.
6. The ambient temperature range depending on temperature class resp. surface temperature is to be taken from the operating instructions.
7. For the use in areas that require EPL Gc: Measures external to the equipment shall be taken so that the transient protection device can be set to a value, which does not exceed 140 % of the rating at the equipment's power connections.
8. For the use in areas that require EPL Gc: The thermometer type TR... (resistance sensor) resp. TC... (thermocouple element) have to be erected in such a way that a pollution degree 2 or less, according to IEC 60664-1, is achieved.

Annex:

[Attachment to IECEx TUN 18.0012X issue 00.pdf](#)

Product:

General product information:

Subject and Type:

Thermometer type:

X - XXXX - X...X
a bcd* - *...*

The asterisks "*" are not ex-relevant.

a Series:

TR (resistance sensor) / TC (thermocouple element)

b A = ATEX, I = IECEx, N = NAMUR, Z = Non-Ex

All other letters of alphabet and numbers 0 till 9 excluded the letters N and Z are reserved characters for other approvals additional to ATEX and IECEx

c E = Ex e

N = Ex nA

T = Ex t (only in combination with other type of ignition protection like Ex e or Ex nA)

d Gas zones

C = Zone 1

D = Zone 2

Dust zones

G = Zone 21

H = Zone 22

Description:

The thermometer type TR... (resistance sensor) resp. TC... (thermocouple element) consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermowire, with the temperature sensor inside which is embedded in a ceramic powder, in a heat resistant casting compound, a cement compound or a thermal conductance paste.

The thermometer type TR.../TC... will be mounted to a certified enclosure (IECEx TUN 18.0010U) manufactured by WIKA series 1/4000, series 7/8000 or series 5/6000. The enclosure and covers are made of stainless steel or aluminum. The cover could be optionally provided with a glass lens (window).

Alternatively the thermometers TR.../TC... can be mounted to other suitable certified enclosures in accordance with the applicable requirements of IEC 60079-0, IEC 60079-7, IEC 60079-15 and IEC 60079-31.

Optionally, a suitable certified transmitter respectively a suitable certified current loop indicator may be placed inside the enclosure.

The maximum surface temperature at the tip of the probe respectively at the tip of the thermowell is the same as media temperature plus 4 K.

The permissible ambient temperatures are depending on the marking of the temperature class,

Page 2 of 4
Attachment to IECEx TUN 18.0012X issue No.: 00

the used enclosure and the assembly with an optionally transmitter and/or a digital display. In this case the special conditions for safe use must be considered. The lower temperature limit is -40 °C for the thermometer type TR.... (resistance sensor) or TC.... (thermocouple); for special versions -60 °C. This also applies to the thermometer type TR.... (resistance sensor) or TC.... (thermocouple), which is installed in a certified housing (IECEX TUN 18.0010U) of the WIKA series 1/4000, 7/8000 or 5/6000.

For the connection of a thermometer and a transmitter and /or a digital display the minor values of the ambient temperature limits and the temperature class with the highest cipher is valid.

The thermometer must be suitable for the thermal and mechanical stress within the process. As the case may be a thermowell with a proper minimum wall thickness may be used.

Electrical data:

Electrical data without built-in transmitter or digital display

Sensor circuit:

$U_{max} = \text{d.c } 10 \text{ V}$

$I_{max} = 9 \text{ mA}$

$P_{max} \text{ (at the sensor)} = 15 \text{ mW}$

For the use of multiple sensors and simultaneous operation the summation of all single power dissipation may not exceed the maximum permissible power dissipation. The maximum permissible power shall be limited to 15 mW.

Electrical data with built-in transmitter or digital display

For the sensor circuit the above specified values corresponding to the group II resp. group III apply.

The used transmitter/ digital display shall be provided with their own certificate in accordance to IEC. The installation conditions and the electrical connection values shall be taken from the corresponding certificate and shall be considered.

Multipoint thermometers built up from several shell elements

For the isolated single element the above specified values are valid.

For elements which are considered as grounded due to their construction the specified values apply for the sensors in sum.

Application in methane atmospheres

Due to the higher minimum ignition energy of methane, the devices may also used into thereby caused explosive gas atmospheres. The device is optionally marked with IIC + CH₄.

Thermal data:

For applications that require EPL Gb or EPL Gc equipment

For applications without transmitter (digital displays) requiring instruments of group II, the following temperature class classification and ambient temperature ranges apply:

Marking	Temperature class	Ambient temperature range (T _a)*	Maximum surface temperature (T _{max}) at the tip of the probe or thermowell
Ex eb IIC T6 Gb or Ex eb IIC + CH4 T6 Gb or Ex ec IIC T6 Gc or Ex ec IIC + CH4 T6 Gc or Ex nA IIC T6 Gc or Ex nA IIC + CH4 T6 Gc	T6	-40 °C ... +80 °C ¹⁾ or -60 °C ... +80 °C ²⁾	T _M (medium temperature) + self-heating (4 K)
Ex eb IIC T5...T1 Gb or Ex eb IIC + CH4 T5...T1 Gb or Ex ec IIC T5...T1 Gc or Ex ec IIC + CH4 T5...T1 Gc or Ex nA IIC T5...T1 Gc or Ex nA IIC + CH4 T5...T1 Gc	T5...T1	-40 °C ... +80 °C ¹⁾ or -60 °C ... +85 °C ²⁾	

* Depending on enclosure configuration

¹⁾ Wika enclosure versions 1/4000; 5/6000 and 7/8000 standard-lid gasket (-40°C), Potting: KAGER 4439 (-40 °C) (-tubing version)

²⁾ Wika enclosure versions 1/4000; 5/6000 and 7/8000 special-lid gasket (-60 °C), Potting: WEVOPUR PD4 (-60 °C) (MI-cable and tubing version)

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered.

For applications that require EPL Db or Dc equipment

For applications without transmitter (digital displays) requiring instruments of group III, the following surface temperatures and ambient temperature ranges apply:

Marking	Ambient temperature range (T _a)*	Maximum surface temperature (T _{max}) at the tip of the probe or thermowell
Ex tb IIIC TX °C Db or Ex tc IIIC TX °C Dc	-40 °C ... +80 °C ¹⁾ or -60 °C ... +85 °C ²⁾	T _M (medium temperature) + self-heating (4 K)

* Depending on enclosure configuration

¹⁾ Wika enclosure versions 1/4000; 5/6000 and 7/8000 standard-lid gasket (-40°C), Potting: KAGER 4439 (-40 °C) (-tubing version)

²⁾ Wika enclosure versions 1/4000; 5/6000 and 7/8000 special-lid gasket (-60 °C), Potting: WEVOPUR PD4 (-60 °C) (MI-cable and tubing version)

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered.

Special Conditions for Safe Use / Notes for Erection:

1. The alternatively used enclosures, optionally suitable transmitters or suitable digital displays shall be provided with their own certification in accordance to IEC 60079-0, IEC 60079-7, IEC 60079-15 and IEC 60079-31. The installation conditions, the electrical connection values, the temperature class respectively the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding certification and shall be considered.
2. Other blanking elements as well as cable glands, if used, have to be separately assessed and certified in accordance with IEC 60079-7, IEC 60079-15 and IEC 60079-31. In the end-use application the degree of protection min IP54 / IP6X shall be maintained in accordance with IEC 60079-0 and in compliance with IEC 60529.
3. The temperature resistance of the connecting cables, the connection heads, the cable entries and if necessary the blanking connectors shall be at least as high as the maximum permissible ambient temperature and shall be at least as low as the minimum permissible ambient temperature.
4. A reverse heat flow from the process exceeding the permissible ambient temperature of the transmitter, the digital display or the enclosure is not allowed and shall be avoided by a suitable thermal insulation or a suitable neck length of the tubing.
5. The cable sensor shall be fitted with kink protection and strain relief. They must be connected to ground through their installation. For tube type cable probes (without MI-Cable), the temperature range of the wire insulation shall be considered for operating.
6. The ambient temperature range depending on temperature class resp. surface temperature is to be taken from the operating instructions.
7. For the use in areas that require EPL Gc: Measures external to the equipment shall be taken so that the transient protection device can be set to a value, which does not exceed 140 % of the rating at the equipment's power connections.
8. For the use in areas that require EPL Gc: The thermometer type TR... (resistance sensor) resp. TC... (thermocouple element) have to be erected in such a way that a pollution degree 2 or less, according to IEC 60664-1, is achieved.