

Instruction Manual

1. Marking

Vibration Limit Switch for Liquids LVL-M4
ATEX certificate: CSANe 23ATEX1157X ATEX marking: Ⓢ II 1/2G Ex db IIC T6...T1 Ga/Gb Ⓢ II 2G Ex db IIC T6...T1 Gb Ⓢ II 1/2D Ex ta/tb IIIC Txxx°C Da/Db Ⓢ II 2D Ex tb IIIC Txxx°C Db
IECEX certificate: IECEX CSAE 23.0044X IECEX marking: Ex db IIC T6...T1 Ga/Gb Ex db IIC T6...T1 Gb Ex ta/tb IIIC Txxx°C Da/Db Ex tb IIIC Txxx°C Db

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2. 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 ¹	Thread G1/2, IP66/68, NEMA type 4X/6P
I	Thread NPT3/4, IP66/68, NEMA type 4X/6P

¹ 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 ²	LED module VU120 visible from the outside, switch

² Only in connection with feature **Electrical output**, option **B, E, N** and feature **Housing, material**, option **A, D**

Option	Approval
ES	ATEX/IEC II 1/2G, 2G Ex db IIC T6 Ga/Gb, II 1/2D, 2D Ex ta/tb IIIC Da/Db

Optional specifications

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

³ 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 ⁴	Bluetooth module VU121
VB ⁵	Bluetooth module VU121 for NAMUR output

⁴ Only in connection with feature **Electrical output**, option **A, B, E, N**, feature **Housing, material**, option **A, D** and feature **Display, operation**, option **A**

⁵ 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 ⁶	Test magnet
WP ⁷	Weather protection cover, plastic
WS ⁸	Weather protection cover, 316L

⁶ Only in connection with feature **Electrical output**, option **B, E, N, M**

⁷ Only in connection with feature **Housing, material**, option **A, G**

⁸ Only in connection with feature **Housing, material**, option **D**

3. Target Group, Personnel

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismantling lies with the plant operator.

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismantling of the device. The trained and qualified personnel must have read and understood the instruction manual.

Prior to using the product make yourself familiar with it. Read the instruction manual carefully.

4. Reference to Further Documentation

Observe directives, standards, and national laws applicable to the intended use and the operating location.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, control drawings, and temperature tables if applicable are an integral part of this document. You can find this information under www.pepperl-fuchs.com.

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.

Refer to the relevant EU-type examination certificate to see the relationship between the connected circuit type, the maximum permitted ambient temperature, the temperature class, and the effective inner reactances.

If you use the device in safety-related applications, observe the requirements for functional safety. You can find these requirements in the functional safety documentation under www.pepperl-fuchs.com.

5. Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

The device is a vibration limit switch for minimum or maximum detection in tanks, containers and piping with all types of liquids

Use the device only within the specified ambient and operating conditions.

Only use the device in media to which the process-contacting materials of the device are sufficiently resistant.

The EU-type examination certificate in accordance with ATEX Directive applies only to the use of apparatus under atmospheric conditions.

The device can be used in hazardous areas containing gas, vapor, and mist.

The device can be used in hazardous areas containing combustible dust.

If you use the device in safety-related applications, observe the information for safety function and safe state.

6. Improper Use

Protection of the personnel and the plant is not ensured if the device is not used according to its intended use.

7. Mounting and Installation

Use appropriate protection measures in order to protect persons that have contact with hazardous or toxic substances.

Do not mount a damaged or polluted device.

Mount the device in a way that the device is protected against mechanical hazard.

If you expect dynamic loads, support the extension tube of the device.

Only use accessories specified by the manufacturer.

If you install the device in safety-related applications, observe the requirements for functional safety.

Include the device into the equipotential bonding.

Avoid inadmissibly high electrostatic charge plastic surfaces.

Avoid inadmissibly high electrostatic charge of insulated capacities or insulated metal parts.

Requirements for Cables and Connection Lines

Only use cables and connection lines with a temperature range appropriate to the application.

Install cables and cable glands in a way that they are not exposed to mechanical hazards.

Observe the minimum bending radius of the conductors.

Observe the permissible core cross section of the conductor.

Crimp wire end ferrules on the conductor ends.

When installing the conductors the insulation must reach up to the terminal.

Close all unused cable glands with the appropriate sealing plugs.

Requirements for Hazardous Area

Observe the installation instructions according to IEC/EN 60079-14.

Refer to the temperature tables for the relationship between permitted ambient temperature, range of application and temperature class.

The device may be installed in Zone 1.

The measuring equipment of the device may be installed in Zone 0.

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

Observe the respective peak values of the field device and the associated apparatus with regard to explosion protection when connecting intrinsically safe field devices with intrinsically safe circuits of associated apparatus (verification of intrinsic safety). Also observe IEC/EN 60079-14 and IEC/EN 60079-25.

Keep the separation distances between all non-intrinsically safe circuits and intrinsically safe circuits according to IEC/EN 60079-14.

Basic specification, feature Housing, material, option A, D

Avoid impact effect or friction during mounting.

Optional specification, feature Accessory Enclosed, option WP

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

Optional specification, feature Accessory Enclosed, option WS

Include the device into the equipotential bonding.

Optional specification, feature Accessory Enclosed, option ST

The component is suitable for use in the explosion-hazardous area.

8. Operation, Maintenance, Repair

If you operate the device in safety-related applications, observe the requirements for functional safety. In case of operating in low demand mode, plan appropriate intervals for the proof test.

Do not use a damaged or polluted device.

The device is maintenance-free.

Do not repair, modify, or manipulate the device.

If there is a defect, always replace the device with an original device.

Connection or disconnection of energized circuits is only permitted in the absence of a potentially explosive atmosphere.

Avoid inadmissibly high electrostatic charge plastic surfaces.

Avoid inadmissibly high electrostatic charge of insulated capacities or insulated metal parts.

Basic specification, feature Housing, material, option A, D

Avoid impact effect or friction during operating.

Optional specification, feature Accessory Enclosed, option WP

Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.

Optional specification, feature Accessory Enclosed, option WS

Include the device into the equipotential bonding.

Optional specification, feature Accessory Enclosed, option ST

The component is suitable for use in the explosion-hazardous area.

Basic specification, feature Electrical Output, option M

If you equip the device with the Bluetooth® module, a battery is required.

Only remove or replace the battery in the non-explosion-hazardous area.

Observe the instruction manuals for the associated modules.

Return

Take the following precautions before you return the device to Pepperl+Fuchs.

Remove all adhering residues from the device. These residues can be hazardous to health.

Fill in the form **Declaration of Contamination**. You can find this form on the product detail page at www.pepperl-fuchs.com.

Enclose the filled in **Declaration of Contamination** form with the device.

Pepperl+Fuchs can examine and repair a returned device, only if a completed form is included in the return.

If needed, include special handling instructions with the device.

Specify the following information:

- Chemical and physical characteristics of the product
- Description of the application
- Description of the error that occurred (specify error code if possible)
- Operating time of the device

9. Delivery, Transport, Disposal

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.