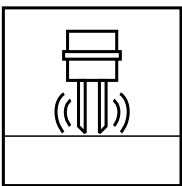


## Vibrating Limit Switch LVL



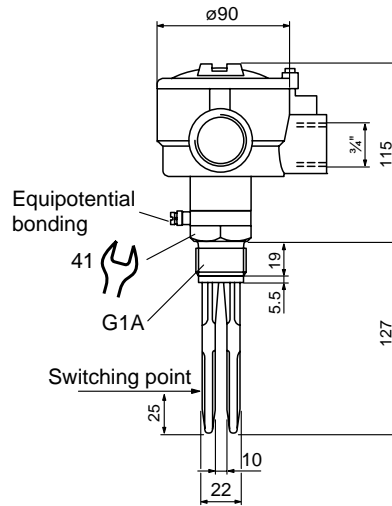
### LVL-Exd



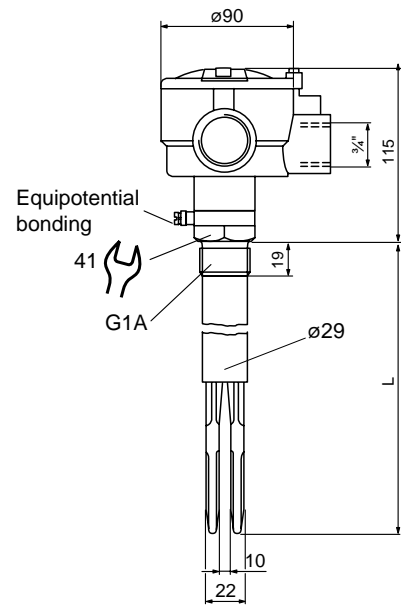
### Features

- Limit switch in EEx d-version for liquids and solid granulates
- Compact housing and extended version
- Two cable outlets
- Universally applicable for liquids and solid granulates.
- Orientation independent
- Self monitoring
- No on-site adjustment necessary
- Additional relay output

## Dimensions



Compact version LVL1



Extended version LVL2



Cable glands have to be supplied by the customer, Exd-Stop can be ordered as accessory.

### Function principle

The vibration fork is actuated cyclically by electromagnetic pulses. It is vibrating with its resonance frequency in air. Contacting liquids and solid materials have a different influence on this frequency. The smart evaluation of this change with a microprocessor is creating the output signal and allows a complete self-monitoring and self-diagnosis of the evaluation unit including the vibrating system. Display of changing material consistency.

### Electrical connection

#### Function switch I ... IV Signification

I 0: Quiescent current	N.C. contact	} Switching output function
1: Load current	N.O. contact	
II 0: Service	Self-diagnosis	}
1: Function	Working position	
III 0: Bulk material	Filling material	}
1: Liquids	to be detected	
IV 0: Operating mode B		
1: Operating mode A		

#### Circuit delay

Mode	Covering	Releasing
B	approx. 3 s	approx. 1.0 s
A	approx. 1 s	approx. 0.2 s

#### LED displays 1 ... 4

1. Function (green)
2. Fault (red)

DC 24 V applied

- Operating mode III at 0, but liquid detected and vice versa
- Corrosion or other modifications at vibration system
- Electrical malfunctions



#### Switching state

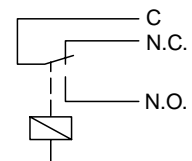
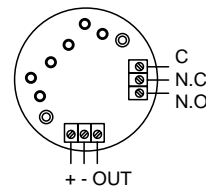
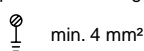
3. "Reference" (yellow)
4. "Actual" (yellow)

Processor function OK  
Switch output

In case of detected filling material, the LEDs 3 and 4 are normally on.

In case of faults (red LED), the processor activates the switch output according to the selected operating mode SI (quiescent/load) and therefore always indicates "Filling material detected".

Equipotential bonding



## Technical data

### Approvals/Certifications

Information about approvals and certifications can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Category, Ignition protection class

DMT 99 ATEX E 004

II ½G EEx d IIC T6/T5/T4/T3  
II ½D IP65 T 202 °C/222 °C/242 °C/312 °C

### Supply

Operating voltage DC 18 V ... 30 V  
Operating current < 60 mA  
Protection class III

### Output

(pnp)-3-wire connection  
Switching function make switch/break switch switchable  
Current < 500 mA, short circuit-proof/overloadable  
Short-circuit current < 1.5 A

### Relay

Switching function Changeover  
max. switching voltage AC 250 V/DC 120 V  
max. switching current 3 A/1 A  
max. breaking capacity AC 750 VA/DC 120 W

### Indicators

Function (only available in non-hazardous areas or after approval by a fire-certification using an ex-tester)  
LED green, flashing  
Fault LED red  
Switching state ref. LED yellow  
Switching state actual LED yellow, dark in case of a short circuit

### Temperature conditions for Ex-applications in gases/liquids (explosion group II)

Temperature class	T6	T5	T4	T3
Ambient temperature	-40 °C...< 70 °C	< 70 °C	< 70 °C	< 70 °C
Media temperature	-40 °C...< 70 °C	< 85 °C	< 120 °C	< 150 °C

### for Ex-applications in dusts (explosion group II)

Ambient temperature	< 70 °C	< 70 °C	< 70 °C	< 70 °C
Media temperature	< 40 °C	< 60 °C	< 80 °C	< 150 °C
max. temperature at the fork	< 202 °C	< 222 °C	< 242 °C	< 312 °C

### Conformity to standards

EN 50014: 1992  
EN 50018: 1994  
prEN 50284: 1997  
EN 50281-1-1: 1998

### Process conditions

Pressure ≤ 40 bar  
Density ρ ≥ 0.6 g/cm<sup>3</sup>  
Viscosity max. 10 000 mPa s

### Electrical connection

Terminal plugs max. 2.5 mm<sup>2</sup>  
Cable glands 2 cable glands ¾" NPT, arranged under 90° with one PVC-terminal each, which have to be exchanged against suitable Exd-threads or Exd-stops by the customer.

### Protection class acc. to IEC 60529

IP65

## Vibrating Limit Switch LVL-Exd

### Conventional versions

#### Basic versions LVL1

- LVL1S-G3S-EU-Exd
- LVL1S-N3S-EU-Exd

#### Extended version LVL2

- LVL2S-G3S-EU-Exd
- LVL2S-N3S-EU-Exd

### Accessories

- LVL-Z81, Exd-Stop ¾"NPT
- LVL-Z41, sliding bushing stainless steel 1.4571 (Viton O-ring, for unpressurised operation)

### Programming

- This device may be used with any sequential circuit, if this circuit complies with the connection values of the switching element.
- Observe the national safety and accident prevention regulations during all work on the LVL-Exd vibration limit switch.
- When using a sliding bushing, special attention must be paid to the resistance of the sealing rings and plastic material to the medium that is involved. Faults lead to a down grading in zone classification.
- Cable glands have to be supplied by the customer, Exd-Stop can be ordered as accessory.
- When using the external connections for the equipotential bonding conductor, these should be smeared with terminal grease.
- Wait for 3 minutes between switching off and opening.
- Do not open while the power is on.

## Key to model numbers/ordering code

Vibracon LVL-Exd

### Measuring range

- 1 Compact version
- 2 Extended version, rod length 220 mm ... 6000 mm

### Surface of fork

S Stainless steel (1.4581)

### Process connection

G 3 G1A thread  
N 3 1" NPT thread

- - other process connections

### Material/surface process connection

S Stainless steel (1.4571)

### Material housing

/ Aluminium

### Electrical output

E U 3-wire pnp with additional relay

### Approvals

E x d Approval Exd

