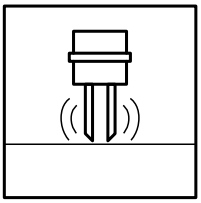
Vibration limit switch

LVL-S1

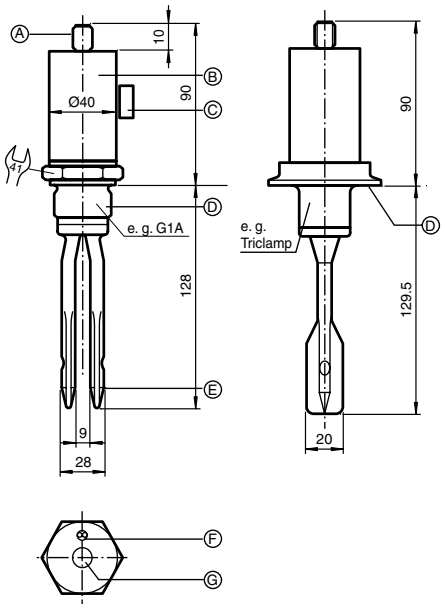


CE

Features

- Level limit switch in hygienic version for liquids
- External test option using test magnet
- On-site function control using external LED display
- Particularly used in systems where other measuring principles cannot be used, e. g. for pastes, build-up, turbulence, liquid flow, gas bubbles and rapid temperature variations when cleaning
- Due to its compact construction, it can be directly connected to a miniature contactor, magnet operated valve or programmable logic control (PLC)
- Rugged stainless steel housing

Dimensions



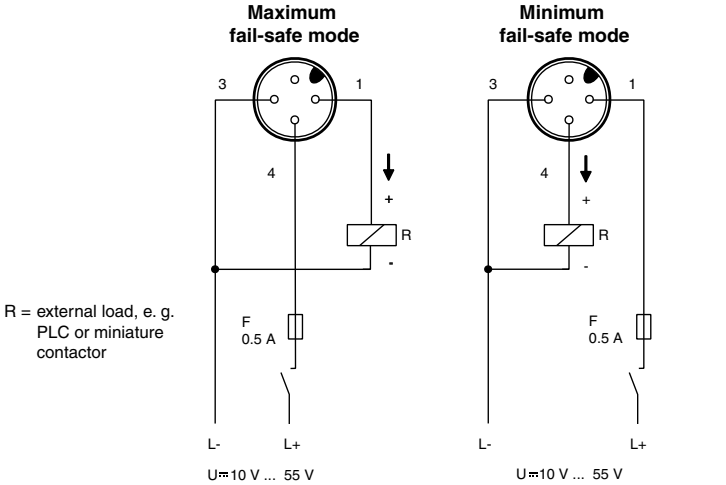
A) Electrical connection via a circular device connector M12 x 1 (ignition protection class IP66/68)
B) Welded housing made of corrosion resistant steel
C) The switching function can be checked from outside the vessel using a magnet (mounted directly on the housing)
D) Process connection versions, all made of corrosion resistant steel
E) Vibration fork made of solid corrosion resistant steel
F) Red light-emitting diode for switch indicator "circuit cut off"
G) Green light-emitting diode "ready to operate"

Function

The symmetrical vibrating probe vibrates at its resonance frequency. If it is submerged in liquid, this frequency changes, and the electronics activate the switching transistor on the PNP output.

The Vibracon LVL-S1 can be operated in minimum or maximum closed circuit safety, i. e. the switching transistor closes in the case of obtaining the limit level, by fault and by power failure.

Electrical connection



R = external load, e. g. PLC or miniature contactor

Electrical connection depends on the protective circuit

No protective grounding connection, protection against indirect contact in accordance with EN 60204-1 or EN 61010-1

Viewed from the pin of the plug connector.

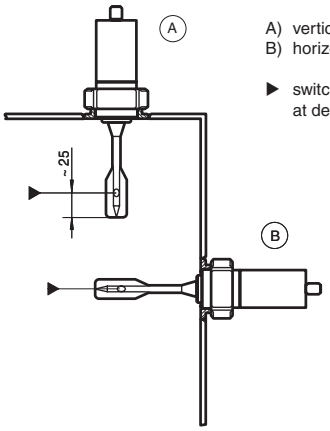
Release date 2012-04-10 10:27 Date of issue 2012-04-10 t3022_eng.xml

Application	
Description	level limit switch for application in storage tank, stirring container and pipeline with liquids
Output characteristics	
Signal on alarm	Output locked
Fail-safe mode	Minimum/maximum closed circuit safety, determined by the way of connection
Switching time	when covering the sensor approx. 0.5 s, when uncovering the sensor approx. 1.0 s
Load	load switched via PNP transistor - transient: (1 s) max. 1 A, max. 55 V (pulsed overload and short-circut protection) - continuous: max. 350 mA, max. 0.5 µF at 55 V, max. 1.0 µF at 24 V - residual voltage < 3 V (with closed transistor) - residual current < 100 µA (with open transistor)
Auxiliary energy	
Electrical connection	output E5: 3-wire DC connection, positive signal on the sensor switch output (PNP)
Supply voltage	10 ... 55 V DC
Current consumption	max. 15 mA
Residual ripple	max. 1.7 V , 0 ... 400 Hz
Reverse polarity protected	yes
Measurement accuracy	
Hysteresis	approx. 4 mm with vertical mounting
Operating conditions	
Installation conditions	
Installation position	any position
Ambient conditions	
Ambient temperature	-40 ... 70 °C (-40 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Process conditions	
Medium temperature	-40 ... 150 °C (-40 ... 302 °F)
Process pressure (static pressure)	-1 ... 40 bar (-14.5 ... 580.2 psi)
Density	min. 0.7 g/cm^3
Viscosity	up to 10000 mm^2/s
Mechanical specifications	
Protection degree	IP66/68 (24 h, 1.5 m), when using the correct connector
Mechanical construction	
Construction type	compact device
Versions	see type code
Dimensions	see dimensions
Mass	approx. 500 g
Material	process connection and vibration fork: stainless steel 1.4571/316Ti housing: stainless steel 1.4404/316L, welded plug connector: stainless steel 1.4571/316Ti viewing windows for LEDs: glass
Surface quality	high polished: R_a < 0.5 µm/240 grit polished: R_a < 1.5 µm/120 grit standard: R_a < 3.2 µm/80 grit
Process connection	- conical thread 1 NPT in acc. with ANSI B 1.20.1 - cylindrical thread G1A in acc. with DIN ISO 228/1 with flat seal 33 x 39 in acc. with DIN 7603 - flush mounted version for welding adapter in acc. with company standard - Triclamp 1½", 2" acc. to ISO 2852 - dairy coupling DN 50 in acc. with DIN 1185 The specified limits for temperature and pressure apply in each case to the limit switch with special process connection. Also note the limits for the seal and clamping ring used!
Electrical connection	plug connector M12 x 1, 4-pin (without protective earthing connection)
Indication and operation	
Display elements	The LED display is on the connection side of the LVL-S1. green LED: indication of ready to operate red LED: switch indication circuit cut off
Function test	function test with test magnet: Put the testing magnet to the shown location (see graph). The vibration fork reacts with the test magnet as in the case of covering with fluid.
General information	
Directive conformity	
Directive 89/336/EEC (EMC)	emitted interference to EN 50081-1 and EN 61326, class B equipment noise immunity to EN 50082-2 (field strength 10 V/m) and EN 61326, annex A (industrial sector)
Conformity	
Electromagnetic compatibility	NE 21
Protection degree	EN 60529
Climate class	EN 60068, part 2-38, fig. 2a

Release date 2012-04-10 10:27 Date of issue 2012-04-10 t3022_eng.xml

Supplementary documentation	operating instructions KA081O operating instructions KA032O weld-in adapter G1A (LVL-Z70) operating instructions KA151O sliding sleeve for unpressurised operation G1A, 1 NPT (LVL-Z120, LVL-Z122) operating instructions KA153O high pressure sliding sleeve G1A, 1 NPT (LVL-Z124, LVL-Z125, LVL-Z128, LVL-Z129) operating instructions electrical connection LVL-S1
Supplementary information	Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

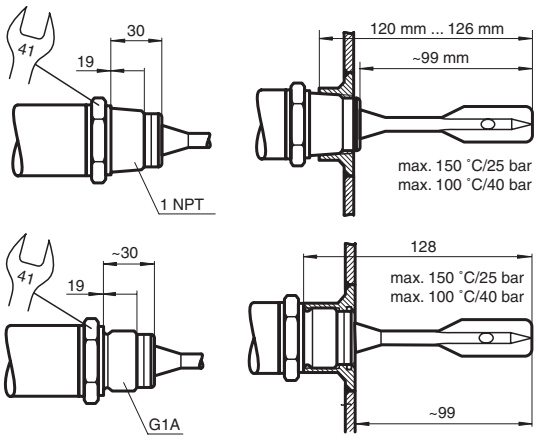
Mounting position



A) vertical installation
B) horizontal installation

▶ switching point depending on the installation direction at density 0.7 g/cm³

Dimensions process connections



Process connection N3 = 1 NPT

Process connection G3 = G1A

Mounting accessories: welding adapter (without vibrating fork alignment) with FPM O-ring (Viton) LVL-Z70

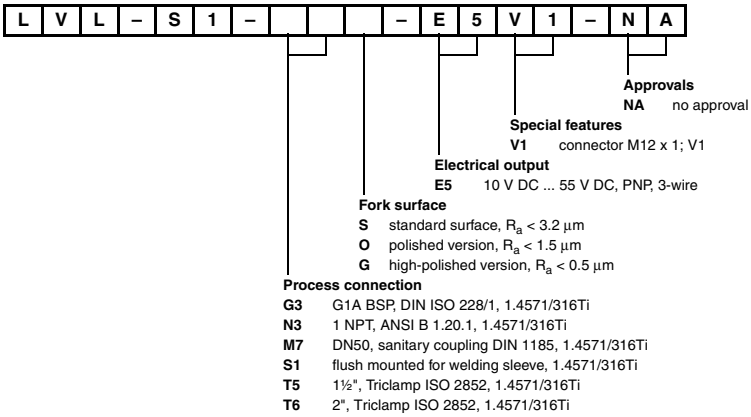
Process connection flush mounted

Accessories

- LVL-Z15, test magnet
- LVL-Z64, socket spanner
- LVL-Z70, welding bushing for vessels G1, viton sealing
- LVL-Z120, sliding sleeve for unpressurised operation G1A
- LVL-Z122, sliding sleeve for unpressurised operation 1 NPT
- LVL-Z124, high pressure sliding sleeve G1A
- LVL-Z125, high pressure sliding sleeve G1A
- LVL-Z128, high pressure sliding sleeve 1 NPT
- LVL-Z129, high pressure sliding sleeve 1 NPT
- V1-G, mating connector, straight
- V1-G-2M-PVC, mating connector, straight, with 2 m (6.6 ft) cable
- V1-W, mating connector, 90° angled
- V1-W-2M-PVC, mating connector, 90° angled, with 2 m (6.6 ft) cable

Release date 2012-04-10 10:27 Date of issue 2012-04-10 t3022_eng.xml

Type code/model number



Release date 2012-04-10 10:27 Date of issue 2012-04-10 t3022_eng.xml