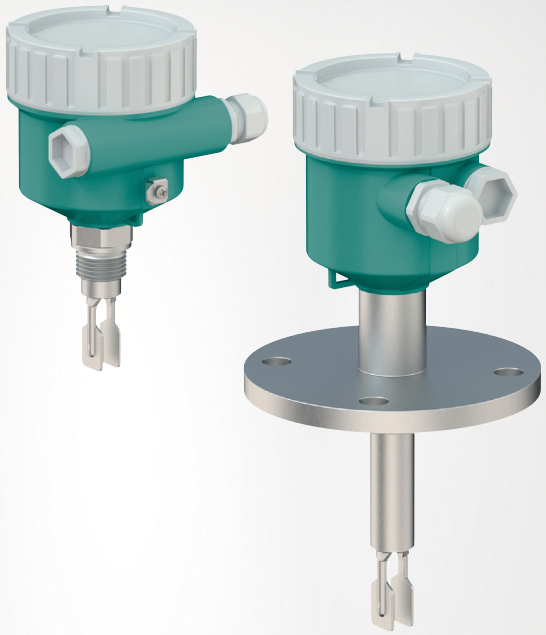
LVL-M4

Vibration Limit Switch

ATEX:
II 1/2G Ex db eb IIC T6...T1 Ga/Gb
II 2G Ex db eb IIC T6...T1 Gb
IECEx:
Ex db eb IIC T6...T1 Ga/Gb
Ex db eb IIC T6...T1 Gb

Temperature Tables



ISO9001

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1 Associated Documentation

The corresponding datasheets, manuals, instruction manuals, declarations of conformity, EUtype 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.

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.

This document is an integral part of the following documents:

- Manual: DOCT-8107
- Brief instructions: DOCT-8111
- Instruction manual: DOCT-8394

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.

2 Supplementary Documentation

Information for explosion protection:
The information can be found on the Internet at 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.

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

4 Manufacturer Address

Pepperl+Fuchs Group
Lilienthalstraße 200, 68307 Mannheim, Germany

Internet: www.pepperl-fuchs.com

2023-08

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
D	Dual compartment, L-shape, aluminum, coated

Option	Electrical connection
B	Gland M20, brass nickel plated, IP66/68, NEMA type 4X/6P
C	Gland M20, 316L, IP66/68, NEMA type 4X/6P
F	Thread M20, IP66/68, NEMA type 4X/6P
G	Thread G1/2, IP66/68, NEMA type 4X/6P
I	Thread NPT3/4, IP66/68, NEMA type 4X/6P

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

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Option	Display, operation
A	Without display, switch
B [1]	LED module VU120 visible from the outside, switch

[1] Only in connection with feature **Electrical output**, option **B, E, N**

Option	Approval
EC	ATEX/IEC II 1/2G, 2G Ex de IIC T6 Ga/Gb

Optional specifications

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

Option	Accessory mounted
BL [1]	Bluetooth module VU121
VB [2]	Bluetooth module VU121 for NAMUR output

[1] Only in connection with feature **Electrical output**, option **A, B, E, N** and feature **Display, operation**, option **A**
[2] Only in connection with feature **Electrical output**, option **M** and feature **Display, operation**, option **A**

Option	Accessory enclosed
ST [1]	Test magnet
WS	Weather protection cover, 316L

[1] Only in connection with feature **Electrical output**, option **B, E, N, M**

6 Temperature Tables

Description notes

Note

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

- 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

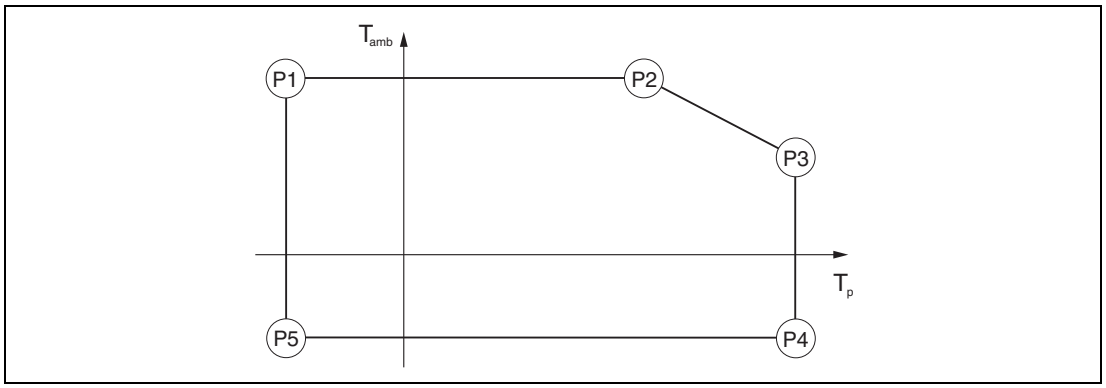

Figure 1

Zone 0, Zone 1

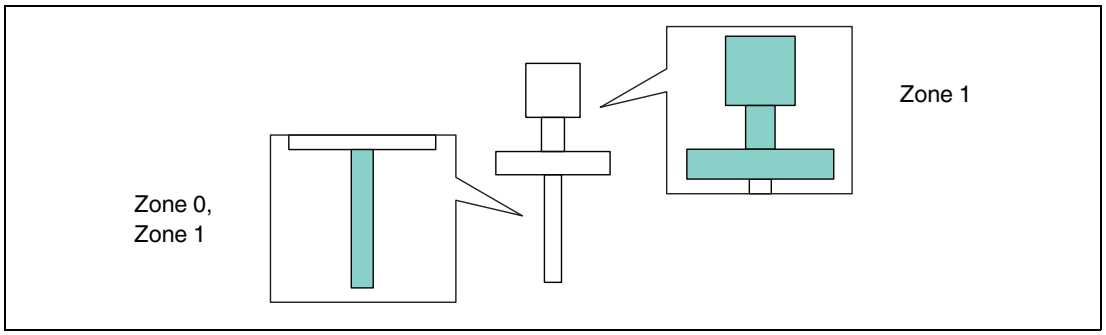

Figure 2

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Basic specification, feature Electrical output, option A

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

Option A, B			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}
	180 mA											
		T6	-50	70	70	70	80	59	80	-40	-50	-40
		T5	-50	70	70	70	95	70	95	-40	-50	-40
		T4	-50	70	70	70	130	70	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	69	150	-40	-50	-40

Table 1

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

Option A, B			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}
	180 mA											
		T6	-50	70	70	70	80	62	80	-40	-50	-40
		T5	-50	70	70	70	95	70	95	-40	-50	-40
		T4	-50	70	70	70	130	70	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	70	150	-40	-50	-40
	350 mA											
		T4	-50	70	70	70	130	55	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	54	150	-40	-50	-40

Table 2

Basic specification, feature Electrical output, option E

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

Option A, B	350 mA		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}
		T6	-50	70	70	70	80	70	80	-40	-50	-40
		T5	-50	70	70	70	95	70	95	-40	-50	-40
		T4	-50	70	70	70	130	66	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	54	150	-40	-50	-40

Table 3

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

Option A, B	350 mA		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}
		T6	-50	70	70	70	80	70	80	-40	-50	-40
		T5	-50	70	70	70	95	70	95	-40	-50	-40
		T4	-50	70	70	70	130	70	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	70	150	-40	-50	-40

Table 4

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Basic specification, feature Electrical output, option B, N

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

Option A, B	2 A		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}
		T6	-50	55	55	55	80	50	80	-40	-50	-40
		T5	-50	70	70	70	95	65	95	-40	-50	-40
		T4	-50	70	70	70	130	65	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	65	150	-40	-50	-40

Table 5

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

Option A, B	2 A		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}
		T6	-50	55	55	55	80	54	80	-40	-50	-40
		T5	-50	70	70	70	95	68	95	-40	-50	-40
		T4	-50	70	70	70	130	70	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	70	150	-40	-50	-40
	4 A											
		T6	-50	45	45	45	80	44	80	-40	-50	-40
		T5	-50	60	60	60	95	59	95	-40	-50	-40
		T4	-50	67	67	67	130	63	130	-40	-50	-40
		T3...T1	-50	67	67	67	150	62	150	-40	-50	-40

Table 6

Basic specification, feature Electrical output, option M

Option A, B			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}
		T6	-50	70	70	70	80	70	80	-40	-50	-40
		T5	-50	70	70	70	95	70	95	-40	-50	-40
		T4	-50	70	70	70	130	70	130	-40	-50	-40
		T3...T1	-50	70	70	70	150	70	150	-40	-50	-40

Table 7

7 Connection Data

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

When using the Bluetooth® module: No changes to the connection values.

Basic specification, feature Electrical output

Option	Power supply circuit	Output
A	U = 19 to 253 V AC, 50/60 Hz P_{max} < 2 VA	I_{max} = 180 mA I_{max} = 350 mA [1]
E	U = 10 to 55 V DC P_{max} < 0.5 W P_{max} < 1.2 W [2]	I_{max} = 350 mA
B	U = 9 to 20 V DC P_{max} < 1 W P_{max} < 1.7 W [2]	2 potential free change-over contacts, 2 A Ex e 4 A Ex e [3]
N	U = 19 to 253 V AC, 50/60 Hz or 19 to 55 V DC P_{max} < 25 VA or < 1.3 W P_{max} < 31 VA or < 2 W [2]	
M	U = 4 to 8.2 V DC	NAMUR, I_{max} = 3.8 mA

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

2 Only in connection with basic specification, feature **Display, operation**, option **B**

3 Only in connection with optional specification, feature **Sensor design**, option **DF, TD**

Table 8

Cable entry parameters

Cable gland: Basic specification, feature Electrical connection, option B

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1.5	Ø8 to 10.5 mm [1] (Ø6.5 to 13 mm) [2]	Ms, nickel-plated	Silicone	EPDM (Ø17x2)

[1] Standard
[2] Separate clamping inserts available

Table 9

Cable gland: Basic specification, feature Electrical connection, option C

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1.5	Ø7 to 12 mm	1.4404	NBR	EPDM (Ø17x2)

Table 10

Note

- The tightening torque refers to cable glands installed by the manufacturer:
  - Recommended torque to connect the cable gland into the housing: 3.75 Nm
  - Recommended torque to tighten the cable into the cable gland: 3.5 Nm
  - Maximum torque to tighten the cable into the cable gland: 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.
- To maintain the ingress protection of the housing: Install the housing cover, cable glands and blind plugs correctly.
- 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.

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