

# Level instruments

## 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
- Strong resistance to external vibrations
- Rotatable enclosure for ease of installation and wiring
- Suitable for point level detection of materials starting at a bulk density of 60 g/l (3.8 lb/ft<sup>3</sup>)
- Customer desired extensions up to 2000 mm (78.74")
- Durable short fork option starting at 170 mm (6.7") insertion length

#### Application

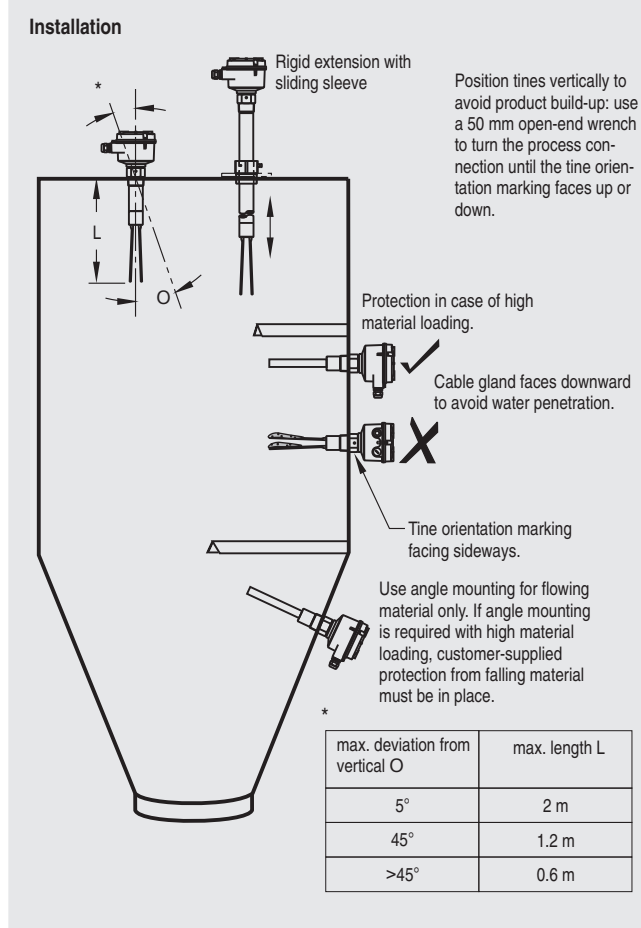
SITRANS LVS100 detects high, low or demand levels of dry bulk solids in bins, silos or hoppers.

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

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### Technical specifications

#### Mode of operation

Measuring principle Vibrating point level switch

#### Input

Measured variable High, low and demand

Measuring frequency 200 Hz

#### Output

- Relays DPDT relay
- Relay delay
  - From loss of vibration: approximately 1 second
  - From resumption of vibration: approximately 1 to 2 seconds
- Signal delay
  - Probe uncovered to covered: approximately 1 second
  - Probe covered to uncovered: approximately 1 to 2 seconds
- 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

**Sensitivity** High or low, switch selectable

#### Rated operating conditions

##### Installation conditions

• Location Indoor/outdoor

##### Ambient conditions

- Ambient temperature -40 to +60 °C (-40 to +140 °F)
- Installation category III
- Pollution degree 2

##### Medium conditions

- Process temperature -40 to +150 °C (-40 to +302 °F)
- Max. threaded bushing temperature +80 °C (+176 °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 (145 psi) European Pressure Directive 97/23/EC: Category 1
- Minimum material density
  - approx. 60 g/l (3.8 lb/ft<sup>3</sup>)

#### Design

- Material
  - Enclosure Epoxy coated aluminum
- Process connection
  - Thread 1¼" NPT [(Taper), ANSI/ASME B1.20.1], R 1½" [(BSPT), EN 10226]
  - Thread R 1½" [(BSPT), EN 10226], ½" NPT [(Taper), ANSI/ASME B1.20.1], sliding sleeve [min. length 500 mm (19.69")]
  - Thread material: stainless steel 304 (1.4301) or 316Ti (1.4571) depending on configuration
- 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 lbs)

#### Power supply

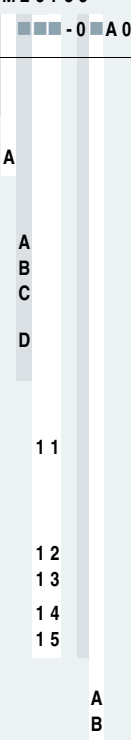
- 19 to 230 V AC, +10%, 50 to 60 Hz, 8 VA
- 19 to 50 V DC, +10%, 1.5 W

#### Certificates and approvals

- CSA/FM General Purpose
- CE
- CSA/FM Dust Ignition Proof
- C-TICK
- ATEX II 1/2 D

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### SITRANS LVS100

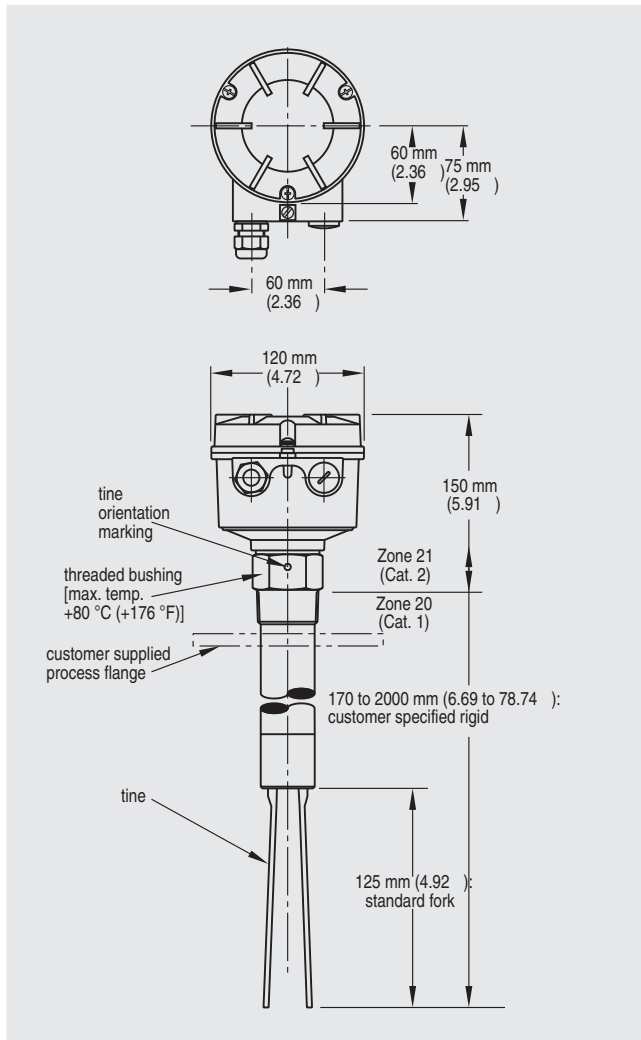
Selection and Ordering data	Order No.
<b>SITRANS LVS100, standard</b> Vibrating point level switch for high or low level detection of bulk solids Sensitivity > 60 g/l.	<b>7ML5735-</b>  <b>- 0 A 0</b>
<b>Input Voltage</b> DPDT Relay - 19 to 230 V AC, 19 to 50 V DC	<b>1</b>
<b>Process temperature</b> up to +150 °C (+302 °F)	<b>A</b>
<b>Process connection</b> Threaded 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") ½" NPT [(Taper), ANSI/ASME B1.20.1] , sliding sleeve [min. length 500 mm (19.69")]	<b>A</b> <b>B</b> <b>C</b> <b>D</b>
<b>Extension length</b> Stainless steel 316Ti (1.4571) Standard length, 170 mm (6.69") Add order code Y01 and plain text: "Insertion length ...mm" Stainless steel 304 (1.4301) • 300 to 500 mm (11.81 to 19.69") • 501 to 1000 mm (19.72 to 39.37") • 1001 to 1500 mm (39.41 to 59.06") • 1501 to 2000 mm (59.09 to 78.74")	<b>11</b> <b>12</b> <b>13</b> <b>14</b> <b>15</b>
<b>Approvals</b> CSA/FM General Purpose, CE CSA/FM Class II, Div. 1, Group E,F, G, Class III, ATEX II 1/2 D	<b>A</b> <b>B</b>
<b>Further designs</b> Please add "-Z" to Order No. and specify Order code(s). Total insertion length: Enter the total insertion length in plain text description, max. 2000 mm (78.74") Signal bulb inserted in M20 cable gland	Order code <b>Y01</b> <b>A20</b>
<b>Instruction manual</b> Multi-language This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	Order No. <b>7ML1998-5FT63</b>
<b>Spare parts</b> Replacement Electronics Module LVS100 DPDT Relay (19 to 253 V AC, 19 to 55 V DC) R 1½" [(BSPT), EN 10226] DIN 2999 thread, sliding sleeve ½" NPT [(Taper), ANSI/ASME B1.20.1] , sliding sleeve [min. length 500 mm (19.69")]	<b>7ML18301NS</b> <b>7ML18301NT</b> <b>7ML18301NU</b>

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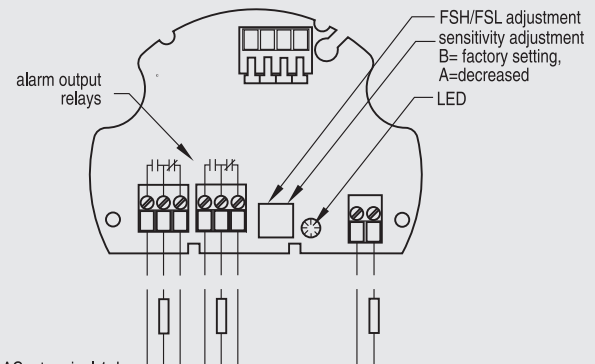
### Dimensional drawings



SITRANS LVS100 dimensions

### Schematics

#### Universal voltage (DPDT relay)



AC: terminal 1: L  
terminal 2: N  
19 to 230 V AC, +10%, 50 to 60 Hz, 8 VA

DC: terminal 1: +  
terminal 2: -  
19 to 50 V DC, +10 %, 2W

SITRANS LVS100 connections