

Translation

(1) **EC-Type Examination Certificate**

TÜV NORD



(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3) **Certificate Number** TÜV 10 ATEX 555793 X

(4) for the equipment: Thermometer TR... / TC...

(5) of the manufacturer: WIKA Alexander Wiegand SE & Co. KG

(6) Address: Alexander-Wiegand-Strasse 30
63911 Klingenberg
Germany

Order number: 8000555793

Date of issue: 2010-03-18

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report.No. 10 203 555793.

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

EN 60079-0:2009

EN 60079-11:2007


EN 60079-26:2007

EN 61241-11:2006

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

 **II 1 G Ex ia IIC T3, T4, T5, T6 Ga resp. II 1/2 G Ex ib IIC T3, T4, T5, T6 Ga/Gb resp.
II 1 D Ex ia IIIC T65°C, T95°C, T125°C Da resp.
II 1/2 D Ex ib IIIC T65°C, T95°C, T125°C Da/Db**

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(13) **SCHEDULE**

(14) **EC-Type Examination Certificate No. TÜV 10 ATEX 555793 X**

(15) Description of equipment

The thermometer type TR... (resistive sensor) and TC... (thermocouple element) consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermo wire, 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. For connection purpose the thermometer may be equipped with a plug or a free connecting cable. Other components like an enclosure used as a connection box or a thermowell may be used. A certified transmitter resp. a certified current loop indicator may be placed inside the enclosure.

The compliance with the temperature class and the intrinsic safety of the circuit is assured by an intrinsically safe power supply. The maximum surface temperature at the tip of the probe resp. the thermowell is to be calculated, depending on the applied power, the ambient temperature resp. medium temperature and the thermal resistance. The required values (R_{th}) are supplied by the manufacturer as a matrix, depending on the probe diameter and the configuration of the probe (see table 3).

The permissible ambient temperatures are depending on the marking of the temperature class, the used enclosure and the installation of an optionally used transmitter and/or a digital display. In this case the special conditions for safe use (17) must be considered. The lower temperature limit is -40 °C , for special models the lower temperature limit is -50 °C .

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 figure is valid.

The pressure and temperature range of explosive atmosphere at the connection side must be for applications which require devices of the category 1 resp. category 1/2 between 0.8 to 1.1 bar and -20 °C to 60 °C . If the thermometer is operated outside this atmospheric conditions this EC-Type Examination Certificate for a device for category 1 resp. category 1/2 is only a guide. Additional tests for the special application conditions are recommended.

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.

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For applications without transmitter (digital display) which require devices of the group II (explosive gas atmospheres) the following temperature classes divisions and ambient temperature ranges apply:

Table 1

Marking	Temperature class	Ambient temperature range (T_a)	Maximum surface temperature (T_{max}) at the tip of the probe or thermowell
II 1 G Ex ia IIC T6 Ga II 1/2 G Ex ib IIC T6 Ga/Gb	T6	(-50 °C) ¹ -40 °C to +80 °C	T_M (medium temperature) + self-heating. The special conditions for safe use (17) shall be considered.
II 1 G Ex ia IIC T5 Ga II 1/2 G Ex ib IIC T5 Ga/Gb	T5	(-50 °C) ¹ -40 °C to +95 °C	
II 1 G Ex ia IIC T4 Ga II 1/2 G Ex ib IIC T4 Ga/Gb II 1 G Ex ia IIC T3 Ga II 1/2 G Ex ib IIC T3 Ga/Gb	T4, T3	(-50 °C) ¹ -40 °C to +100 °C	

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered (17).

For applications which require devices of the group II (explosive dust atmospheres) the following surface temperatures and ambient temperature ranges apply:

Table 2

Marking	Power P_i	Ambient temperature range (T_a)	Maximum surface temperature (T_{max}) at the tip of the probe or thermowell
II 1 D Ex ia IIIC T65 °C Da II 1/2 D Ex ib IIIC T65 °C Da/Db	750 mW	(-50 °C) ¹ -40 °C to +40 °C	T_M (medium temperature) + self-heating. The special conditions for safe use (17) shall be considered.
II 1 D Ex ia IIIC T95 °C Da II 1/2 D Ex ib IIIC T95 °C Da/Db	650 mW	(-50 °C) ¹ -40 °C to +70 °C	
II 1 D Ex ia IIIC T125 °C Da II 1/2 D Ex ib IIIC T125 °C Da/Db	550 mW	(-50 °C) ¹ -40 °C to +100 °C	

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered (17).

¹ The values in brackets apply for special models. These probes are manufactured with a special casting compound. Furthermore they are equipped with enclosures made of stainless steel and cable bushings for low temperatures.

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Technical data

Electrical data without built-in transmitter or digital display

For devices of group II (explosive gas atmospheres) the following maximum connection values apply:

$$\begin{aligned}U_i &= \text{DC } 30 \text{ V} \\I_i &= 550 \text{ mA} \\P_i \text{ (at the sensor}^2\text{)} &= 1.5 \text{ W}\end{aligned}$$

For devices of group II (explosive dust atmospheres) the following maximum connection values apply:

$$\begin{aligned}U_i &= \text{DC } 30 \text{ V} \\I_i &= 550 \text{ mA} \\P_i \text{ (at the sensor}^3\text{)} &= \text{Values from table 2, column 2}\end{aligned}$$

The internal inductance (L_i) and capacitance (C_i) of standard measuring inserts according to DIN 43735 are negligibly small. The values for cable probes shall be taken from the type label and shall be considered for the connection to an intrinsically safe power supply.

Sensor circuit in type of protection intrinsic safety Ex ia, or ib, IIC

Only to be connected to intrinsically safe circuits with the following output values for devices of group II (explosive gas atmospheres):

$$\begin{aligned}U_o &= \text{DC } 30 \text{ V} \\I_o &= 550 \text{ mA} \\P_o &= 1.5 \text{ W}\end{aligned}$$

Sensor circuit in type of protection intrinsic safety Ex ia, or ib, IIIC

Only to be connected to intrinsically safe circuits with the following output values for devices of group II (explosive dust atmospheres):

$$\begin{aligned}U_o &= \text{DC } 30 \text{ V} \\I_o &= 550 \text{ mA} \\P_o &= \text{Values from table 2, column 2}\end{aligned}$$

For the use of multiple sensors and simultaneous operation the summation of all single power dissipation may not exceed the maximum permissible power dissipation. This shall be considered by the end-user in the end-use application.

² The permissible power for the sensor depends on the medium temperature T_M , the temperature class and the thermal resistance R_{th} , maximum, however, 1.5 W.

³ The permissible power for the sensor depends on the medium temperature T_M , the maximum permissible surface temperature and the thermal resistance R_{th} , maximum, however, the values from table 2, column 2.

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Electrical data with built-in transmitter or digital display

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

Signal circuit in type of protection intrinsic safety Ex ia, or ib, IIC resp. IIIC

U_i = depending on transmitter/digital display

I_i = depending on transmitter/digital display

P_i = inside the enclosure: depending on transmitter/digital display

C_i = depending on transmitter/digital display

L_i = depending on transmitter/digital display

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

Electrical data with built-in transmitter or digital display according to the FISCO model

The used transmitter/ digital display for operating conditions according to the FISCO model are considered as FISCO field devices. The requirements according to EN/IEC 60079-27 and the conditions for connection of the EC-Type Examination Certificate for FISCO apply.

Multipoint thermometers

Multipoints 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**. For use in dust atmospheres the values of table 2, column 2 apply.

Coaxial multi-point thermocouples

The circuits of the coaxial element shall be considered as connected due to their construction. For the application a separate examination shall be done resp. for the connection of the coaxial **multi-point thermocouple** special conditions for safe use shall be considered if applicable. An additionally assessment as an intrinsically safe system shall be done (e.g. connection of several circuits of different transmitters etc.).

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Table 3: Thermal resistance [R_{th} in K/W]

Diameter of the sensor	2.0 mm - < 3.0 mm	3.0 mm - < 6.0 mm	6 mm - 8 mm	3.0 mm ⁴ - 6.0 mm ⁴	0.5 mm - < 1.5 mm	1.5 mm - < 3.0 mm	3.0 mm - < 6.0 mm	6.0 mm - 12.0 mm
Sensor	RTD	RTD	RTD	RTD	TC	TC	TC	TC
Without thermowell	245	110	75	225	105	60	20	5
With thermowell - Fabricated (straight and tapered) (e.g. TW22, TW35, TW40, TW45 etc.)	135	60	37	/	/	/	11	2.5
With thermowell – bar stock (straight and tapered) (e. g. TW10, TW15, TW20, TW25, TW30, TW50, TW55, TW60 etc.)	50	22	16	/	/	/	4	1
Special designed thermowell - EN 14597	/	/	33	/	/	/	/	2.5
Tx55 (support tube)	/	110	75	225	/	/	20	5
Fitted in a blind hole (minimum wall thickness 5 mm)	50	22	16	45	22	13	4	1

Application in methane atmospheres

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

(16) Test documents are listed in the test report No. 10 203 555793.

⁴ Surface sensitivity

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(17) Special conditions for safe use

- 1.) For types with $\varnothing < 3$ mm or „grounded measuring points“ the intrinsically safe circuits shall be considered as galvanically connected to ground potential from a safety-related view. Potential equalization shall exist in the complete course of the erection of the intrinsically safe circuits. Furthermore for the connection the requirements of EN/IEC 60079-14 shall be considered.
- 2.) For devices that do not comply to the electrostatic requirements of EN/IEC 60079-0 and EN/IEC 60079-26 due to their construction, electrostatic charging shall be avoided.
- 3.) The used transmitters/digital displays shall be provided with their own EC-Type Examination Certificate in accordance to EN/IEC. The installation conditions, the electrical connection values, the temperature classes resp. the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding EC-Type Examination Certificate and shall be considered.
- 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.) In case of a wall thickness less than 1 mm the device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.
- 6.) Using a thermowell/neck tube the device shall be constructed in a way that allows an installation that results in a sufficient tight joint (IP67) or a flameproof joint (EN/IEC 60079-1) in the direction of the less endangered area.
- 7.) The circuits of the coaxial multipoint thermocouple shall to be considered as connected due to their construction. For the application a separate examination shall be done resp. for the connection of the coaxial multipoint thermocouple special conditions for safe use must be considered if applicable. An additionally assessment as an intrinsically safe system shall be done (e.g. connection of several circuits of different transmitters etc.).
- 8.) For the use of enclosures they shall either be provided with their own EC-Type Examination Certificate or they shall comply to the minimum requirements. IP-protection: at least IP20 (at least IP65 for dust) applies for all enclosures. Light metal enclosures, however, shall comply with the corresponding clauses of the applicable standards. Non-metallic enclosures or powder-coated enclosures shall additionally comply with the electrostatic requirements of the applicable standards or have an corresponding warning marking.

(18) Essential Health and Safety Requirements
no additional ones

Translation

1. SUPPLEMENT

to Certificate No.	TÜV 10 ATEX 555793 X
Equipment:	Thermometer TR... / TC...
Manufacturer:	WIKA Alexander Wiegand SE & Co. KG
Address:	Alexander-Wiegand-Strasse 30 63911 Klingenberg Germany
Order number:	8000421199
Date of issue:	2015-11-30

Amendments:

In the future the device may also be manufactured and operated according to the test documents listed in the test report. The standards used for assessment, the marking and the special conditions had been updated (the marking has to be taken from table 1 and 2).

The equipment incl. of this supplement meets the requirements of these standards:

EN 60079-0:2012+A11:2013

EN 60079-11:2012

EN 60079-26:2015

Description of equipment

The thermometer type TR... (resistive sensor) and TC... (thermocouple element) consists of a welded tubing or a mineral-sheathed cable or a ceramic insulated thermo wire, 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. For connection purpose the thermometer may be equipped with a plug or a free connecting cable. Other components like an enclosure used as a connection box or a thermowell may be used. A certified transmitter resp. a certified current loop indicator may be placed inside the enclosure.

The compliance with the temperature class and the intrinsic safety of the circuit is assured by an intrinsically safe power supply. The maximum surface temperature at the tip of the probe resp. the thermowell is to be calculated, depending on the applied power, the ambient temperature resp. medium temperature and the thermal resistance. The required values (R_{th}) are supplied by the manufacturer as a matrix, depending on the probe diameter and the configuration of the probe (see table 3).

The permissible ambient temperatures are depending on the marking of the temperature class, the used enclosure and the installation of an optionally used transmitter and/or a digital display. In this case the special conditions for safe use (17) must be considered. The lower temperature limit is -40 °C , for special models the lower temperature limit is -50 °C .

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 pressure and temperature range of explosive atmosphere at the connection side must be for applications which require devices of the category 1 resp. category 1/2 between 0.8 to 1.1 bar and -20 °C to 60 °C. If the thermometer is operated outside this atmospheric conditions this EC-Type Examination Certificate for a device for category 1 resp. category 1/2 is only a guide. Additional tests for the special application conditions are recommended.

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.

For applications without transmitter (digital display) which require devices of the group II (explosive gas atmospheres) the following temperature class classifications and ambient temperature ranges from table 1 apply:

Table 1

Marking	Temperature class	Ambient temperature range (T _a) ¹	Maximum surface temperature (T _{max}) at the tip of the probe or thermowell
II 1 G Ex ia IIC T6 Ga or II 1/2 G Ex ia IIC T6 Ga/Gb or II 2 G Ex ia IIC T6 Gb or II 2 G Ex ib IIC T6 Gb	T6	-40 °C to +80 °C -50 °C to +80 °C	T _M (medium temperature) + self-heating. The special conditions for safe use (17) shall be considered.
II 1 G Ex ia IIC T5 Ga or II 1/2 G Ex ia IIC T5 Ga/Gb or II 2 G Ex ia IIC T5 Gb or II 2 G Ex ib IIC T5 Gb	T5	-40 °C to +80 °C -50 °C to +95 °C	
II 1 G Ex ia IIC T4...T1 Ga or II 1/2 G Ex ia IIC T4...T1 Ga/Gb or II 2 G Ex ia IIC T4...T1 Gb or II 2 G Ex ib IIC T4...T1 Gb	T4, T3, T2, T1	-40 °C to +80 °C -50 °C to +100 °C	

¹Temperature range -40 °C to +80 °C for standard models. Extended temperature ranges are possible for special models. These models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

For applications that require devices of EPL Gb, devices of EPL Ga may also be used. The same electrical parameters as EPL Ga must be applied. If a device of EPL Ga is used in an application requiring EPL Gb it may not be re-used in an application requiring EPL Ga.

For applications that require devices of EPL Gc, devices of EPL Ga or Gb may also be used. The same electrical parameters as EPL Ga or Gb must be applied. If a device of EPL Ga or Gb is used in an application requiring EPL Gc it may not be re-used in an application requiring EPL Ga or Gb.

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered (17).

For applications which require devices of the group III (explosive dust atmospheres) the following surface temperatures, ambient temperature ranges and power dissipation of table 2 apply:

Table 2

Marking	Power P_i	Ambient temperature range (T_a) ²	Maximum surface temperature (T_{max}) at the tip of the probe or thermowell
II 1 D Ex ia IIIC T65 °C Da or II 1/2 D Ex ia IIIC T65 °C Da/Db or II 2 D Ex ia IIIC T65 °C Db or II 2 D Ex ib IIIC T65 °C Db	750 mW	-40 °C to +40 °C -50 °C to +40 °C	T _M (medium temperature) + self-heating. The special conditions for safe use (17) shall be considered.
II 1 D Ex ia IIIC T95 °C Da or II 1/2 D Ex ia IIIC T95 °C Da/Db or II 2 D Ex ia IIIC T95 °C Db or II 2 D Ex ib IIIC T95 °C Db	650 mW	-40 °C to +70 °C -50 °C to +70 °C	
II 1 D Ex ia IIIC T125 °C Da or II 1/2 D Ex ia IIIC T125 °C Da/Db or II 2 D Ex ia IIIC T125 °C Db or II 2 D Ex ib IIIC T125 °C Db	550 mW	-40 °C to +80 °C -50 °C to +100 °C	

²Temperature range -40 °C to maximum +80 °C for standard models is limited by requirements for group III application. Extended temperature ranges are possible for special models. These models are manufactured with special components, i.e. suitable casting compound, enclosures and cable glands for extended temperature ranges.

For applications that require devices of EPL Db, devices of EPL Da may also be used. The same electrical parameters as EPL Da must be applied. If a device of EPL Da is used in an application requiring EPL Db it may not be re-used in an application requiring EPL Da.

For the installation of a transmitter and/or a digital display the special conditions for safe use shall be considered (17).

Technical data

Electrical data without built-in transmitter or digital display

For devices of group II (explosive gas atmospheres) the following maximum connection values apply:

$$U_i = DC 30 V$$

$$I_i = 550 mA$$

$$P_i \text{ (at the sensor}^3\text{)} = 1.5 W$$

For devices of group III (explosive dust atmospheres) the following maximum connection values apply:

$$U_i = DC 30 V$$

$$I_i = 550 mA$$

$$P_i \text{ (at the sensor}^4\text{)} = \text{Values from table 2, column 2}$$

The internal inductance (L_i) and capacitance (C_i) of standard measuring inserts according to DIN 43735 are negligibly small. The values for cable probes shall be taken from the type label and shall be considered for the connection to an intrinsically safe power supply.

³The permissible power for the sensor depends on the medium temperature T_M , the temperature class and the thermal resistance R_{th} , but not more than 1.5 W.

⁴The permissible power for the sensor depends on the medium temperature T_M , the maximum permissible surface temperature and the

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thermal resistance R_{th} , maximum, however, the values from table 2, column 2.

Sensor circuit in type of protection intrinsic safety Ex ia, or ib, IIC

Only to be connected to intrinsically safe circuits with the following output values for devices of group II (explosive gas atmospheres):

$$U_o = DC 30 V$$

$$I_o = 550 mA$$

$$P_o = 1.5 W$$

Sensor circuit in type of protection intrinsic safety Ex ia, or ib, IIIC

Only to be connected to intrinsically safe circuits with the following output values for devices of group III (explosive dust atmospheres):

$$U_o = DC 30 V$$

$$I_o = 550 mA$$

$$P_o = \text{Values from table 2, column 2}$$

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 1.5 W, resp. the values of table 2, column 2 shall be considered by the end-user in the end-use application.

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.

Signal circuit in type of protection intrinsic safety Ex ia, or ib, IIC resp. IIIC

U_i = depending on transmitter/digital display

I_i = depending on transmitter/digital display

P_i = inside the enclosure: depending on transmitter/digital display

C_i = depending on transmitter/digital display

L_i = depending on transmitter/digital display

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

Electrical data with built-in transmitter or digital display according to the FISCO model

The used transmitter/ digital display for operating conditions according to the FISCO model are considered as FISCO field devices. The requirements according to EN/IEC 60079-11 and the conditions for connection of the EC-Type Examination Certificate for FISCO apply.

Multipoint thermometers

Multipoints 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. For use in dust atmospheres the values of table 2, column 2 apply.

Coaxial multi-point thermocouples

The circuits of the coaxial element shall be considered as connected due to their construction.

For the application a separate examination shall be done resp. for the connection of the coaxial multi-point thermocouple special conditions for safe use shall be considered if applicable. An additionally assessment as an intrinsically safe system shall be done (e.g. connection of several circuits of different transmitters etc.).

Table 3: Thermal resistance [R_{th} in K/W]

Diameter of the sensor	2.0 mm - < 3.0 mm	3.0 mm - < 6.0 mm	6 mm - 8 mm	3.0 mm ⁵ - 6.0 mm ⁵	0.5 mm - < 1.5 mm	1.5 mm - < 3.0 mm	3.0 mm - < 6.0 mm	6.0 mm - 12.0 mm
Sensor	RTD	RTD	RTD	RTD	TC	TC	TC	TC
Without thermowell	245	110	75	225	105	60	20	5
With thermowell - Fabricated (straight and tapered) (e.g. TW22, TW35, TW40, TW45 etc..)	135	60	37	/	/	/	11	2.5
With thermowell – bar stock (straight and tapered) (e.g. TW10, TW15, TW20, TW25, TW30, TW50, TW55, TW60 etc.)	50	22	16	/	/	/	4	1
Special designed thermowell - EN 14597	/	/	33	/	/	/	/	2.5
Tx55 (support tube)	/	110	75	225	/	/	20	5
Fitted in a blind hole (minimum wall thickness 5 mm)	50	22	16	45	22	13	4	1

⁵Surface sensitivity

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.

- (16) The test documents are listed in the test report No. 15 203 121826.
- (17) Special conditions for safe use
 - 1.) Types with Ø <3 mm or „grounded measuring points“do not comply to clause 6.3.13 of EN/IEC 60079-11 because of the kind of use. By that from a safety-related view this intrinsically safe circuits shall be considered as galvanically connected to ground potential. Potential equalization shall exist in the complete course of the erection of the intrinsically safe circuits. Furthermore for the connection the requirements of EN/IEC 60079-14 shall be considered.
 - 2.) For devices that do not comply to the electrostatic requirements of EN/IEC 60079-0 and EN/IEC 60079-26 due to their construction, electrostatic charging shall be avoided.
 - 3.) The used transmitters/digital displays shall be provided with their own EC-Type Examination Certificate in accordance to EN/IEC. The installation conditions, the electrical connection values, the temperature classes resp. the maximum surface temperatures of devices for the use in explosive dust atmospheres and the permissible ambient temperature shall be taken from the corresponding EC-Type Examination Certificate and shall be considered.
 - 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

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- 5.) In case of a wall thickness less than 1 mm the device may not be exposed to environmental conditions which may negatively affect the partition wall. A thermowell with a suitable minimum wall thickness can be used alternatively.
- 6.) Using a thermowell/neck tube the device shall be constructed in a way that allows an installation that results in a sufficient tight joint (IP66 or IP67) or a flameproof joint (EN/IEC 60079-1) in the direction of the less endangered area.
- 7.) The circuits of the coaxial multipoint thermocouple shall to be considered as connected due to their construction. For the application a separate examination shall be done resp. for the connection of the coaxial multipoint thermocouple special conditions for safe use must be considered if applicable. An additionally assessment as an intrinsically safe system shall be done (e.g. connection of several circuits of different transmitters etc.).
- 8.) For the use of enclosures they shall either be provided with their own EC-Type Examination Certificate or they shall comply to the minimum requirements. IP-protection: at least IP20 (at least IP6X for dust) applies for all enclosures. Light metal enclosures, however, shall comply with clause 8.3 and 8.4 of EN/IEC 60079-0. Non-metallic enclosures or powder-coated enclosures shall also comply with 7.4 of EN/IEC 60079-0 or have an corresponding warning marking.
- 9.) Accessible parts of metallic enclosures which are not connected to ground and accessible parts of metallic enclosures which are connected to ground but do not comply to clause 6.5 of EN/IEC 60079-11, shall comply with clause 7.5 of EN/IEC 60079-0 or have an corresponding warning marking.
- 10.) In case it is impracticable to include the ambient temperature range within the marking of the device, because the device is a small device according to 29.10 of EN/IEC 60079-0, the ambient temperature range shall be specified in the supplied manual. If the device is not a small device according to 29.10 of EN/IEC 60079-0 and the ambient temperature range is not included within the marking, the marking shall additionally include an advisory marking referring to the supplied manual.

(18) Essential Health and Safety Requirements
no additional ones

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body



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