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
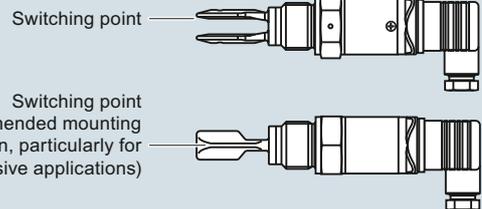- Integrated test function to confirm correct operation

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, overfill, and dry run protection

Configuration

Horizontal mounting

Switching point

Switching point (recommended mounting position, particularly for adhesive applications)

Vertical mounting

Switching point with lower density

Switching point [approx. 13 (0.51)]

Switching point with higher density

13 (0.51)

13 (0.51)
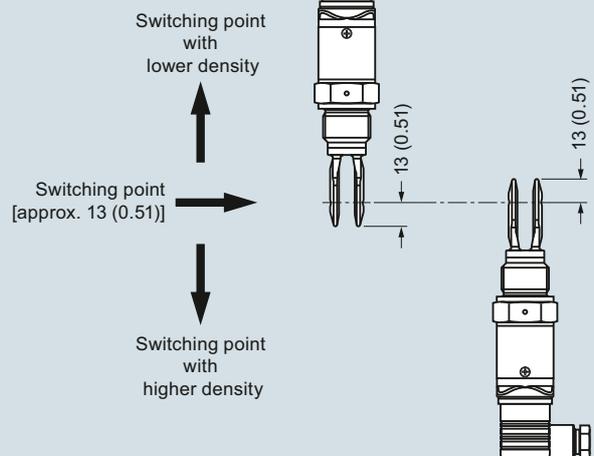
Horizontal mounting in viscous or adhesive applications

30 (1.18)
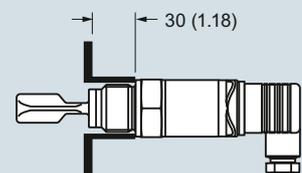
Moisture protection

NOTE:
Welded socket for flush mount optional.

Ensure cable gland faces downward to avoid water ingress.
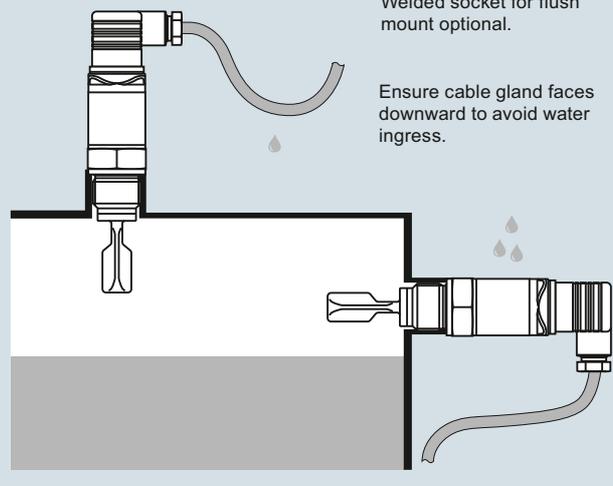
SITRANS LVL100 Installation, dimensions in mm (inch)

◼ Technical specifications

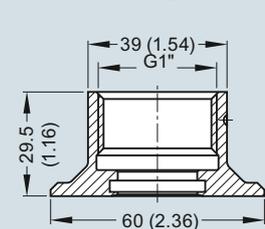| Mode of operation	
Measuring principle	Vibrating point level switch
Input	
Measured variable	High and low and demand
Output	
Output options	Contactless electronic switch Transistor output PNP
Measuring Accuracy	
• Hysteresis	Approx. 2 mm (0.08 inch) with vertical installation
• Switching delay	Approx. 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/cm³ (0.025 ... 0.09 lb/in³)
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

LVL100 threaded welded socket

G¾" A/316L — 32 (1.26), G¾", 32 (1.26), 53 (2.09)

G1" A/316L — 39 (1.54), G1", 29.5 (1.16), 60 (2.36)

SITRANS LVL100 welded socket, dimensions in mm (inch)

SITRANS LVL100

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	☁	1
Shipping approvals [1]	☁	2
Overfill protection (WHG) [2]	☁	3
Process temperature		
Standard -40 ... +100 °C (-40 ... +212 °F) [3]	☁	A
Extended -40 ... +150 °C (-40 ... +302 °F) [3]	☁	B
Hygienic applications -40 ... +150 °C (-40 ... +302 °F) [4]		C
Process connection		
Thread G¾" A PN 64/316L	☁	A 0
Thread G¾" A PN 64/316L Ra< 0.8 μm		A 1
Thread ¾" NPT PN 64/316L	☁	A 2
Thread ¾" NPT PN 64/316L Ra< 0.8 μm		A 3
Thread G1" A PN 64/316L	☁	A 4
Thread G1" A PN 64/316L Ra< 0.8 μm		A 5
Thread 1" NPT PN 64/316L	☁	A 6
Thread 1" NPT PN 64/316L Ra< 0.8 μm		A 7
Tri-Clamp 1" PN 16 DIN 32676/316L Ra< 0.8 μm		A 8
Tri-Clamp 1½" PN 16 DIN 32676/316L Ra< 0.8 μm		B 0
Tri-Clamp 2 " PN 16 DIN 32676/316L Ra< 0.8 μm		B 1
Bolting DN25 PN 40 DIN 11851/316L Ra< 0.8 μm		B 2
Bolting DN40 PN 40 DIN 11851/316L Ra< 0.8 μm		B 3
Bolting DN50 PN 25 DIN 11851/316L Ra< 0.8 μm		B 4
SMS DN38 PN 6 316L Ra< 0.8 μm		B 5
Hygienic fitting with compression nut F40 PN 25/316L Ra < 0.8 μm		B 6
Electronics		
Contactless electronic switch 20 ... 250 V AC/DC [5]	☁	1
Transistor output PNP 10 ... 55 V DC	☁	2
Housing		
316L	☁	1
Electrical connection/Protection		
M12x1/IP67	☁	A
According to DIN 43650 including plug/IP65		B
Acc. to DIN 43650 incl. plug with QuickOn connection/IP65		C
M12x1 incl. 5 m cable/IP68 (0.2 bar)		D

[1] Available with process temperature option A only

[2] Available with electronics option 2 only

[3] Available with process connection A0, A2, A4, and A6 only

[4] Available with process connection A1, A3, A5, and A7 ... B6 only

[5] Available with electrical connection/protection option B and C 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	Article No.
LVL100 (Contactless electronic switch)	
• English	**7ML1998-5KN01**
• French	**7ML1998-5KN11**
• Spanish	**7ML1998-5KN21**
• German	**7ML1998-5KN31**
LVL100 (Transistor PNP)	
• English	**7ML1998-5KP01**
• French	**7ML1998-5KP11**
• Spanish	**7ML1998-5KP21**
• German This device is shipped with the Siemens Milltronics manual DVD containing the Operating Instructions library.	**7ML1998-5KP31**
Spare Parts	
LVL100 Threaded Welded Socket	
G¾" A/316L with FKM Seal	**7ML1930-1EE**
G1" A/316L with FKM Seal	**7ML1930-1EF**
M27x1.5/316L with FKM Seal	**7ML1930-1EG**
G¾" 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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SITRANS LVL100

■ **Dimensional drawings**

SITRANS LVL100 (standard)

36 (1.42)
27 (1.06)
35 (1.38)
Ø 31.7 (1.25)
158 (6.22)
○32
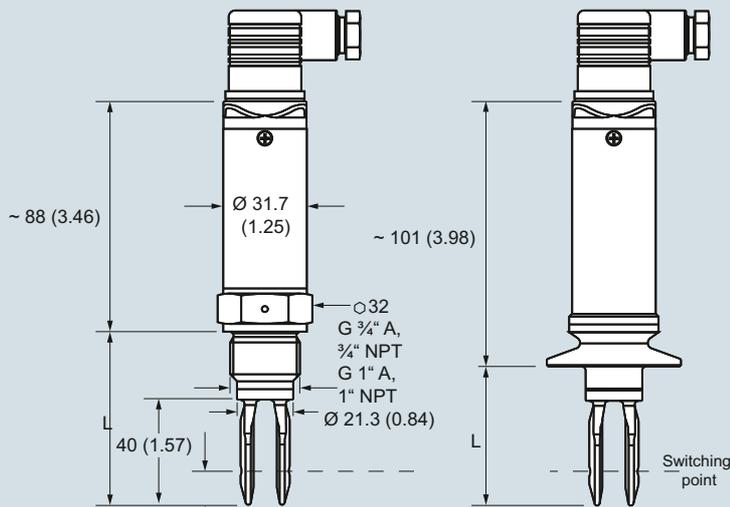G 1" A
Ø 21.3 (0.84)
L
40 (1.57)
Switching point
13 (0.51)

L =
Length with G ¾" A, ¾" NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)

SITRANS LVL100 (extended high temperature)

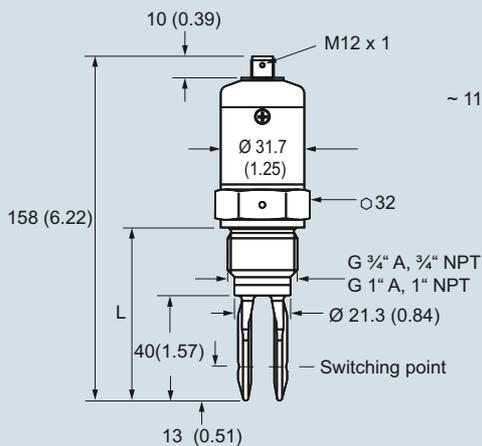Thread G ¾" A, G 1 inch A (DIN ISO 228/1),
¾" NPT or 1" NPT (valve plug DIN 43650)

Tri-clamp (valve plug DIN 43650)

~ 88 (3.46)
Ø 31.7 (1.25)
~ 101 (3.98)
○32
G ¾" A,
¾" NPT
G 1" A,
1" NPT
Ø 21.3 (0.84)
L
40 (1.57)
L
Switching point
13 (0.51)

L =
Length with G ¾" A, ¾" NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)
Length with Tri-clamp: 53 (2.1)

SITRANS LVL100 (standard with M12 connector)

10 (0.39)
M12 x 1
Ø 31.7 (1.25)
○32
158 (6.22)
G ¾" A, ¾" NPT
G 1" A, 1" NPT
Ø 21.3 (0.84)
L
40 (1.57)
Switching point
13 (0.51)

L =
Length with G ¾" A, ¾" NPT: 66 (2.6)
Length with G 1" A, 1" NPT: 69 (2.7)

SITRANS LVL100 (extended, high temperature)

Bolting DIN 11851 (valve plug DIN 43650)

SMS 1145 (valve plug DIN 43650)

~ 115 (4.53)
~ 105 (4.13)
L
40 (1.57)
L
Switching point
13 (0.51)
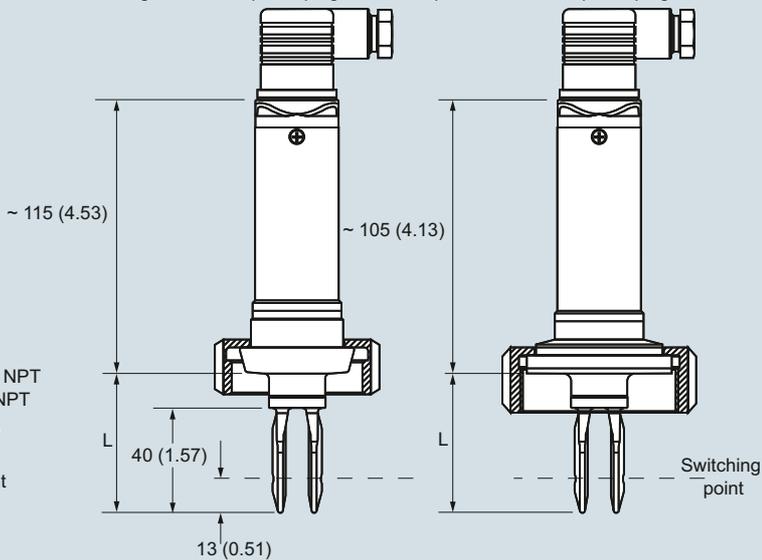
L =
Length with bolting: 53 (2.1)
Length with SMS 1145: 53 (2)

SITRANS LVL100, dimensions in mm (inch)

Schematics

Transistor PNP (M12 x 1 plug connection)

Max.

1 2

Min.

1 4

2 1

3 4

R$_L$

−   +

10 ... 55 V DC

2 1

3 4

R$_L$

−   +

10 ... 55 V DC
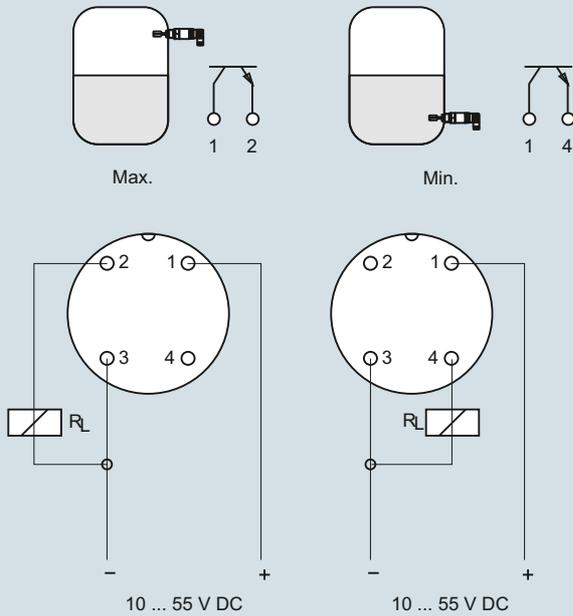
Transistor PNP (with valve plug DIN 43650)

Max.

2 3

Min.

2 3

1 2
3

R$_L$

−   +

10 ... 55 V DC

PA (Potential equalization)

1 2
3

R$_L$

−   +

10 ... 55 V DC

PA
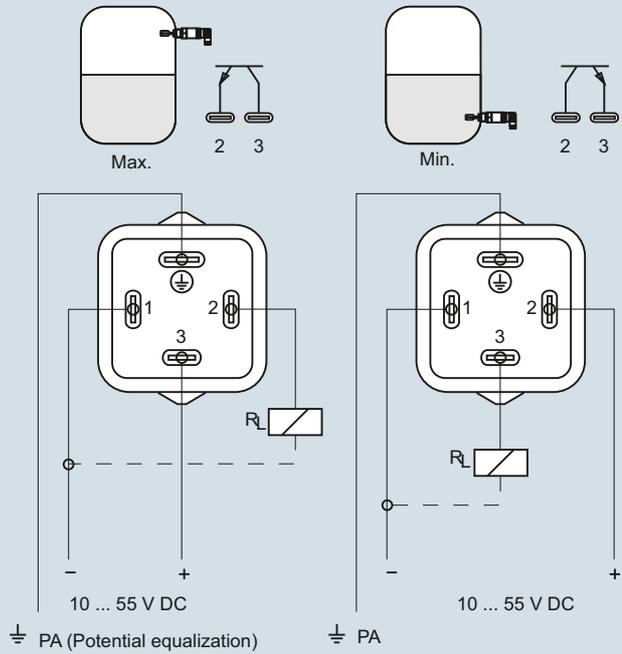
Contactless electronic switch (valve plug DIN 43650)

Max.

Min.

1 2
3

R$_L$

L1+   N −

PE (protective ground)

1 2
3

R$_L$

L1+   N −

PE
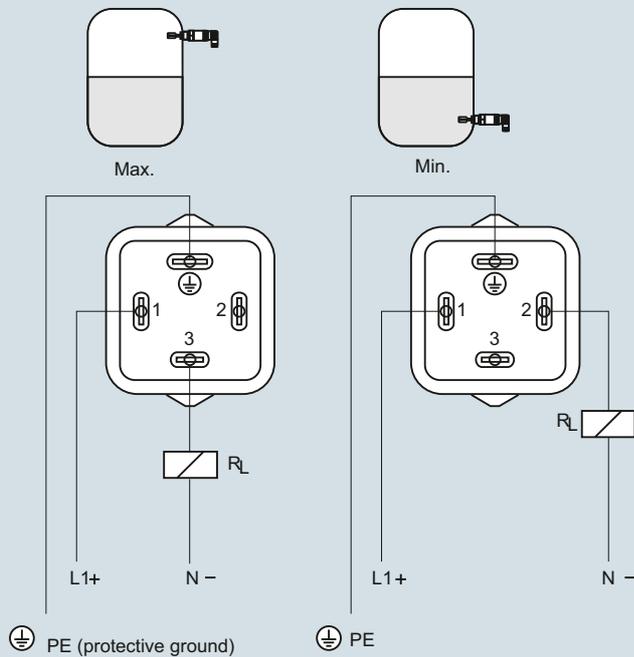
SITRANS LVL100, connections

SITRANS LVL100
Vibrační spínač hladiny

- **Pro kapalná média o hustotě 0,7 až 2,5 g/cm³.**
- **Vhodný pro hygienické aplikace.**
- **Tranzistorový výstup PNP nebo bezkontaktní spínač.**
- **Materiál ve styku s médiem nerezová ocel.**
- **Procesní připojení závitem, přírubou nebo Tri-Clamp.**
- **Elektrické připojení konektorem DIN nebo průchodkou M12.**
- **Kompaktní provedení umožňuje použití ve stísněných prostorech.**
- **Pracovní tlak -1 až 64 bar g.**
- **Teplota měřené látky -40 až +150 °C.**
- **Stupeň krytí až IP 68.**

Typ	Popis			Cena
7ML5745-	Vibrační spínač hladiny SITRANS LVL100			NAB
Kód	**Schválení**			
1	bez schválení			
3	ochrana proti přeplnění (WHG)		(pouze pro kód 2)	
Kód	**Procesní teplota**			
A	standardní	-40 až +100 ℃	(pouze pro kód A0, A2, A4 a A6)	
B	rozšířená	-40 až +150 ℃	(pouze pro kód A0, A2, A4 a A6)	
C	hygienické aplikace	-40 až +150 ℃	(pouze pro kód A1, A3, A5 a A7 až B6	
Kód	**Procesní připojení**			
A0	G3/4"	PN 64 / 316L		
A1	G3/4"	PN 64 / 316L	Ra < 0,8 µm	(pouze pro kód C)
A2	3/4" NPT	PN 64 / 316L		
A3	3/4" NPT	PN 64 / 316L	Ra < 0,8 µm	(pouze pro kód C)
A4	G1"	PN 64 / 316L		
A5	G1"	PN 64 / 316L	Ra < 0,8 µm	(pouze pro kód C)
A6	1" NPT	PN 64 / 316L		
A7	1" NPT	PN 64 / 316L	Ra < 0,8 µm	(pouze pro kód C)
A8	Tri-Clamp 1"	PN 16, DIN 32676 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B0	Tri-Clamp 1 1/2"	PN 16, DIN 32676 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B1	Tri-Clamp 2"	PN 16, DIN 32676 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B2	sešroubování DN 25	PN 40, DIN 11851 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B3	sešroubování DN 40	PN 40, DIN 11851 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B4	sešroubování DN 50	PN 25, DIN 11851 / 316L	Ra < 0,8 µm	(pouze pro kód C)
B6	hygienické šroubení s maticí F40	PN 25 / 316L	Ra < 0,8 µm	
Kód	**Elektronika**			
1	bezkontaktní elektronický spínač 20 až 250 V_{ST}		(pouze pro kód BA0-Z a CA0-Z)	
2	tranzistorový výstup PNP 10 až 55 V_{SS}			
Kód	**Materiál pouzdra**			
-1	nerezová ocel 316L			
Kód	**Elektrické připojení / Stupeň krytí**			
AA0-Z	M12x1 / IP 67			
BA0-Z	úhlový konektor DIN 43650 / IP 65			
CA0-Z	úhlový konektor DIN 43650 s QuickOn připojením / IP 65			
DA0-Z	M12x1 včetně 5 m kabelu / IP 68 (0,2 bar)			
Kód	**Volitelné příslušenství a provedení**			
W01	odmaštěné provedení s certifikací			
Y16	identifikační štítek			
Příklad objednávky:	**7ML5745-1AA41-1BA0-Z**			