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EU-Type Examination Certificate Supplement 4

Change to Directive 2014/34/EU

- 2 Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU
- 3 EU-Type Examination Certificate Number: BVS 03 ATEX E 292 X
- 4 Product: Temperature sensors type 4,68,**,** and 4,69,**,** and Exia,*,**,**
- 5 Manufacturer: Dittmer GbR
- 6 Address: Carl-Zeiss-Strasse 19, 47475 Kamp-Lintfort, Germany
- This supplementary certificate extends EC-Type Examination Certificate No. BVS 03 ATEX E 292 to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.
- DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of 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 Report No. PP/03.2191 EU.

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

EN 60079-0:2012 + A11:2013 / General requirements EN 60079-11:2012 / Intrinsic Safety "i"

EN 60079-26:2015 /// Equipment with equipment protection level (EPL) Ga

- If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.
- This EU-Type Examination Certificate relates only to the design and construction of the specified product. 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:

For types 4,68,**,** and 4,69,**,**

II 2G Ex ia IIC T4/T6 Gb

II 2G EX IA IIC 14/16 GD

(Ex) I M2 Ex ia I Mb

II 2D Ex ia IIIC T135°C Db

For type Exia,*,**,**

/II 1/2G Ex ia IIC T4/T6 Ga/Gb

x II 1/2D Ex ia IIIB T135°C Da/Db (Pt100)
II 1/2D Ex ia IIIB T100°C Da/Db (Thermoelement)

DEKRA EXAM GmbH Bochum, 2017-01-25

Signed: Dr. Franz Eickhoff

Signed: Dr. Michael Wittler

Certifier

Approver



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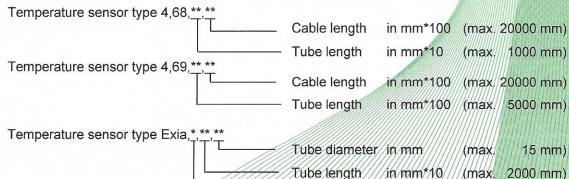
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- 13 Appendix
- 14 EU-Type Examination Certificate

BVS 03 ATEX E 292 X Supplement 4

- 15 Product description
- 15.1 Subject and type

Temperature sensors type 4,68,**,** and type 4,69,**,** and type Exia,*,**,**



The temperature sensors include one resp. two Pt100 resistors or alternatively one resp. two thermocouples. The measuring method (Pt100 or thermocouple) is part of the marking.

Connection head variant J. B. D or V

15.2 **Description**

With this supplement the certificate is changed to Directive 2014/34/EU.

(Annotation: In accordance with Article 41 of Directive 2014/34/EU. EC-Type Examination

Certificates referring to 94/9/EC that were in existence prior to the date of application of

2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive
2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

15.2.1 Description of the apparatus

The temperature sensors type 4,68,**,**

consist of a stainless steel measuring tube of variable length, which includes one or two temperature sensor resistors (Pt100) or one or two thermocouples.

The interconnection between the temperature-proof wiring inside the measuring tube and the permanently connected multicore cable providing open leads for external connections is sealed within a metallic adapter-sleeve.

The temperature sensors type 4.69.**.**

consist of a short piece of stainless steel measuring tube connected to a flexible special PTFE cable of various length. The measuring tube contains one or two temperature sensor resistors (Pt100) or one or two thermocouples.

The interconnection between the PTFE cable and the permanently connected multicore cable for external connections is sealed within a metallic adapter-sleeve.

The temperature sensors type Exia, *, **, **

consist of a stainless steel tube of various diameter and length, which includes one or two temperature sensor resistors (Pt100) or one or two thermocouples.

The stainless steel tube is screwed to the connection head. The temperature sensors are supplied via terminals inside the connection head.



The temperature sensors type 4,68,**,** and type 4,69,**,** are suitable for use in areas requiring Category 2G- or 2D- or M2-equipment.

The temperature sensors type Exia, *, **, ** are installed into the separation wall (e.g. container wall, pipe) separating areas 1G/2G resp. 1D/2D.

The temperature sensors are simple apparatus. They contain only components that do not affect the intrinsic safety of the connected measuring circuit.

The intrinsically safe measuring circuit provides 2-wire, 3-wire or 4-wire configurations.

15.2.2 Reasons for the supplement

- Change to Directive 2014/34/EU
- Alternative values for Ui and Ii
- Assessment of types 4,68,**,** and 4,69,**,** for IIIC Db-applications

15.2.3 Listing of all components used referring to older standards None

15.3 **Parameters**

Note for following versions:

The ambient temperature ranges have to be respected in areas where an explosive

atmosphere may be present.

In areas, where no explosive atmospheres are present, higher ambient temperatures are permissible (the temperature sensors are designed for a measuring range /40/°C/...+200 °C). A sufficient thermal decoupling to explosive areas has to be ensured.

Versions type 4,68,**,** and type 4,69,**,** for applications in areas with 15.3.1 2G and M2-requirements

15.3.1.1 Variants with one or two Pt100 resistors

2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

Maximum input voltage Maximum input current		///AC/DC//40/////40	//////////////////////////////////////
or alternatively		///////////////////////////////////////	
Maximum input/voltage Maximum input current	////\/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	AC/DC / 10 250	//////////////////////////////////////
Maximum input power Ambient temperature range	Pi Va	in accordance with the in accordance with the	

Pi Group II, T4 and Group I		////400 mW *)///////
	Group/II,/T6///////////	/////90/mW/*)////////
Ta	Group II, T4 and Group I///	////-40 °C+80 °C
	Group II,/T6//////////////////////////////////	////-40 °C+55/°C

^{*)} Sum value in case of two Pt100 resistors

Maximum recommended

mA measuring current In capacitance of the permanently connected cable Internal effective capacitance Ci inductance of the permanently connected cable Internal effective inductance Li

For the permanently connected cable, the following values apply:

 C_c 135 pF/m Cable capacitance 0.65 µH/m Cable inductance Lc



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15.3.1.2	Variants with one or two thermocouples

Maximum input voltage	U _i	AC/DC	40	V
Maximum input current	I _i		40	mA
or alternatively				
Maximum input voltage	U _i	AC/DC	10	V
Maximum input current	I _i		250	mA
Maximum input power Ambient temperature range	P _i T _a	in accor	400 dance with	mW h the following table

Ta	Group II, T4 and Group I	-40 °C+80 °C
	Group II, T6	-40 °C+55 °C

15.3.2 Versions type 4,68,**,** and type 4,69,**,** for applications in areas with 2D-requirements

15.3.2.1 Variants with one or two Pt100 resistors

2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

Maximum input voltage Maximum input current	N; N;	AC/DC//40 40	//////////////////////////////////////
or alternatively			
Maximum input voltage Maximum input current	<u> </u>	AC/DC//10 /250	//////////////////////////////////////
Maximum input power Ambient temperature range	//P _i	in accordance with the	

P _i //////	//////550/650/750/mW/*\/////////////////
Ta//////	/////-40/°C././+40/°C/(P;/=/750,mW)//
	////// /4 0/°C,./ <i>+</i> 70/°C/(P _i /=/650/mW)//
	///// /-4 0/°C;/./+100/°C/(P;/=/550/mW)//

*) Sum value in case of two Pt100 resistors

Maximum recommended / / / / / / /	/////	
measuring current	///V _n /	//////////////////////////////////////
Internal effective capacitance	///¢/	capacitance of the permanently connected cable
Internal effective inductance	$///L_i/$	/ inductance of the permanently connected cable
For the permanently connected cable, t	he follo	owing values apply: ////////////////////////////////////

Cable capacitance C_c / 135/ / / / / / / / / / / Cable inductance C_c / 0,65 / μ H/m

15.3.2.2 Variants with one or two thermocouples

		1111111111111	1	
Maximum input voltage Maximum input current	Ú, li	AC/DC	40 40	/////// V mA
or alternatively			//////////////////////////////////////	
Maximum input voltage Maximum input current	U _i	AC/DC	10 250	V mA
Maximum input power Ambient temperature range	P _i T _a			following table following table

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Pi	550/650/750 mW *)
Ta	-40 °C+40 °C (P _i = 750 mW) -40 °C+70 °C (P _i = 650 mW) -40 °C+95 °C (P _i = 550 mW)
	-40 °C+70 °C (P _i = 650 mW)
	-40 °C+95 °C (P _i = 550 mW)

Ci capacitance of the permanently connected cable Internal effective capacitance inductance of the permanently connected cable Internal effective inductance L_i For the permanently connected cable, the following values apply:

pF/m 135 Cable capacitance 0.65 µH/m Cable inductance

Variants type Exia,*,**,** for applications in areas with 1/2G-requirements 15.3.3

15.3.3.1 Variants with one or two Pt100 resistors

2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

Maximum input voltage	U_{i}	AC/DC	<i>/////</i> ///////////////////////////////	///////////////////////////////////////
Maximum input current	I _i		40///////	////// mA
or alternatively				
Maximum input voltage	Ui	AC/DC	////1/0////////	///////////////////////////////////////
Maximum input current			//250//////	///// mA
Maximum input power				he following table
Ambient temperature range	//////\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	///////in/accor	dance with t	he following table

Pi	T4//	400 mW *Y//////
//	76//	90 mW *\/////
T _a ///	74//	/-40°C/./+80°C///
11111	T6///	/-40/°C./.+55/°C///

*) Sum value in case of two PT100 resistors

Maximum recommended mA measuring current negligible Internal effective capacitance Ci negligible Internal effective inductance

15.3.3.2 Variants with one or two thermocouples

Maximum input voltage Maximum input current		///AC/DC	/40 /40	//////////////////////////////////////
or alternatively			///////////////////////////////////////	
Maximum input voltage Maximum input current	//////////////////////////////////////	///AC/DC	10///// 250///////	/////////////mA
Maximum input power Ambient temperature range	P _i T _a	in accord	400 Jance with th	mW ne following table

Ta	T4	-40 °C+80 °C	//
	T6	-40 °C+55 °C	11

Internal effective capacitance Ci negligible Internal effective inductance negligible



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15.3.4 Variants type Exia,*,**,** for applications in areas with 1/2D-requirements

15.3.4.1 Variants with one or two PT100 resistors

Ambient temperature range

2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

	-,,		
Maximum input voltage Maximum input current	U _i I _i	AC/DC 40 40	V mA
or alternatively			
Maximum input voltage Maximum input current	U _i I _i	AC/DC 10 250	V mA
Maximum input power	Pi	in accordance wi	th the following table

T.

in accordance with the following table

Pi	550/650/750 mW)*
Ta	-40 °C +40 °C (P _i = 750 mW)
	-40 °C +70 °C (P _i = 650 mW)
	-40 °C+100 °C (P _i = 550 mW)

*) Sum value in the case of two Pt100 resistors

Maximum recommended			
measuring current	I_n	//////////3//////////	/////mA
Internal effective capacitance	C _i	<i>/////////////////////////////////////</i>	negligible
Internal effective inductance	<u> </u>	<i>/////////////////////////////////////</i>	/// negligible

15.3.4.2 Variants with one or two thermocouples

Maximum input voltage Maximum input current	Ui Vi	AC/DC///40/// /40	//////////////////////////////////////
or alternatively			///////////////////////////////////////
Maximum input voltage Maximum input current)	AC/DC 10 250	//////////////////////////////////////
Maximum input power Ambient temperature range	Pi Ta	////in/accordance/with/ /in/accordance/with/	

Pi//////	/////550/650/750/mW/*y///////////
T _a //////	/////-40°C/./+40°C/(P/=750/mW)//
11/1/////	////////40°C/./+70°C/.(P;/=,650/mW)//
	///////40°C/./+95°C/(P/=/550/mW/)//

Internal effective capacitance	////¢(/////////////////////////////////	///////////////////////////////////////	negligible
Internal effective inductance	////\\\		negligible

16 Report Number

BVS PP 03.2191 EU, as of 2017-01-25

17 Special Conditions for Use

Temperature sensors type 4,68,**,** and type 4,69,**,**:

In dust-explosive areas, the sensors have to be installed in such a way, that intensive electrostatic charging is excluded.

When the sensors are used in areas with conductive dust IIIC, a safe separation of the intrinsically safe circuit from earth is not ensured.

The metallic measuring tube / piece of measuring tube and the metallic adapter-sleeve have to be included into the potential equalization.



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For temperature sensor type Exia, *, **, **:

The installation into a separation wall between areas with 1G/2G- resp. 1D/2D-requirements has to be done in such a way, that all metallic parts are conductively connected to the metal container wall; or, if the container is made of plastic, that all insulated metal parts are connected to equipotential bonding.

The temperature sensors have to be installed into the separation wall with standardized connections. At the place of installation, technical tightness has to be ensured.

The separation wall (stainless steel tube) has a wall thickness < 1 mm. It has to be installed in such a way that it cannot be damaged by mechanical impact.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.

In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH Bochum, dated 2017-01-25 BVS-Le/Mu A 20160777

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Certifier/

Approver

