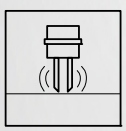
LVL-M*(H), LVL-M2C

Vibration Level Switch

ATEX, IEXEx
Ex ia IIC Ga/Gb
Ex ia IIIC Da/Db

Instruction Manual

ISO9001



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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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Vibration Level Switch
Vibracon LVL-M*(H), LVL-M2C

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1 Associated Documentation

This document is an integral part of the following documents:

- KA00143O (LVL-M1, LVL-M2)
- KA00144O (LVL-M1H, LVL-M2H)
- KA00162O (LVL-M2C)

The documents which are supplied and correspond to the device type apply.

2 Supplementary Documentation

Information for explosion protection:
The information can be found on the Internet at www.pepperl-fuchs.com.

3 General Notes: Combined Approval

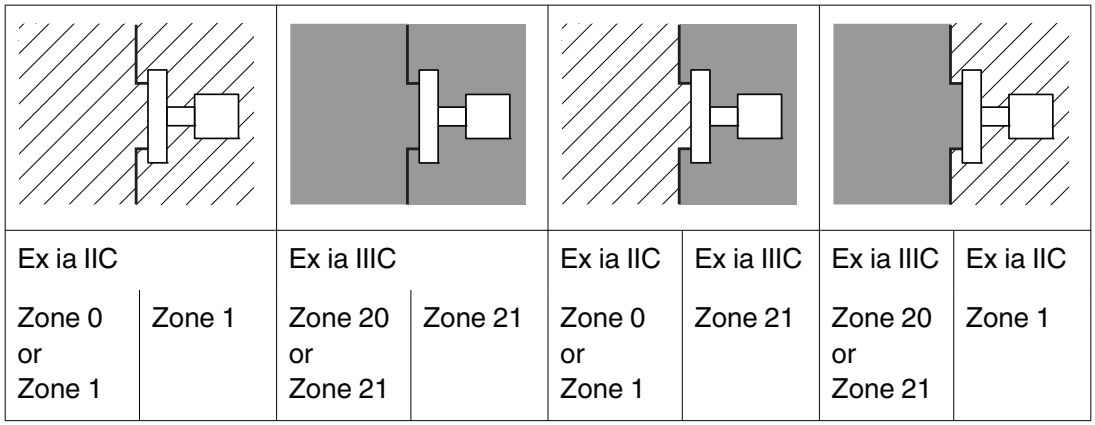

Figure 1

The device is designed for operation in explosive gas or explosive dust atmosphere as shown in the sketch above. In the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously: Suitability requires further assessment.

Note

A sequential change between gas and dust explosion protection is only possible if:

- A period with non-explosive atmosphere is realized during the transition or
- Special examinations are done which are not covered by the certificate

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4 Manufacturer's Certificates

EU Declaration of Conformity

The EU Declaration of Conformity can be found on the product detail page of the devices on the Internet at 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.

EU Type-Examination Certificate

Certificate number: KEMA 01 ATEX 1089 X

List of applied standards: see EU Declaration of Conformity

IEC Declaration of Conformity

Certificate number: IECEx DEK 16.0077X

Affixing the certificate number certifies conformity with the following standards (depending on the device version).

- IEC 60079-0: 2017
- IEC 60079-1: 2014
- IEC 60079-11: 2011
- IEC 60079-26: 2021

5 Manufacturer Address

Pepperl+Fuchs Group
Lilienthalstraße 200, 68307 Mannheim, Germany

Internet: www.pepperl-fuchs.com

6 Other Standards

Among other things, the following standards shall be observed in their current version for proper installation:

- IEC/EN 60079-14: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection"
- EN 1127-1: "Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology"

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7 Extended Order Code

The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated manual.

Structure of the Extended Order Code

Device type		Basic specifications		Probe length
LVL-M1	–	XXXXX-XXXXXX-XX		–
LVL-M1H	–	XXXXX-XXXXXX-XX		–
LVL-M2	–	XXXXX-XXXXXX-XX	.	XXXX
LVL-M2H	–	XXXXX-XXXXXX-XX	.	XXXX
LVL-M2C	–	XXXXXX-XXXXXX-XX	.	XXXX

Table 1

X = Placeholder
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Basic Specifications

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.

Optional Specifications

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available.

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Extended Order Code: Vibration Level Switch

Note

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

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

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Device types

LVL-M1, LVL-M1H, LVL-M2, LVL-M2H, LVL-M2C

Basic specifications

Probe version, probe length		
Position	**Option**	**Description**
LVL-M1-XXX**XX**-XXXXXX-XX	AA	Compact
	IA	Compact, with temperature spacer
	QA	Compact, with gastight spacer
LVL-M1H-XXX**XX**-XXXXXX-XX	AX	Compact
	IX	Compact, with temperature spacer
	QX	Compact, with gastight spacer
	XD	Compact, R_a < 0.3 µm/12 µinch
LVL-M2-XXX**XX**-XXXXXX-XX.XXXX	BB, CB, DB	in mm/inch, 1.4435/316L
	BE, CE, DE	in mm/inch, 2.4610/Alloy C4
	JB, KB, LB	in mm/inch, 1.4435/316L, with temperature spacer
	JE, KE, LE	in mm/inch, 2.4610/Alloy C4, with temperature spacer
	RB, SB, TB	in mm/inch, 1.4435/316L, with gastight spacer
	RE, SE, TE	in mm/inch, 2.4610/Alloy C4, with gastight spacer
LVL-M2H-XXX**XX**-XXXXXX-XX.XXXXX	BX, CX, DX	in mm/inch
	JX, KX, LX	in mm/inch, with temperature spacer
	RX, SX, TX	in mm/inch, with gastight spacer
	XD	in mm/inch, R_a < 0.3 µm/12 µinch
LVL-M2C-XXX**XX**X-XXXXXX-XX.XXXXX	BK, CK, DK	with ECTFE coating [1]

[1] only for Ex ia IIB Ga/Gb

Temperature spacer, gastight spacer		
Position	**Option**	**Description**
LVL-M2C-XXXXXX**X**-XXXXXX-XX.XXXXX	A	without
	B	Temperature spacer
	C	Gastight spacer

Housing		
Position	**Option**	**Description**
LVL-MX-XXXXX-**XX**XXXX-XX LVL-MXH-XXXXX-**XX**XXXX-XX.XXXXX	AX	Aluminum housing
	CX	Compact housing
	EX	Stainless steel housing, hygienic version
LVL-M2C-XXXXXXX-**XX**XXXX-XX.XXXXX	AX	Aluminum housing
	EX	Stainless steel housing, hygienic version

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Electrical output		
Position	**Option**	**Description**
LVL-MX-XXXXX-XX**XX**XX-XX LVL-MXH-XXXXX-XX**XX**XX-XX.XXXXX LVL-M2C-XXXXXXX-XX**XX**XX-XX.XXXXX	PA	FEL50A, PROFIBUS PA
	SI	FEL55, 8/16 mA, 11 V to 36 V DC
	N1	FEL56, NAMUR, L-H edge
	N2	FEL58, NAMUR with push button, H-L edge

Approval		
Position	**Option**	**Description**
LVL-MX-XXXXX-XXXXXX-**XX** LVL-MXH-XXXXX-XXXXXX-**XX**.XXXXX	E2, EB	ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb ATEX II 1/2D Ex ia IIIC Txxx°C Da/Db IECEx Ex ia IIC T6...T1 Ga/Gb IECEx Ex ia IIIC Txxx°C Da/Db
LVL-M2C-XXXXXX-XXXXXX-**XX**.XXXXX	EF	ATEX II 1/2G Ex ia IIB T6...T1 Ga/Gb IECEx Ex ia IIB T6...T1 Ga/Gb

Table 2

Optional specifications

No options specific to hazardous locations are available.

8 Safety Instructions: General

- The device is intended to be used in explosive atmospheres as defined in the scope of IEC 60079-0 or equivalent national standards. If no potentially explosive atmospheres are present or if additional protective measures have been taken:
  The device may be operated according to the manufacturer's specifications.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
  - Of plastic surfaces (e. g. housing, sensor element, special varnishing, attached additional plates, ...)
  - Of isolated capacities (e. g. isolated metallic plates)
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application and the temperature class.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Pepperl+Fuchs.

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All versions except device types LVL-M1H, LVL-M2H, basic specification, feature Probe version, probe length, option XD

The probe is made of stainless steel or high corrosion-resistant alloy of thickness ≥ 1 mm.

Device types LVL-M1H, LVL-M2H, basic specification, feature Probe version, probe length, option XD

The probe is made of stainless steel or high corrosion-resistant alloy of thickness within 0.2 to 1 mm.

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9 Safety Instructions: Special Conditions

- Limitations of the maximum ambient temperature at the electronics housing may be required dependent on device configuration, process temperatures and temperature classification.
- Details of limitations: See section 11 for temperature tables.
- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the housing or other metal parts or for adhesive plates:
  - Observe the danger of electrostatic charging and discharge.
  - Do not install in the vicinity of processes (≤ 0.5 m) generating strong electrostatic charges.

Basic specification, feature Housing, option AX

Avoid sparks caused by impact and friction.

Device types LVL-M1H, LVL-M2H, basic specification, feature Probe version, probe length, option XD

The probe must not be subjected to abrasive or corrosive medium that may adversely affect the partition for the zone separation.

Device type LVL-M2C

In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.

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10 Safety Instructions: Installation

Basic specification, feature Electrical output, options SI, N1, N2

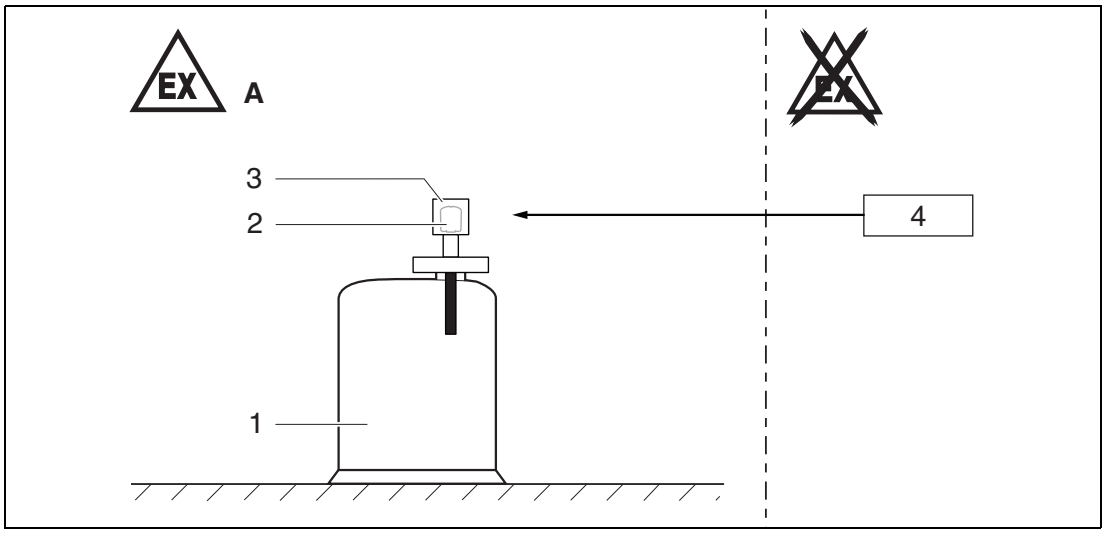

Figure 2

A Zone 1, Zone 21

1 Tank; Zone 0, Zone 20

2 Electronic insert

3 Housing

4 Basic specification, feature **Electrical output**, options **SI, N1, N2**: associated intrinsically safe power supply units

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Basic specification, feature Electrical output, option PA

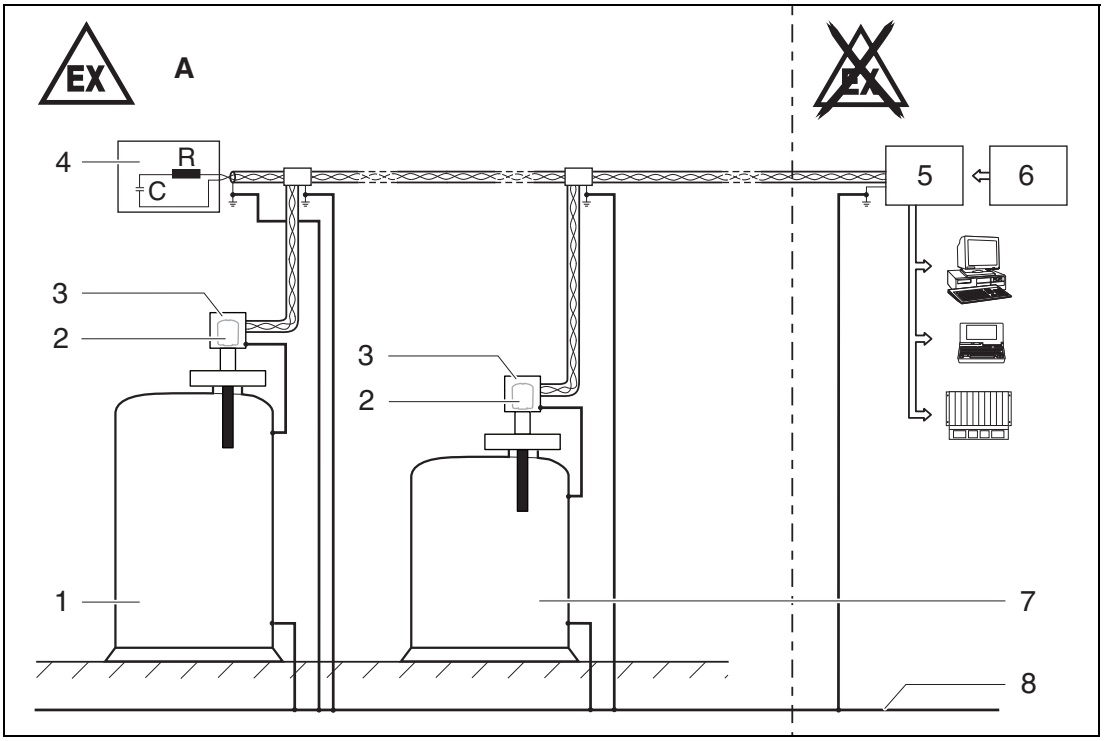

Figure 3

A Zone 1, Zone 21
1 Tank; Zone 0, Zone 20
2 Electronic insert
3 Housing
4 Permitted terminating resistor Ex ia IIC
5 Certified associated apparatus
6 Power supply
7 Tank; Zone 1, Zone 21
8 Potential equalization

- Connect the device using suitable cable and wire entries of protection type **Intrinsic safety (Ex i)**. An ingress protection of at least IP54 must be achieved.
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB, the type of protection changes to Ex ib IIC and Ex ib IIB.
- Continuous service temperature of the connecting cable: ≥ T_{amb} + 5 K.
- Perform the following to achieve the degree of protection IP66/67:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- Connection of intrinsically safe PROFIBUS devices: 10 devices.
- Observe the maximum process conditions according to the manufacturer's documentation.
- At high medium temperatures, note flange pressure load capacity as a factor of temperature.

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- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Support extension tube of the device if a dynamic load is expected.

Accessory high pressure sliding sleeve

The high pressure sliding sleeve can be used for a continuous setting of the switch point and is suited for zone separation if mounted properly (see manual).

Device group III, application in dust

- To ensure the ingress protection IP54: Only use the unit-mounted cable entries, sealing plugs and O-rings.
- Supplied cable glands and metallic sealing plugs comply with the requirements of type of protection marked on the nameplate.

Permitted ambient conditions: Ex ia IIIC Da/Db

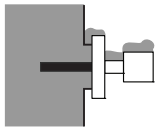
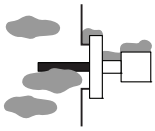
Process Zone 20		Housing Zone 21
Continuous dust submersion		Dust accumulation or temporary explosive dust atmosphere
Continuous explosive dust atmosphere and deposits		Dust accumulation or temporary explosive dust atmosphere

Table 3

Intrinsic safety

- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection Ex ia/Ex ib.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V_{rms}.

Potential equalization

- Integrate the device into the local potential equalization.
- Grounding the screen, see the following figure.

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Basic specification, feature Electrical output, option PA

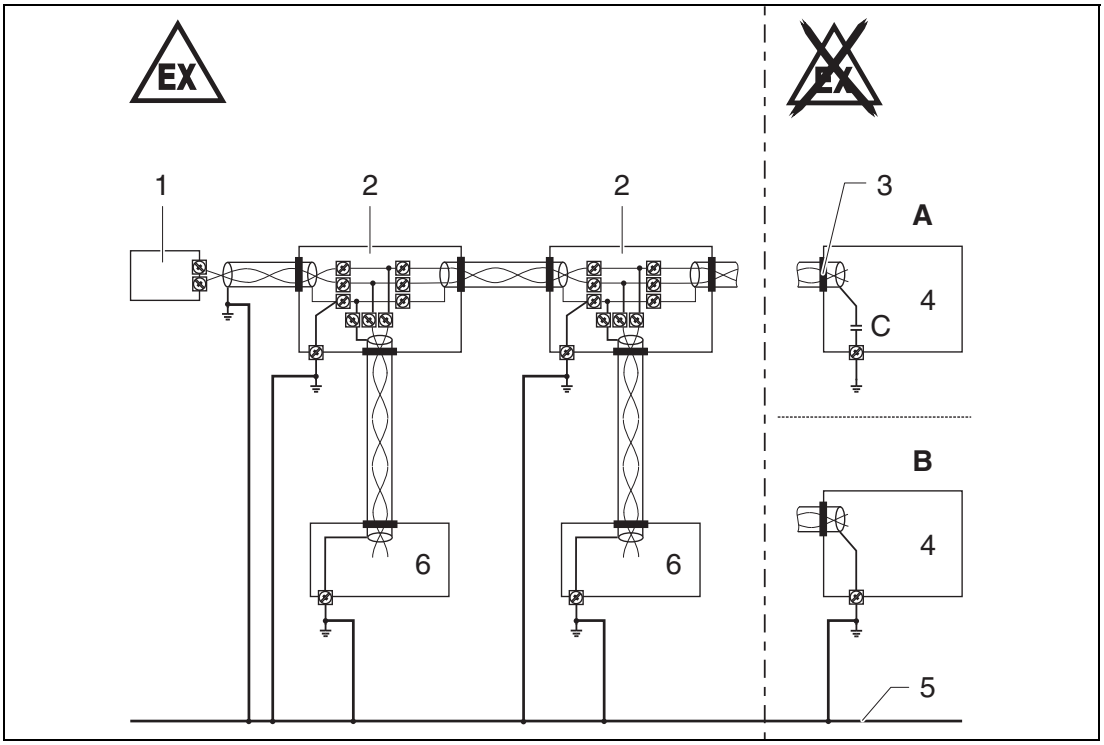

Figure 4

A Version 1:
Use small capacitors (e. g. 1 nF, 1500 V, dielectric strength, ceramic).
Total capacitance connected to the screen may not exceed 10 nF.

B Version 2

1 Terminating resistor

2 Distributor/terminal box

3 Screen insulated

4 Supply unit/segment coupler

5 Potential equalization (secured in high degree)

6 Field device

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11 Temperature Tables

Description notes

Note

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

Zone 0, Zone 1

- 1st column:
  - LVL-M1, LVL-M1H, LVL-M2, LVL-M2H:
    basic specification, feature **Probe version, probe length**
  - LVL-M2C: basic specification, feature **Temperature spacer, gastight spacer**
- 2nd 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

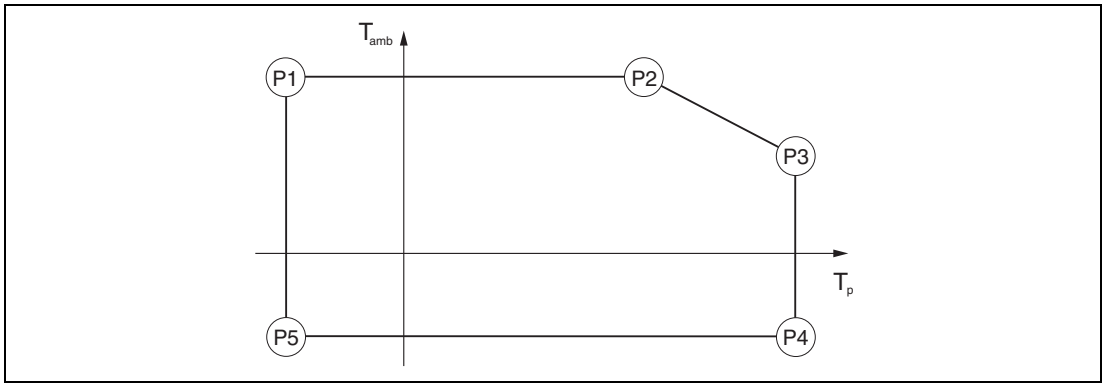

Figure 5

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Zone 20, Zone 21

- 1st column:
  - LVL-M1, LVL-M1H, LVL-M2, LVL-M2H:
    basic specification, feature **Probe version, probe length**
  - LVL-M2C: basic specification, feature **Temperature spacer, gastight spacer**
- 2nd column: process temperature range in °C
- 3rd column: ambient temperature range in °C
- 4th column: maximum surface temperature in °C

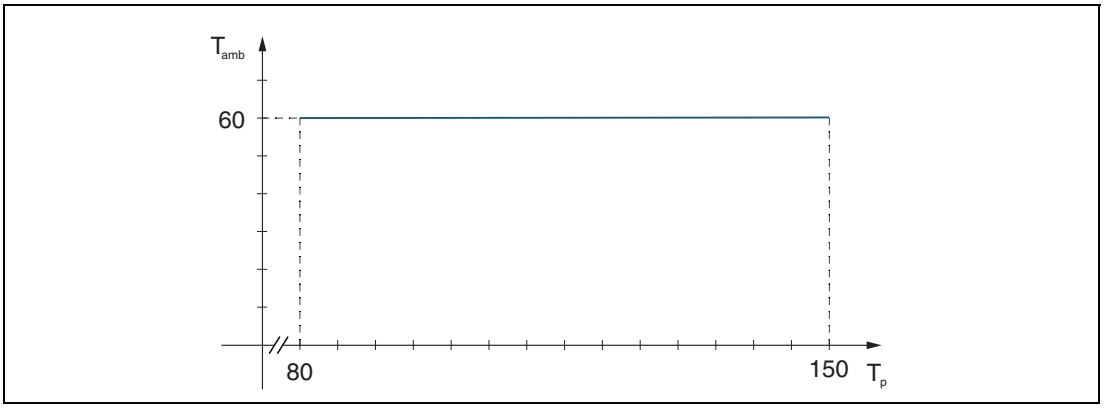

Figure 6

T_{amb} Ambient temperature in °C
T_p Process temperature in °C

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Zone 0, Zone 1

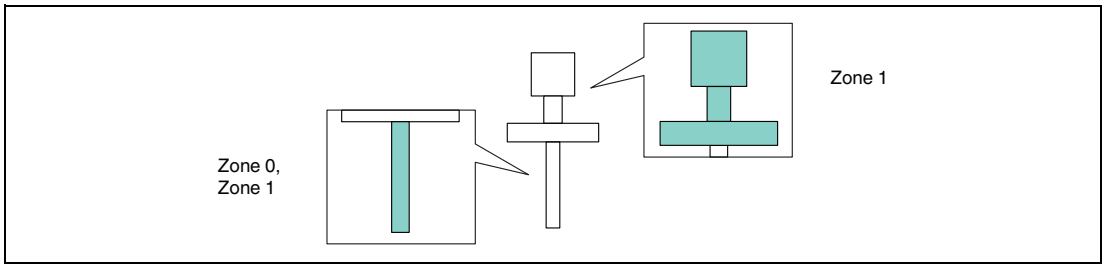

Figure 7

Device type LVL-M1, LVL-M1H, LVL-M2, LVL-M2H

Basic specification, feature **Electrical output**, option **PA, SI**

		P1		P2		P3		P4		P5	
		T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}
LVL-M1, LVL-M1H: AX LVL-M2, LVL-M2H: BX, CX, DX	T6	-50	55	55	55	75	45	75	-50 -40 [1]	-50	-50 -40 [1]
	T5...T1	-50	55	55	55	90	40	90	-50 -40 [1]	-50	-50 -40 [1]
LVL-M1, LVL-M1H: IX, QX LVL-M2, LVL-M2H: JX, KX, LX, RX, SX, TX	T6	-50	55	65	55	75	50	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	55	65	55	90	50	90	-50 -40 [1]	-50	-50 -40 [1]
	T4	-50	55	65	55	125	50	125	-50 -40 [1]	-50	-50 -40 [1]
	T3...T1	-50	55	65	55	150	45	150	-50 -40 [1]	-50	-50 -40 [1]

[1] only in connection with basic specification, feature **Housing**, option **EX**

Table 4

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Basic specification, feature **Electrical output**, option **N1, N2**

		P1		P2		P3		P4		P5	
		T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}
LVL-M1, LVL-M1H: AX LVL-M2, LVL-M2H: BX, CX, DX	T6	-50	55	67	55	75	55	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	65	70	65	90	55	90	-50 -40 [1]	-50	-50 -40 [1]
	T4...T1	-50	65	70	65	130	40	130	-50 -40 [1]	-50	-50 -40 [1]
LVL-M1, LVL-M1H: IX, QX LVL-M2, LVL-M2H: JX, KX, LX, RX, SX, TX	T6	-50	55	70	55	75	55	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	65	95	65	95	65	90	-50 -40 [1]	-50	-50 -40 [1]
	T4	-50	65	95	65	125	60	125	-50 -40 [1]	-50	-50 -40 [1]
	T3...T1	-50	65	95	65	150	60	150	-50 -40 [1]	-50	-50 -40 [1]

[1] only in connection with basic specification, feature **Housing**, option **EX**

Table 5

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Device type LVL-M2C

Basic specification, feature **Electrical output**, option **PA, SI**

		P1		P2		P3		P4		P5	
		T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}
A	T6	-50	55	55	55	75	45	75	-50 -40 [1]	-50	-50 -40 [1]
	T5...T1	-50	55	55	55	90	40	90	-50 -40 [1]	-50	-50 -40 [1]
B, C	T6	-50	55	65	55	75	50	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	55	65	55	90	50	90	-50 -40 [1]	-50	-50 -40 [1]
	T4	-50	55	65	55	120	50	120	-50 -40 [1]	-50	-50 -40 [1]
	T3...T1	-50	55	65	55	120	45	120	-50 -40 [1]	-50	-50 -40 [1]

[1] only in connection with basic specification, feature **Housing**, option **EX**

Table 6

Basic specification, feature **Electrical output**, option **N1, N2**

		P1		P2		P3		P4		P5	
		T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}	T_p	T_{amb}
A	T6	-50	55	67	55	75	55	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	65	70	65	90	55	90	-50 -40 [1]	-50	-50 -40 [1]
	T4...T1	-50	65	70	65	130	40	130	-50 -40 [1]	-50	-50 -40 [1]
B, C	T6	-50	55	70	55	75	55	75	-50 -40 [1]	-50	-50 -40 [1]
	T5	-50	65	95	65	95	65	90	-50 -40 [1]	-50	-50 -40 [1]
	T4	-50	65	95	65	120	60	120	-50 -40 [1]	-50	-50 -40 [1]
	T3...T1	-50	65	95	65	120	60	120	-50 -40 [1]	-50	-50 -40 [1]

[1] only in connection with basic specification, feature **Housing**, option **EX**

Table 7

Zone 20, Zone 21

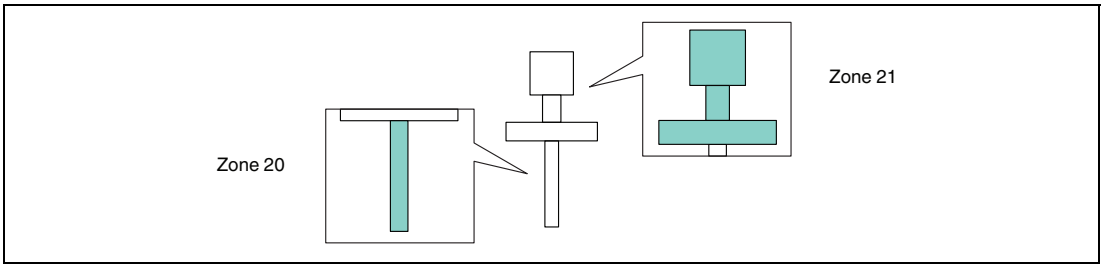

Figure 8

Device type LVL-M1, LVL-M1H, LVL-M2, LVL-M2H

Basic specification, feature **Electrical output**, option **PA, SI**

	Process temperature	Ambient temperature	Maximum surface temperature
LVL-M1, LVL-M1H: AX LVL-M2, LVL-M2H: BX, CX, DX	$-50 \leq T_p \leq +65$	$-50 \leq T_{amb} \leq +50$ [1] $-40 \leq T_{amb} \leq +50$ [1]	Sensor: $T_{p\,max} + 15\,K$ [2] Housing: $T_{amb\,max} + 20\,K$ [3]
	$-50 \leq T_p \leq +90$	$-50 \leq T_{amb} \leq +40$ [1] $-40 \leq T_{amb} \leq +40$ [1]	Sensor: $T_{p\,max} + 15\,K$ [2] Housing: $T_{amb\,max} + 30\,K$ [3]
LVL-M1, LVL-M1H: IX, QX LVL-M2, LVL-M2H: JX, KX, LX, RX, SX, TX	$-50 \leq T_p \leq +150$	$-50 \leq T_{amb} \leq +45$ [1] $-40 \leq T_{amb} \leq +45$ [1]	Sensor: $T_{p\,max} + 15\,K$ [2] Housing: $T_{amb\,max} + 25\,K$ [3]

1 only in connection with basic specification, feature **Housing**, option **EX**

2 with 200 mm dust deposit

3 with mm dust accumulation T_L

Table 8

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Basic specification, feature **Electrical output**, option **N1, N2**

	Process temperature	Ambient temperature	Maximum surface temperature
LVL-M1, LVL-M1H: AX LVL-M2, LVL-M2H: BX, CX, DX	$-50 \leq T_p \leq +95$	$-50 \leq T_{amb} \leq +55$ $-40 \leq T_{amb} \leq +55$ [1]	Sensor: $T_{p\,max} + 15$ K [2] Housing: $T_{amb\,max} + 15$ K [3]
	$-50 \leq T_p \leq +130$	$-50 \leq T_{amb} \leq +40$ $-40 \leq T_{amb} \leq +40$ [1]	Sensor: $T_{p\,max} + 15$ K [2] Housing: $T_{amb\,max} + 30$ K [3]
LVL-M1, LVL-M1H: IX, QX LVL-M2, LVL-M2H: JX, KX, LX, RX, SX, TX	$-50 \leq T_p \leq +150$	$-50 \leq T_{amb} \leq +60$ $-40 \leq T_{amb} \leq +60$ [1]	Sensor: $T_{p\,max} + 15$ K [2] Housing: $T_{amb\,max} + 10$ K [3]

1 only in connection with basic specification, feature **Housing**, option **EX**

2 with 200 mm dust deposit

3 with mm dust accumulation T_L

Table 9

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EN

Device type LVL-M2C

Basic specification, feature **Electrical output**, option **PA, SI**

	Process temperature	Ambient temperature	Maximum surface temperature
A	$-50 \le T_p \le +65$	$-50 \le T_{amb} \le +50$ $-40 \le T_{amb} \le +50$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 20\ K$ [3]
	$-50 \le T_p \le +90$	$-50 \le T_{amb} \le +40$ $-40 \le T_{amb} \le +40$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 30\ K$ [3]
B, C	$-50 \le T_p \le +120$	$-50 \le T_{amb} \le +45$ $-40 \le T_{amb} \le +45$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 25\ K$ [3]

1 only in connection with basic specification, feature **Housing**, option **EX**
2 with 200 mm dust deposit
3 with mm dust accumulation T_L

Table 10

Basic specification, feature **Electrical output**, option **N1, N2**

	Process temperature	Ambient temperature	Maximum surface temperature
A	$-50 \le T_p \le +95$	$-50 \le T_{amb} \le +55$ $-40 \le T_{amb} \le +55$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 15\ K$ [3]
	$-50 \le T_p \le +130$	$-50 \le T_{amb} \le +40$ $-40 \le T_{amb} \le +40$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 30\ K$ [3]
	$-50 \le T_p \le +120$	$-50 \le T_{amb} \le +45$ $-40 \le T_{amb} \le +45$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 25\ K$ [3]
B, C	$-50 \le T_p \le +120$	$-50 \le T_{amb} \le +60$ $-40 \le T_{amb} \le +60$ [1]	Sensor: $T_{p\ max} + 15\ K$ [2] Housing: $T_{amb\ max} + 10\ K$ [3]

1 only in connection with basic specification, feature **Housing**, option **EX**
2 with 200 mm dust deposit
3 with mm dust accumulation T_L

Table 11

EN

12 Connection Data

Basic specification, feature Electrical output, option SI, N1, N2

Associated intrinsically safe power supply unit with max. electrical specifications below the characteristic values of the electronic inserts

Electrical output	Electronic insert	Supply
SI	FEL55	U_i = 36 V P_i = 1 W I_i = 100 mA C_i = 0 L_i = 0
N1	FEL56	U_i = 16 V P_i = 170 mW I_i = 52 mA C_i = 30 nF L_i = 0
N2	FEL58	U_i = 16 V P_i = 170 mW I_i = 52 mA C_i = 30 nF L_i = 0

Table 12

Basic specification, feature Electrical output, option PA

Certified intrinsically safe fieldbus (PROFIBUS PA), in accordance with the FISCO model, with the following maximum values

Electrical output	Electronic insert	Supply
PA	FEL50A	U_i = 17.5 V P_i = 5.5 W I_i = 500 mA C_i = 2.7 nF L_i = ≤ 10 µH

Table 13

Certified intrinsically safe circuit with the following maximum values

Electrical output	Electronic insert	Supply
PA	FEL50A	U_i = 24 V P_i = 1.2 W I_i = 250 mA C_i = 2.7 nF L_i = ≤ 10 µH

Table 14

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EN

Cable Entry: Connection Compartment

Ex ia IIC

Not relevant.

Ex ia IIIC

Cable gland: basic specification, feature **Housing**, option **AX**, **CX**, **EX**

preferably for basic specification, feature **Housing**, option **AX**

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1.5	Ø7 to Ø12 mm	1.4404	NBR	EPDM (Ø17x2)

Table 15

preferably for basic specification, feature **Housing**, option **CX, EX**

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1.5	Ø7 to Ø10.5 mm [1] (Ø6.5 to Ø13 mm) [2]	Ms, nickel-plated	Silicone	EPDM (Ø17x2)

[1] Standard

[2] Separate clamping inserts available

Table 16

Note

- The tightening torque refers to cable glands installed by the manufacturer:
  - Recommended: 3.5 Nm
  - Maximum: 10 Nm
- This value may be different depending on the type of cable. However, the maximum value must not be exceeded.

- Only suitable for fixed installation. The operator must pay attention to a suitable strain relief of the cable.
- The cable glands are suitable for a low risk of mechanical danger (4 Joule) and must be mounted in a protected position if larger impact energy levels are expected.
- To maintain the ingress protection of the housing: Install the housing cover, cable glands and blind plugs correctly.

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