

# LVL-M4

## Vibration Limit Switch

### ATEX:

II 1/2 G Ex db IIC T6...T1 Ga/Gb

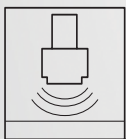
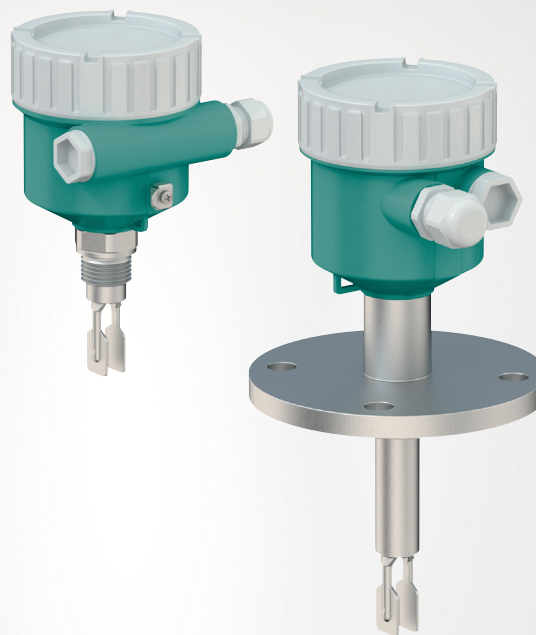
II 2 G Ex db IIC T6...T1 Gb

### IECEX:

Ex db IIC T6...T1 Ga/Gb

Ex db IIC T6...T1 Gb

Temperature Tables



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With regard to the supply of products, the current issue of the following document is applicable:  
The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

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## 1 Associated Documentation

The corresponding datasheets, manuals, instruction manuals, declarations of conformity, EU type examination certificates, certificates, and control drawings if applicable are an integral part of this document. You can find this information under [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

This document does not substitute the instruction manual.

For full information on the product, refer to the instruction manual and further documentation on the Internet at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

This document is an integral part of the following documents:

- Manual: DOCT-8107
- Brief instructions: DOCT-8111
- Instruction manual: DOCT-8392

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

## 2 Supplementary Documentation

Information for explosion protection:

The information can be found on the Internet at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

## 3 Manufacturer's Certificates

### EU Declaration of Conformity

Declaration number: DOC-7442

### EU Type-Examination Certificate

Certificate number: CSANe 23ATEX1157X

List of applied standards: see EU Declaration of Conformity

### IEC Declaration of Conformity

Certificate number: IECEX CSAE 23.0044X

List of applied standards: see IECEX certificate



#### Note

Further information is available on the product detail page of the devices on the internet at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

Enter the order designation in the search field → Select the appropriate product → Open the product detail page → Open the **Approvals+Certificates** tab.

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## 4 Manufacturer Address

Pepperl+Fuchs Group  
Lilienthalstraße 200, 68307 Mannheim, Germany  
Internet: [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

## 5 Device Versions

Device type	Basic specifications	Optional specifications
LVL-M4	-XXXXXX-XXXXXX-XX	+XX

The X-marked letters of the type code are placeholders for versions of the device.

The following specifications reproduce an extract from the product structure and are used to assign.

### Basic specifications

Option	Type of probe
A	Compact version
B	Short tube version
C	Tube extension

Option	Sensor length, material
A	Compact version, Alloy C22
B	Compact version, 316L
C	Short tube version, Alloy C22
D	Short tube version, 316L
E	Tube extension, length L in mm, Alloy C22, Ra < 3.2 µm/126 µinch
F	Tube extension, length L in mm, 316L, Ra < 3.2 µm/126 µinch
G	Tube extension, length L in inch, Alloy C22, Ra < 3.2 µm/126 µinch
H	Tube extension, length L in inch, 316L, Ra < 3.2 µm/126 µinch

Option	Housing, material
A	Single compartment, aluminum, coated
D	Dual compartment, L-shape, aluminum, coated
G	Single compartment, 316L, cast

Option	Electrical connection
F	Thread M20, IP66/68, NEMA type 4X/6P
G <sup>1</sup>	Thread G1/2, IP66/68, NEMA type 4X/6P
I	Thread NPT3/4, IP66/68, NEMA type 4X/6P

<sup>1</sup> Reduction M20x1.5 to G1/2 enclosed

Option	Application, temperature
A	Process: max. 150 °C/302 °F, max. 64 bar
B	Process: max. 150 °C/302 °F, max. 100 bar

Option	Electrical output
A	FEL61, 2-wire, 19 to 253 V AC with test button
B	FEL64DC, relay DPDT, 9 V DC to 20 V DC, contact 253 V/6 A with test button
E	FEL62, 3-wire PNP, 10 V DC to 55 V DC with test button
N	FEL64, relay DPDT, 19 V AC to 253 V AC/19 V DC to 55 V DC, contact 253 V/6 A with test button
M	FEL68, 2-wire NAMUR with test button

Option	Display, operation
A	Without display, switch
B <sup>1</sup>	LED module VU120 visible from the outside, switch

<sup>1</sup> Only in connection with feature **Electrical output**, option **B, E, N** and feature **Housing, material**, option **A, D**

Option	Approval
E3	ATEX/IEC II 1/2G, 2G Ex db IIC T6 Ga/Gb

### Optional specifications

Option	Test, certificate, declaration
U1 <sup>1</sup>	Ambient temperature -50 °C/-58 °F
U2 <sup>3</sup>	Ambient temperature -60 °C/-76 °F

<sup>1</sup> Only in connection with feature **Electrical output**, option **B, E, N, M** and feature **Display, operation**, option **A**

Option	Sensor design
DF	Pressure tight feed through (second line of defense)
TD	Temperature spacer

Option	Accessory mounted
BL <sup>1</sup>	Bluetooth module VU121
VB <sup>2</sup>	Bluetooth module VU121 for NAMUR output

<sup>1</sup> Only in connection with feature **Electrical output**, option **A, B, E, N**, feature **Housing, material**, option **A, D** and feature **Display, operation**, option **A**

<sup>2</sup> Only in connection with feature **Electrical output**, option **M**, feature **Housing, material**, option **A, D** and feature **Display, operation**, option **A**

Option	Accessory enclosed
ST <sup>1</sup>	Test magnet
WP <sup>2</sup>	Weather protection cover, plastic
WS <sup>3</sup>	Weather protection cover, 316L

<sup>1</sup> Only in connection with feature **Electrical output**, option **B, E, N, M**

<sup>2</sup> Only in connection with feature **Housing, material**, option **A, G**

<sup>3</sup> Only in connection with feature **Housing, material**, option **D**

## 6 Safety Instructions: Installation

Continuous service temperature of the connecting cable/cable gland/cable entry:

- Basic specification, feature **Electrical output**, option **A, M**:  $\geq T_{\text{amb}} + 20 \text{ K}$
- Basic specification, feature **Electrical output**, option **E**:  $\geq T_{\text{amb}} + 35 \text{ K}$
- Basic specification, feature **Electrical output**, option **B, N**:  $\geq T_{\text{amb}} + 40 \text{ K}$
- Basic specification, feature **Electrical output**, option **E, B, N** in connection with optional specification, feature **Sensor design**, option **DF, TD**:  $\geq T_{\text{amb}} + 20 \text{ K}$

## 7 Temperature Tables

Optional specification, feature **Test, certificate, declaration**, option **U1**



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### Note

Lower limit of the ambient temperature for explosion protection changes to  $-50 \text{ }^\circ\text{C}$ .

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Optional specification, feature **Test, certificate, declaration**, option **U2**



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### Note

Lower limit of the ambient temperature for explosion protection changes to  $-60 \text{ }^\circ\text{C}$ .

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### General notes

Optional specification, feature **Accessories enclosed**, option **WP**



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### Note

When using the weather protection cover: Reduce the values  $T_{\text{amb}}$  of P1, P2, P3 by 16 K.

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### Description notes



#### Note

Unless otherwise indicated, the positions always refer to the basic specification.

- 1st line: basic specification, feature **Housing material**, option **A, D, G**
- 1st column: basic specification, feature **Application, temperature**, option **A, B**
- 2nd column: maximum load current
- 3rd column: temperature classes T6 (85 °C) to T1 (450 °C)
- Column P1 to P5: position (temperature value) on the axes of the derating
  - $T_{amb}$ : ambient temperature in °C
  - $T_p$ : process temperature in °C

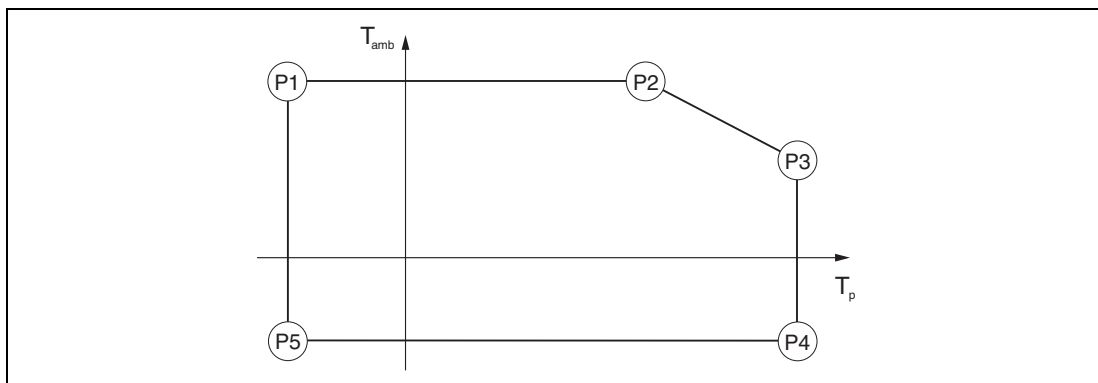


Figure 1

### Zone 0, Zone 1

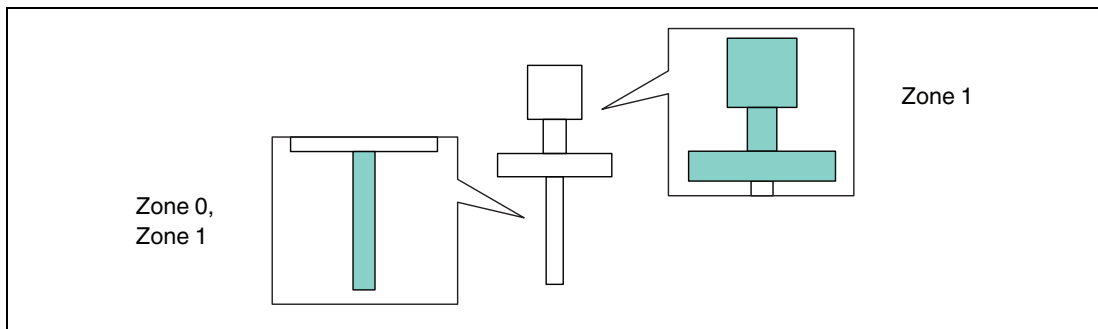


Figure 2

**Basic specification, feature Electrical output, option A**

Without optional specification, feature Sensor design, option DF, TD

Option A, G												
Option A, B		P1		P2		P3		P4		P5		
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
		180 mA										
		T6	-50	55	55	55	80	46	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40
		T5	-50	70	70	70	95	61	95		-50	-50 <sup>1</sup>
		T4	-50	70	76	70	130	50	130		-50	-60 <sup>2</sup>
		T3...T1	-50	70	76	70	150	42	150		-50	-60 <sup>2</sup>

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 1

With optional specification, feature Sensor design, option DF, TD

Option A, G												
Option A, B		P1		P2		P3		P4		P5		
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
		180 mA										
		T6	-50	55	55	55	80	53	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40
		T5	-50	70	70	70	95	68	95		-50	-50 <sup>1</sup>
		T4	-50	70	94	70	130	67	130		-50	-60 <sup>2</sup>
		T3...T1	-50	70	94	70	150	65	150		-50	-60 <sup>2</sup>
		350 mA										
		T6	-50	37	49	37	80	34	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40
		T5	-50	52	64	52	95	49	95		-50	-50 <sup>1</sup>
		T4	-50	69	69	69	130	64	130		-50	-60 <sup>2</sup>
		T3...T1	-50	69	69	69	150	62	150		-50	-60 <sup>2</sup>

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 2



Without optional specification, feature Sensor design, option DF, TD

Option D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
		<b>180 mA</b>									
	T6	-50	63	64	63	80	59	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	95	70	95	70	95		-50	
	T4	-50	70	112	70	130	66	130		-50	
	T3...T1	-50	70	112	70	150	61	150		-50	
		<b>350 mA</b>									
	T6	-50	38	39	38	80	29	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	53	54	53	95	44	95		-50	
	T4	-50	70	72	70	130	57	130		-50	
	T3...T1	-50	70	72	70	150	53	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 3

With optional specification, feature Sensor design, option DF, TD

Option D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
		<b>180 mA</b>									
	T6	-50	62	70	62	80	62	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	95	70	95	70	95		-50	
	T4	-50	70	130	70	130	70	130		-50	
	T3...T1	-50	70	130	70	150	70	150		-50	
		<b>350 mA</b>									
	T6	-50	36	80	36	80	36	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	51	95	51	95	51	95		-50	
	T4	-50	67	130	67	130	67	130		-50	
	T3...T1	-50	66	150	66	150	66	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 4

**Basic specification, feature Electrical output, option E**

Without optional specification, feature Sensor design, option DF, TD

Option A, G, D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
350 mA											
	T6	-50	55	55	55	80	46	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	70	70	95	61	95		-50	
	T4	-50	70	76	70	130	50	130		-50	
	T3...T1	-50	70	76	70	150	42	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 5

With optional specification, feature Sensor design, option DF, TD

Option A, G, D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
350 mA											
	T6	-50	55	55	55	80	53	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	70	70	95	68	95		-50	
	T4	-50	70	94	70	130	67	130		-50	
	T3...T1	-50	70	94	70	150	65	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 6

**Basic specification, feature Electrical output, option B, N**  
**Without optional specification, feature Sensor design, option DF, TD**

Option A, G											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
2 A											
	T6	-50	52	52	52	80	42	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	67	67	67	95	57	95		-50	
	T4	-50	70	77	70	130	70	130		-50	
	T3...T1	-50	70	77	70	150	70	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 7

**With optional specification, feature Sensor design, option DF, TD**

Option A, G											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
2 A											
	T6	-50	52	52	52	80	50	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	67	67	67	95	65	95		-50	
	T4	-50	70	100	70	130	67	130		-50	
	T3...T1	-50	70	100	70	150	66	150		-50	
4 A											
	T6	-50	41	50	41	80	39	80	-40 -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	56	65	56	95	54	95		-50	
	T4	-50	69	76	69	130	64	130		-50	
	T3...T1	-50	69	76	69	150	63	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 8

Without optional specification, feature Sensor design, option DF, TD

Option D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
2 A											
	T6	-50	55	56	55	80	50	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	71	70	95	65	95		-50	
	T4	-50	70	94	70	130	61	130		-50	
	T3...T1	-50	70	94	70	150	57	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 9

With optional specification, feature Sensor design, option DF, TD

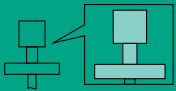
Option D											
Option A, B		P1		P2		P3		P4		P5	
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
2 A											
	T6	-50	55	59	55	80	53	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	70	74	70	95	68	95		-50	
	T4	-50	70	130	70	130	70	130		-50	
	T3...T1	-50	70	148	70	150	70	150		-50	
4 A											
	T6	-50	45	62	45	80	44	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
	T5	-50	60	77	60	95	59	95		-50	
	T4	-50	70	113	70	130	69	130		-50	
	T3...T1	-50	70	113	70	150	67	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 10

**Basic specification, feature Electrical output, option M**

Option A, G, D												
Option A, B		P1		P2		P3		P4		P5		
		T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
		T6	-50	70	80	70	80	70	80	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>	-50	-40 <sup>1</sup> -50 <sup>1</sup> -60 <sup>2</sup>
		T5	-50	70	95	70	95	70	95		-50	
		T4	-50	70	130	70	130	70	130		-50	
		T3...T1	-50	70	130	70	150	65	150		-50	

<sup>1</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U1**

<sup>2</sup> Only in connection with optional specification, feature **Test, certificate, declaration**, option **U2**

Table 11

## 8 Connection Data

Optional specification, feature **Access mounted**, option **BL, VB**

When using the Bluetooth<sup>®</sup> module: No changes to the connection values.

**Basic specification, feature Electrical output**

Option	Power supply circuit	Output
<b>A</b>	U = 19 to 253 V AC, 50/60 Hz P <sub>max</sub> < 2 VA	I <sub>max</sub> = 180 mA I <sub>max</sub> = 350 mA <sup>1</sup>
<b>E</b>	U = 10 to 55 V DC P <sub>max</sub> < 0.5 W P <sub>max</sub> < 1.2 W <sup>2</sup>	I <sub>max</sub> = 350 mA
<b>B</b>	U = 9 to 20 V DC P <sub>max</sub> < 1 W P <sub>max</sub> < 1.7 W <sup>2</sup>	2 potential free change-over contacts, 2 A Ex d 4 A Ex d <sup>3</sup>
<b>N</b>	U = 19 to 253 V AC, 50/60 Hz or 19 to 55 V DC P <sub>max</sub> < 25 VA or < 1.3 W P <sub>max</sub> < 31 VA or < 2 W <sup>2</sup>	
<b>M</b>	U = 4 to 8.2 V DC	NAMUR, I <sub>max</sub> = 3.8 mA

<sup>1</sup> Only in connection with basic specification, feature **Application, temperature**, option **A, B** and optional specification, feature **Sensor design**, option **DF, TD**

<sup>2</sup> Only in connection with basic specification, feature **Display, operation**, option **B**

<sup>3</sup> Only in connection with optional specification, feature **Sensor design**, option **DF, TD**

Table 12

# Your automation, our passion.

## Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

## Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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