

Level measurement

Point level measurement – Vibrating switches

SITRANS LVL100

Overview



SITRANS LVL100 is a compact vibrating level switch for use in liquid and slurry applications such as overflow, high, low and demand applications, as well as pump protection. It is ideal for use in confined spaces.

Benefits

- Proven vibrating level switch technology for liquids
- Compact insertion length of 40 mm (1.57 inch) for confined space applications
- Fault monitoring for corrosion, loss of vibration, or line break to the piezo drive
- Integrated test function to confirm correct operation

Application

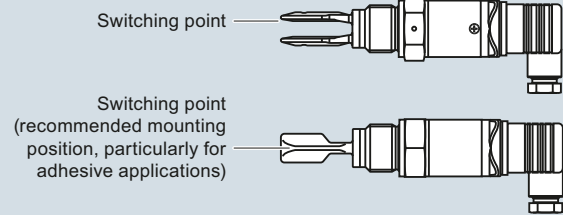
SITRANS LVL100 is a compact level switch designed for industrial use in all areas of process technology and can be used with liquids and slurries. With an insertion length of only 40 mm (1.57 inch), SITRANS LVL100 can be mounted in small pipes and confined space applications. It is virtually unaffected by the chemical and physical properties of the liquid. The LVL100 can be used in difficult conditions including turbulence, air bubbles, foam generation, buildup, or external vibration.

The tuning fork is piezoelectrically energized and vibrates at a mechanical resonance frequency of approximately 1 200 Hz. The vibration frequency changes when the tuning fork is covered by the medium. This change is detected by the integrated oscillator and converted into a switching command. The integrated electronics evaluate the level signal and output a switching signal to connected devices.

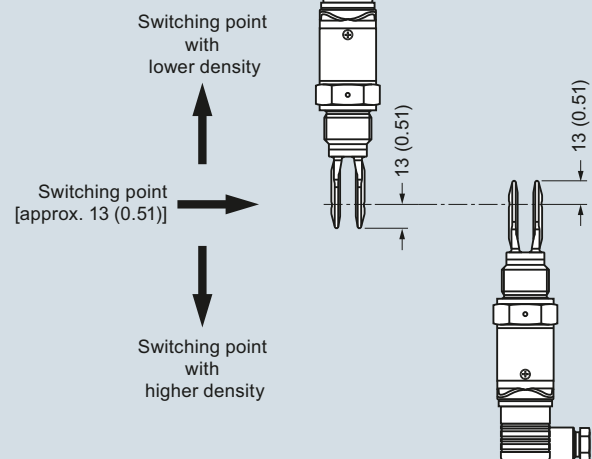
- Key Applications: For use in liquids and slurries, for level measurement, overflow, and dry run protection

Configuration

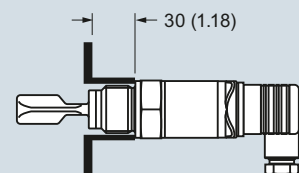
Horizontal mounting



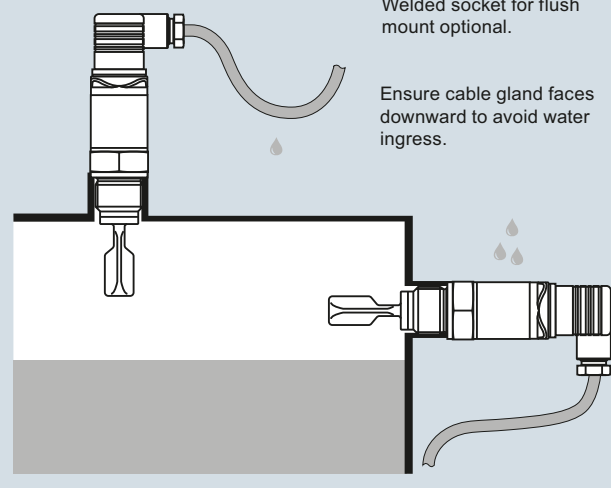
Vertical mounting



Horizontal mounting in viscous or adhesive applications



Moisture protection



SITRANS LVL100 Installation, dimensions in mm (inch)

Level measurement

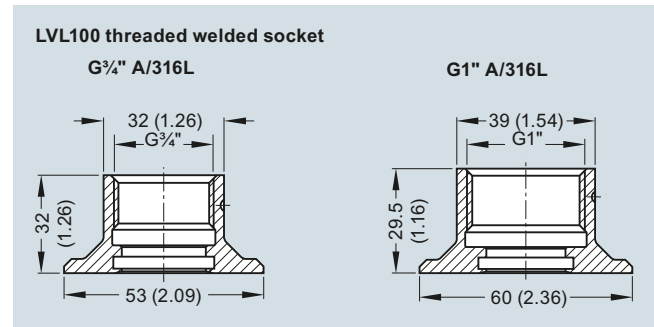
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Technical specifications

Mode of operation	
Measuring principle	Vibrating point level switch
Input	
Measured variable	High and low and demand
Output	
Output options	Contactless electronic switch Transistor output PNP
Measuring Accuracy	
• Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation
• Switching delay	Approx. 500 ms (on/off)
• Frequency	Approx. 1 200 Hz
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	
• Temperature	
- Standard	-40 ... +100 °C (-40 ... +212 °F)
- High temperature option	-40 ... +150 °C (-40 ... +302 °F)
• Pressure (vessel)	-1 ... 64 bar g (-14.5 ... 928 psi g)
• Density	0.7 ... 2.5 g/cm ³ (0.025 ... 0.09 lb/in ³)
Design	
Material	
• Enclosure	316L and Plastic PEI
• Tuning fork	316L (1.4404 or 1.4435)
• Process connection (threaded)	316L (1.4404 or 1.4435)
• Process seal	Klingersil C-4400
Process connection	
• Pipe thread, cylindrical (ISO 228 T1)	G ¾" A or G 1" A
• Pipe thread, tapered	¾" NPT or 1" NPT
• Hygienic fittings	Bolting DN 40 PN 40 Tri-clamp 1", 1½", 2" PN 10
Degree of protection	IP65/Type 4/NEMA 4 (with DIN 43650 valve plug), IP66/67 or IP68 (with M12 connector)
Conduit entry	1 x M12 [IP66/IP67 or IP68 (0.2 bar)]
Weight (housing)	250 g (9 oz)
Power supply	
Supply voltage	20 ... 253 V AC, 50/60 Hz 20 ... 253 V DC
Power consumption	1 ... 8 VA AC, approx. 1.3 W DC
Certificates and approvals	
	• Overfill protection (WHG) • Shipping approvals

Options



SITRANS LVL100 welded socket, dimensions in mm (inch)

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Selection and Ordering data	Article No.
SITRANS LVL100 Compact vibrating level switch for use in liquid and slurry applications such as overflow, high, low, and demand applications, as well as pump protection. Ideal for use in confined spaces.	7ML5745- A 0
Approvals Without approvals Shipping approvals ⁵⁾ Overfill protection (WHG) ¹⁾	1 2 3
Process temperature Standard -40 ... +100 °C (-40 ... +212 °F) ²⁾ Extended -40 ... +150 °C (-40 ... +302 °F) ²⁾ Hygienic applications -40 ... +150 °C (-40 ... +302 °F) ³⁾	A B C
Process connection Thread G $\frac{3}{4}$ " A PN 64/316L Thread G $\frac{3}{4}$ " A PN 64/316L Ra< 0.8 µm Thread $\frac{3}{4}$ " NPT PN 64/316L Thread $\frac{3}{4}$ " NPT PN 64/316L Ra< 0.8 µm Thread G1" A PN 64/316L Thread G1" A PN 64/316L Ra< 0.8 µm Thread 1" NPT PN 64/316L Thread 1" NPT PN 64/316L Ra< 0.8 µm Tri-Clamp 1" PN 16 DIN 32676/316L Ra< 0.8 µm Tri-Clamp 1½" PN 16 DIN 32676/316L Ra< 0.8 µm Tri-Clamp 2" PN 16 DIN 32676/316L Ra< 0.8 µm Bolting DN25 PN 40 DIN 11851/316L Ra< 0.8 µm Bolting DN40 PN 40 DIN 11851/316L Ra< 0.8 µm Bolting DN50 PN 25 DIN 11851/316L Ra< 0.8 µm SMS DN38 PN 6 316L Ra< 0.8 µm Hygienic fitting with compression nut F40 PN 25/316L Ra< 0.8 µm Thread G½" (DIN 3852-A) PN64 / 316L Thread G½" (DIN 3852-A) PN64 / 316L Ra< 0.8 µm Thread ½" NPT (ASME B1.20.1) PN 64 / 316L Thread ½" NPT (ASME B1.20.1) PN 64 / 316L Ra< 0.8 µm	A 0 A 1 A 2 A 3 A 4 A 5 A 6 A 7 A 8 B 0 B 1 B 2 B 3 B 4 B 5 B 6 C 0 C 1 C 2 C 3
Electronics Contactless electronic switch 20 ... 250 V AC/DC ⁴⁾ Transistor output PNP 10 ... 55 V DC	1 2
Housing 316L	1
Electrical connection/Protection M12x1/IP67 According to DIN 43650 including plug/IP65 Acc. to DIN 43650 incl. plug with QuickOn connection/IP65 M12x1 incl. 5 m cable/IP68 (0.2 bar)	A B C D

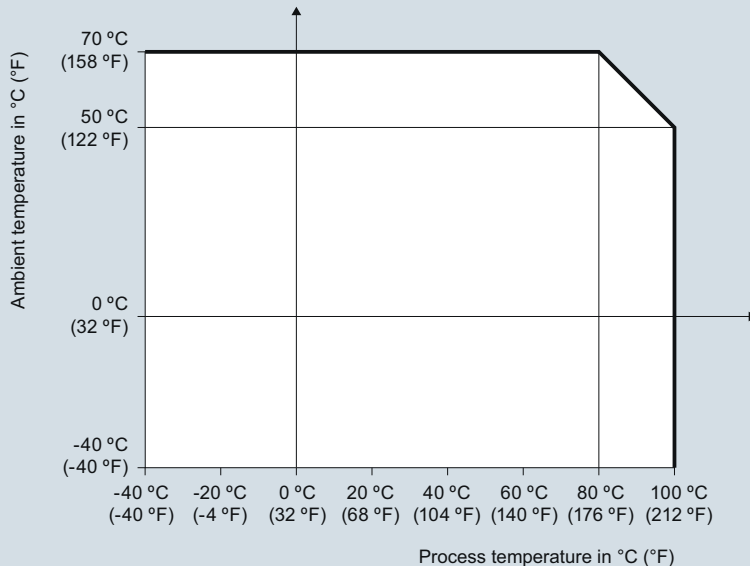
- 1) Available with process connection A0, A2, A4, and A6 only
 2) Available with process connection A1, A3, A5, and A7 ... B6 only
 3) Available with Electrical connection/Protection option B and C only
 4) Available with Process Temperature option A only
 5) Available with Process Temperature option A only

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

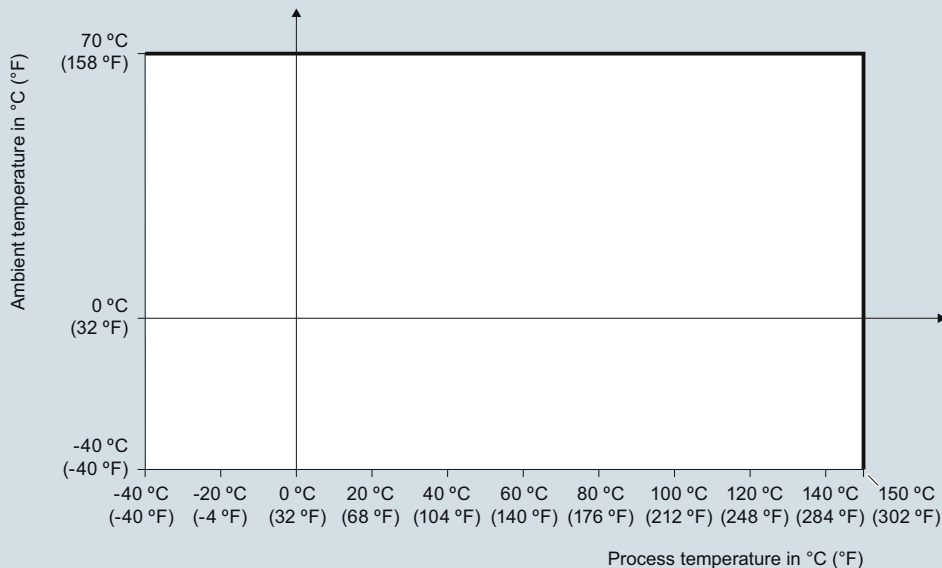
Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Cleaning including certificate (oil, grease and silicone free)	W01
Identification Label, foil laser marking	◆ Y16
Acceptance test certificate 3.1 for instrument	◆ C12
Acceptance test Certificate 2.2 for material EN10204	◆ C15
Additional Operating Instructions <u>LVL100 (Contactless electronic switch)</u>	Article No.
• English	7ML1998-5KN01
• French	7ML1998-5KN11
• Spanish	7ML1998-5KN21
• German	7ML1998-5KN31
<u>LVL100 (Transistor PNP)</u>	
• English	7ML1998-5KP01
• French	7ML1998-5KP11
• Spanish	7ML1998-5KP21
• German	7ML1998-5KP31
This device is shipped with the Siemens Milltronics manual DVD containing the Operating Instructions library.	
Spare Parts <u>LVL100 Threaded Welded Socket</u>	
G $\frac{3}{4}$ " A/316L with FKM Seal	7ML1930-1EE
G1" A/316L with FKM Seal	7ML1930-1EF
M27x1.5/316L with FKM Seal	7ML1930-1EG
G $\frac{3}{4}$ " A/316L with EPDM Seal	7ML1930-1EH
G1" A/316L with EPDM Seal	7ML1930-1EJ
M27x1.5/316L with EPDM Seal	7ML1930-1EK
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Characteristic curves

Ambient temperature to process temperature dependency (standard version)



Ambient temperature to process temperature dependency (high temperature version)



SITRANS LVL100 Ambient Temperature/Process Temperature derating curves

Level measurement

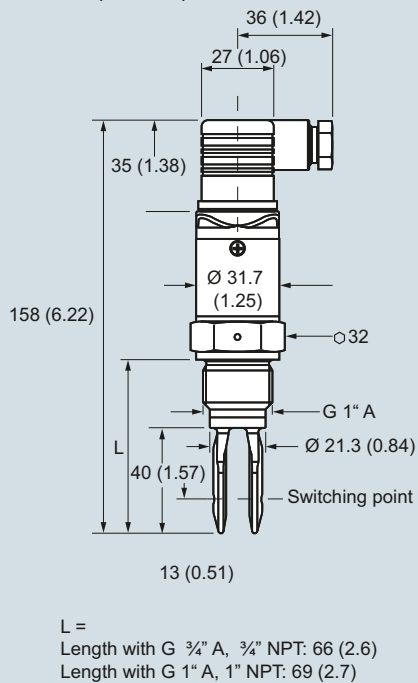
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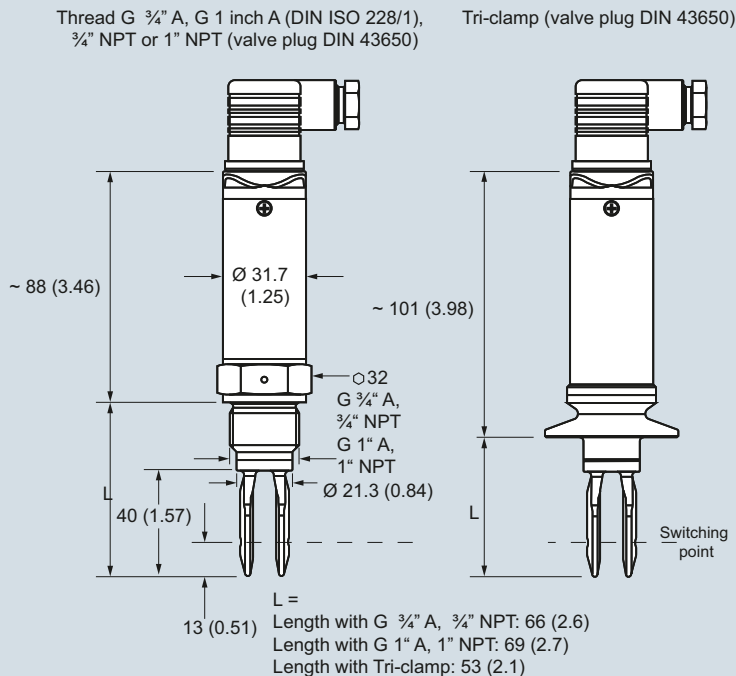
Dimensional drawings

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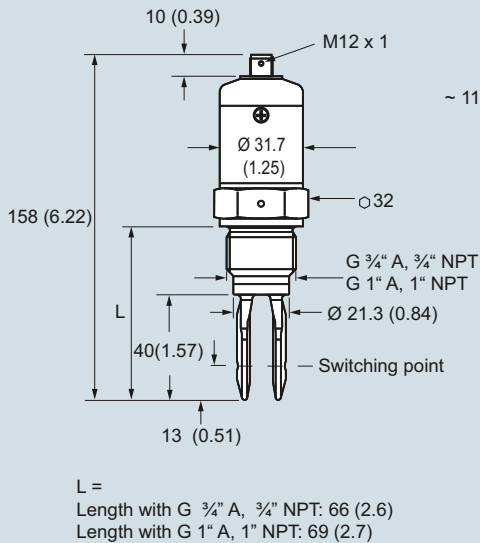
SITRANS LVL100 (standard)



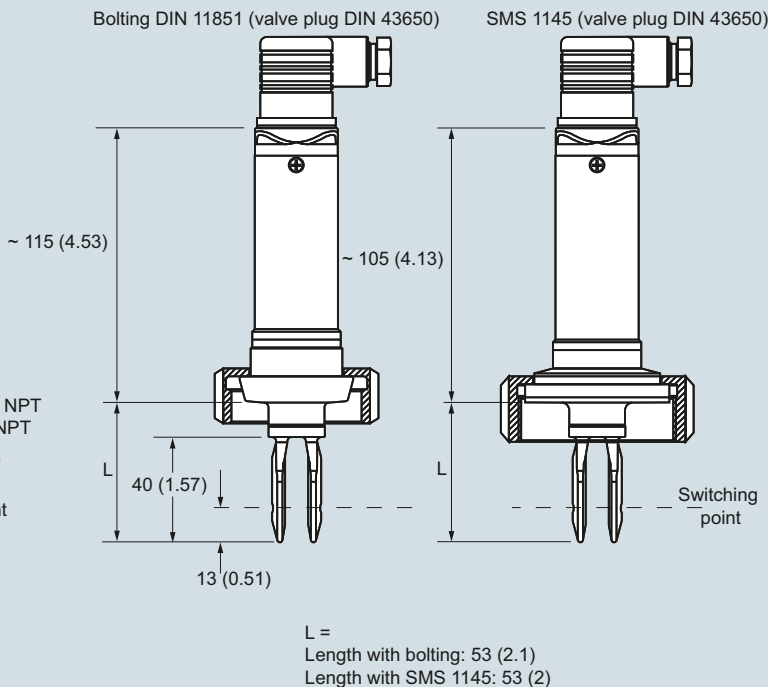
SITRANS LVL100 (extended high temperature)



SITRANS LVL100 (standard with M12 connector)



SITRANS LVL100 (extended, high temperature)



SITRANS LVL100, dimensions in mm (inch)

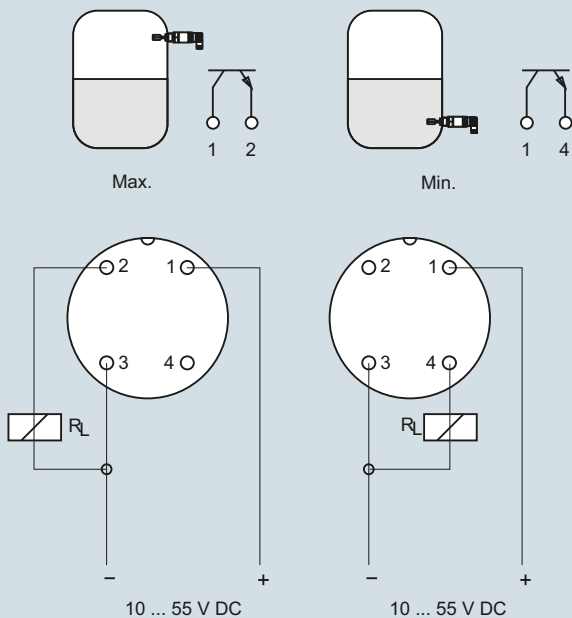
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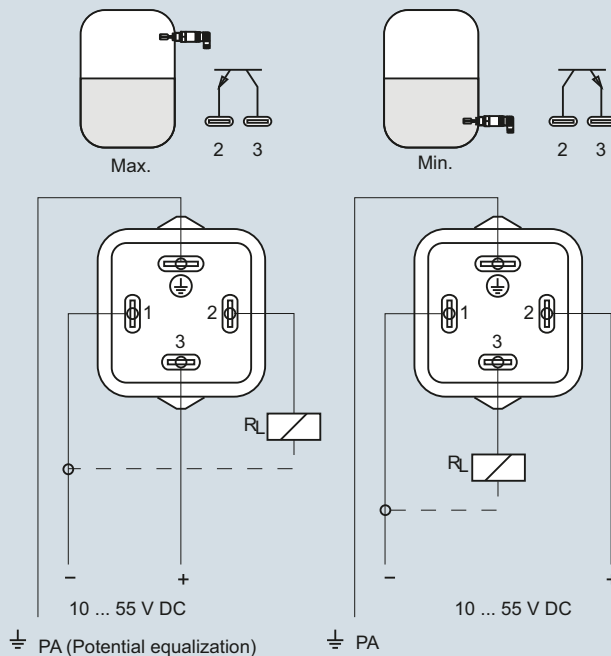
SITRANS LVL100

Schematics

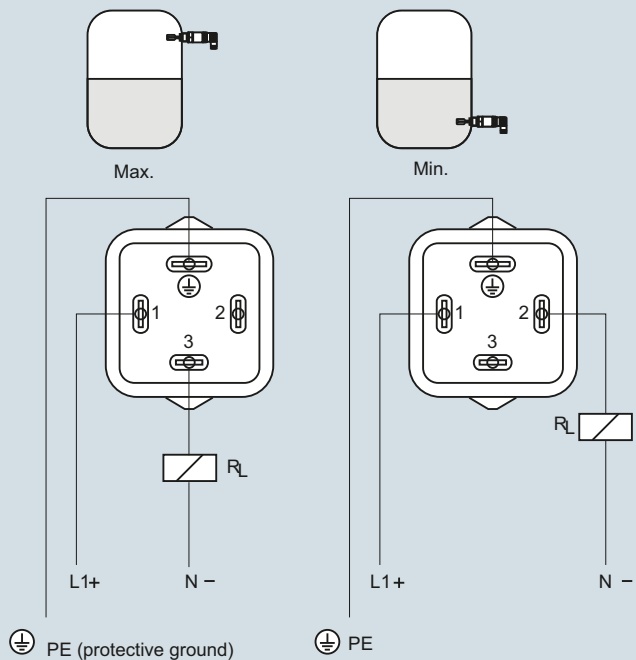
Transistor PNP (M12 x 1 plug connection)



Transistor PNP (with valve plug DIN 43650)



Contactless electronic switch (valve plug DIN 43650)



SITRANS LVL100, connections

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