

# Level Measurement

## Point level measurement – Vibrating switches

### SITRANS LVS100

#### Overview



SITRANS LVS100 is a vibrating point level switch for bulk solids.

#### Benefits

- High resistance to mechanical forces
- Sliding sleeve options for adjustable insertion length and ease of cleaning
- Rotatable enclosure for ease of installation and wiring
- Suitable for point level detection of materials starting at a bulk density of 30 g/l (1.9 lb/ft<sup>3</sup>)
- Customer desired extensions up to 4 000 mm (157.48 inch)

#### Application

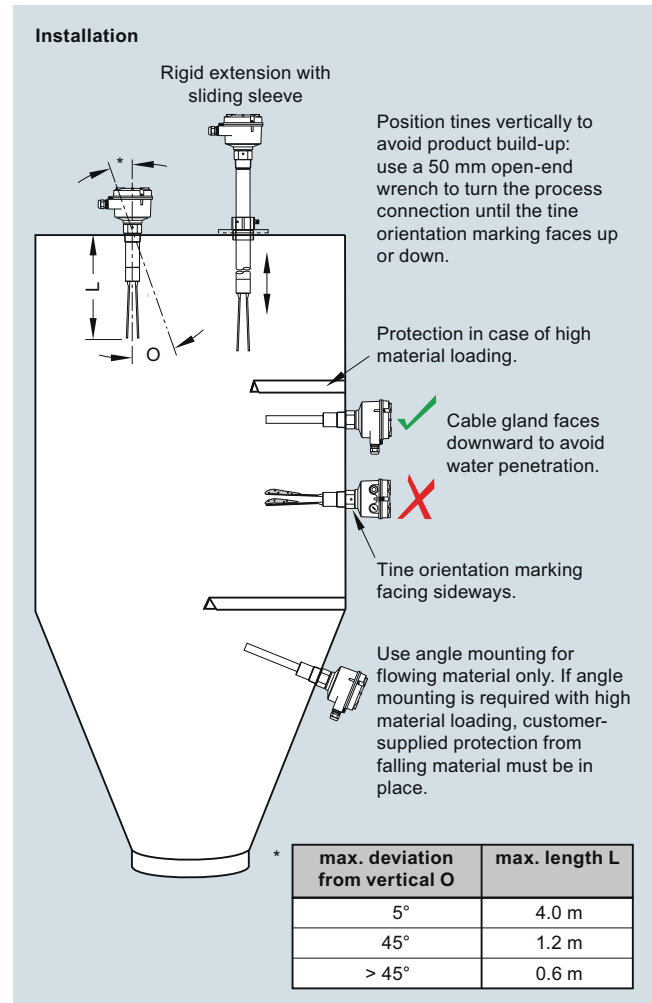
SITRANS LVS100 detects high, low or demand levels of dry bulk solids in bins, silos or hoppers.

SITRANS LVS100 has a compact design and can be top, side, or angle mounted. The vibrating fork design ensures the tines are kept clean. The unique design of the fork and crystal assembly eliminates false high level readings even if tines become damaged.

A signal from the electronic circuit excites a crystal in the probe causing the fork to vibrate. If the fork is covered by material, the change in vibration is detected by the electronic circuitry which causes the relay to change state after a one second delay. When the fork is free from material pressure, full vibration resumes and the relay reverts to its normal condition.

- Key Applications: dry bulk solids in bins, silos, hoppers

#### Configuration



SITRANS LVS100 installation, dimensions in mm (inch)

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### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Vibrating point level switch
<b>Input</b>	
Measured variable	High, low and demand
Measuring frequency	200 Hz
<b>Output</b>	
Relays	DPDT relay
Relay delay	From loss of vibration: approximately 1 second  From resumption of vibration: approximately 1 ... 2 s
Signal delay	Probe uncovered to covered: approximately 1 s  Probe covered to uncovered: approximately 1 ... 2 s
Relay fail-safe	High or low, switch selectable
Alarm output	Relay 8 A at 250 V AC, non-inductive  Relay 5 A at 30 V DC, non-inductive
<b>Sensitivity</b>	
High or low, switch selectable	
<b>Rated operating conditions</b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Installation category	III
• Pollution degree	2
Medium conditions	
• Process temperature	-40 ... +150 °C (-40 ... +302 °F)
• Max. threaded bushing temperature	60 °C (140 °F)
• Max. enclosure surface temperature (Category 2D)	90 °C (194 °F)
• Max. extension surface temperature (Category 1D)	150 °C (302 °F)
• Pressure (vessel)	Max. 10 bar g (145 psi g) European Pressure Directive 97/23/EC: Category 1
Minimum material density	Approx. 30 g/l (1.9 lb/ft <sup>3</sup> )

<b>Design</b>	
Material	
• Enclosure	Epoxy coated aluminum
Process connection	<ul style="list-style-type: none"> <li>• Thread 1¼" NPT [(Taper), ANSI/ASME B1.20.1], R 1½" [(BSPT), EN 10226]</li> <li>• Thread R 1½" [(BSPT), EN 10226], ½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]</li> <li>• Thread material: stainless steel 304 (1.4301) or 316TI (1.4571) depending on configuration</li> </ul>
Tine material	Stainless steel 316TI (1.4571)
Degree of protection	IP66/Type 4/NEMA 4
Conduit entry	2 x M20x1.5 or 2 x ½" NPT
Weight	Standard version, no extensions: approx 1.7 kg (3.7 lb)
<b>Power supply</b>	
<ul style="list-style-type: none"> <li>• 19 ... 230 V AC, +10 %, 50 ... 60 Hz, 8 VA</li> <li>• 19 ... 40 V DC, +10 %, 1.5 W</li> </ul>	
<b>Certificates and approvals</b>	
<ul style="list-style-type: none"> <li>• CSA/FM General Purpose</li> <li>• CE</li> <li>• CSA/FM Dust Ignition Proof</li> <li>• C-TICK</li> <li>• ATEX II 1/2 D</li> <li>• IECEx</li> </ul>	

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# Level Measurement

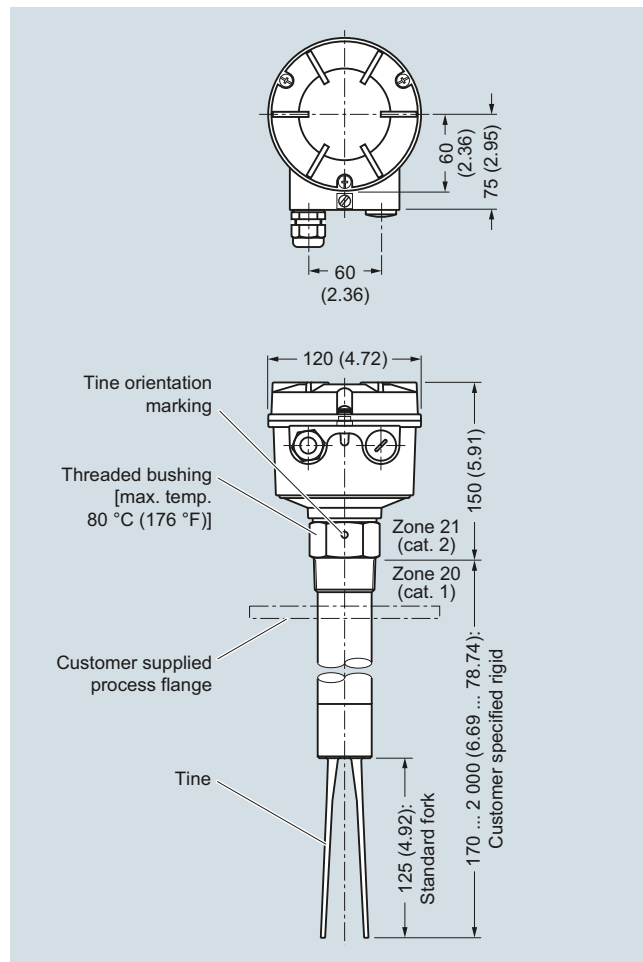
## Point level measurement – Vibrating switches

### SITRANS LVS100

Selection and Ordering data	Article No.
<b>SITRANS LVS100, standard</b> Vibrating point level switch for high or low level detection of bulk solids. Sensitivity > 30 g/l.	<b>7ML5735-</b> - - - - - 0 A 0
<b>Input Voltage</b> DPDT Relay - 19 ... 230 V AC, 19 ... 40 V DC DPDT Relay - 19 ... 230 V AC, 19 ... 40 V DC (stocked version) <sup>1)</sup>	1 2
<b>Process temperature</b> Up to 150 °C (302 °F)	A
<b>Process connection</b> <u>Threaded</u> R 1½" [(BSPT), EN 10226] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] R 1½" [(BSPT), EN 10226] DIN 2999 thread, sliding sleeve - min. length 500 mm (19.69 inch) <sup>2)</sup> 1½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)] <sup>2)</sup>	A B C D
<b>Extension length</b> <u>Stainless steel 316TI (1.4571)</u> Standard length, 170 mm (6.69 inch) <u>Add Order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u> <u>Stainless steel 304 (1.4301)</u> • 300 ... 500 mm (11.81 ... 19.69 inch) • 501 ... 1 000 mm (19.72 ... 39.37 inch) • 1 001 ... 1 500 mm (39.41 ... 59.06 inch) • 1 501 ... 2 000 mm (59.09 ... 78.74 inch) • 2 001 ... 2 500 mm (78.78 ... 98.43 inch) • 2 501 ... 3 000 mm (98.46 ... 118.11 inch) • 3 001 ... 3 500 mm (118.15 ... 137.80 inch) • 3 501 ... 4 000 mm (137.83 ... 157.48 inch)	11 12 13 14 15 16 17 18 20
<b>Approvals</b> CSA/FM General Purpose, CE, C-TICK CSA/FM Class II, Div. 1, Group E, F, G, Class III, ATEX II 1/2 D, C-TICK IEC-Ex t IIIC Da/Db	A B C

<sup>1)</sup> Only available with the following configurations 7ML5735-2AA11-0AA0 or 7ML5735-2AB11-0AA0  
<sup>2)</sup> Not available with extension length options 11, 12

### Dimensional drawings

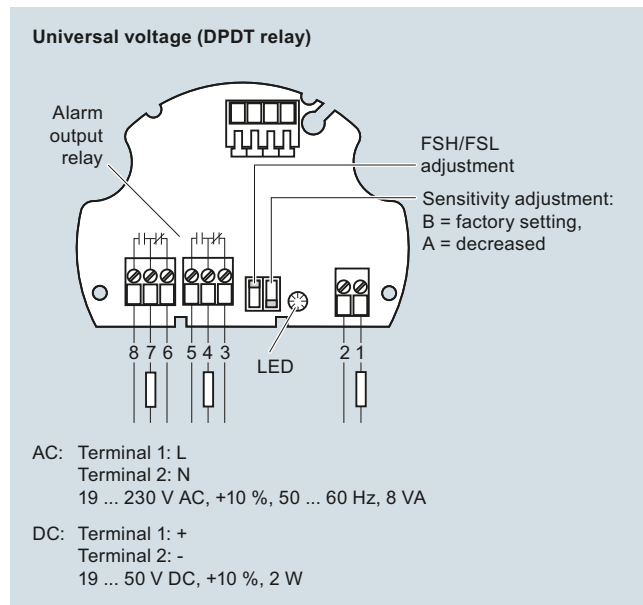


SITRANS LVS100, dimensions in mm (inch)

Selection and Ordering data	Order code
<b>Further Designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s). Total insertion length: Enter the total insertion length in plain text description, max. (50 mm increments) Signal bulb inserted in M20 cable gland <sup>1)</sup>	<b>Y01</b> <b>A20</b>
<b>Operating Instructions</b> Multi-language This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	Article No. <b>7ML1998-5FT63</b>
<b>Spare Parts</b> Replacement Electronics Module LVS100 DPDT Relay (19 ... 253 V AC, 19 ... 55 V DC) R 1½" [(BSPT), EN 10226] DIN 2999 thread, sliding sleeve 1½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69 inch)]	<b>7ML1830-1NS</b> <b>7ML1830-1NT</b> <b>7ML1830-1NU</b>

<sup>1)</sup> Available only with approval CE  
• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol. For details see page 9/5 in the appendix.

### Schematics



SITRANS LVS100 connections