

Translation

# EU-Type Examination Certificate Supplement 4

Change to Directive 2014/34/EU

Equipment intended for use in potentially explosive atmospheres  
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 03 ATEX E 292 X**

Product: **Temperature sensors type 4,68,\*\*,\*\* and 4,69,\*\*,\*\* and Exia,\*\*,\*\***

Manufacturer: **Dittmer GbR**

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.

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.

The marking of the product shall include the following:

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

II 2G Ex ia IIC T4/T6 Gb  
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  
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

Certifier

Signed: Dr. Michael Wittler

Approver



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  $U_i$  and  $I_i$
- 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  $-40\text{ °C} \dots +200\text{ °C}$ ).  
A sufficient thermal decoupling to explosive areas has to be ensured.

#### 15.3.1 Versions type 4,68,\*\*,\*\* and type 4,69,\*\*,\*\* for applications in areas with 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	$U_i$	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	$P_i$	in accordance with the following table		
Ambient temperature range	$T_a$	in accordance with the following table		

$P_i$	Group II, T4 and Group I	400 mW *)
	Group II, T6	90 mW *)
$T_a$	Group II, T4 and Group I	$-40\text{ °C} \dots +80\text{ °C}$
	Group II, T6	$-40\text{ °C} \dots +55\text{ °C}$

\*) Sum value in case of two Pt100 resistors

Maximum recommended

measuring current  $I_n$  3 mA

Internal effective capacitance  $C_i$  capacitance of the permanently connected cable

Internal effective inductance  $L_i$  inductance of the permanently connected cable

For the permanently connected cable, the following values apply:

Cable capacitance	$C_c$	135	pF/m
Cable inductance	$L_c$	0.65	µH/m

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	$P_i$		400	mW
Ambient temperature range	$T_a$	in accordance with the following table		

$T_a$	Group II, T4 and Group I	-40 °C...+80 °C
	Group II, T6	-40 °C...+55 °C

Internal effective capacitance  $C_i$  capacitance of the permanently connected cable  
 Internal effective inductance  $L_i$  inductance of the permanently connected cable  
 For the permanently connected cable, the following values apply:  
 Cable capacitance  $C_c$  135 pF/m  
 Cable inductance  $L_c$  0.65 µH/m

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	$U_i$	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	$P_i$	in accordance with the following table		
Ambient temperature range	$T_a$	in accordance with the following table		

$P_i$	550/650/750 mW *)
$T_a$	-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 case of two Pt100 resistors

Maximum recommended measuring current  $I_n$  3 mA  
 Internal effective capacitance  $C_i$  capacitance of the permanently connected cable  
 Internal effective inductance  $L_i$  inductance of the permanently connected cable  
 For the permanently connected cable, the following values apply:  
 Cable capacitance  $C_c$  135 pF/m  
 Cable inductance  $L_c$  0.65 µH/m

15.3.2.2 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	$P_i$	in accordance with the following table		
Ambient temperature range	$T_a$	in accordance with the following table		

$P_i$	550/650/750 mW *)
$T_a$	-40 °C...+40 °C ( $P_i = 750$ mW)
	-40 °C...+70 °C ( $P_i = 650$ mW)
	-40 °C...+95 °C ( $P_i = 550$ mW)

Internal effective capacitance  $C_i$  capacitance of the permanently connected cable  
 Internal effective inductance  $L_i$  inductance of the permanently connected cable  
 For the permanently connected cable, the following values apply:  
 Cable capacitance  $C_c$  135 pF/m  
 Cable inductance  $L_c$  0.65  $\mu$ H/m

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

#### 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 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  $P_i$  in accordance with the following table  
 Ambient temperature range  $T_a$  in accordance with the following table

$P_i$	T4	400 mW *)
	T6	90 mW *)
$T_a$	T4	-40 °C...+80 °C
	T6	-40 °C...+55 °C

\*) Sum value in case of two PT100 resistors

Maximum recommended measuring current  $I_n$  3 mA  
 Internal effective capacitance  $C_i$  negligible  
 Internal effective inductance  $L_i$  negligible

#### 15.3.3.2 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  $P_i$  400 mW  
 Ambient temperature range  $T_a$  in accordance with the following table

$T_a$	T4	-40 °C...+80 °C
	T6	-40 °C...+55 °C

Internal effective capacitance  $C_i$  negligible  
 Internal effective inductance  $L_i$  negligible

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

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	$P_i$	in accordance with the following table		
Ambient temperature range	$T_a$	in accordance with the following table		

$P_i$	550/650/750 mW )*
$T_a$	-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	$C_i$		negligible
Internal effective inductance	$L_i$		negligible

#### 15.3.4.2 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	$P_i$	in accordance with the following table		
Ambient temperature range	$T_a$	in accordance with the following table		

$P_i$	550/650/750 mW *)
$T_a$	-40 °C...+40 °C ( $P_i = 750$ mW)
	-40 °C...+70 °C ( $P_i = 650$ mW)
	-40 °C...+95 °C ( $P_i = 550$ mW)

Internal effective capacitance	$C_i$	negligible
Internal effective inductance	$L_i$	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.

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.

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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



\_\_\_\_\_  
Certifier



\_\_\_\_\_  
Approver