

Overview



SITRANS LVS300 is a vibrating rod point level switch for high, low, or demand level detection of bulk solids.

Benefits

- High resistance to mechanical forces.
- Adjustable sensitivity for varied applications including build-up.
- Rotatable enclosure for convenient wiring.
- Suitable for low density material: standard version, 20 g/l (1.3 lb/ft³).
- Customer desired extensions up to 4 000 mm (157 inch).
- 160 mm (6.3 inch) insertion length.
- Flexible, customer supplied, rods to 4 meters.
- Process connections starting at 1 inch.

Application

The standard LVS300 detects high, low, or demand levels of dry bulk solids in bins, silos, or hoppers.

A pipe extension version is available, separated by a customer supplied 1 inch pipe.

The LVS300 has a compact design and can be top, side or angle mounted. The vibrating rod design ensures the product will not be impacted by bridging of traditional forks in applications with buildup potential. A durable probe design ensures the product will withstand heavier materials without damage or bending.

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

- Key Applications: dry or bulk solids with buildup potential, in bins, silos, or hoppers, such as lime, molding sand, milk powder, flour, salt, and plastic granules.

Level measurement

Point level measurement

Vibrating switches

SITRANS LVS300

Technical specifications

| | | | |
|--------------------------|---|-----------------------------------|---|
| Mode of operation | | Rated operating conditions | |
| Measuring principle | Vibrating point level switch | Installation conditions | |
| Input | | • Location | Indoor/outdoor |
| Measured variable | High, low, and demand | Ambient conditions | |
| Measuring frequency | | • Ambient temperature | -40 ... +60 °C (-40 ... +140 °F) |
| • Standard | 330 Hz | • Storage temperature | -40 ... +80 °C (-40 ... +176 °F) |
| Output | | • Installation category | II |
| PNP | Open collector: Permanent load max. 0.4 A, short-circuit and over-load protected (reverse protection) | • Pollution degree | 2 |
| Relay | DPDT relay | Medium conditions | |
| Signal delay | <ul style="list-style-type: none"> • Probe uncovered to covered: approximately 1 second • Probe covered to uncovered: approximately 1 ... 2 seconds | • Process temperature | -40 ... +150 °C (-40 ... +302 °F) |
| Relay fail-safe | High or low, switch selectable | • Pressure (vessel) | Max. 16 bar g (232 psi g) European Pressure Directive 2014/68/EU: Category 1 |
| Alarm output | <ul style="list-style-type: none"> • Relay 8 A at 250 V AC, non-inductive • Relay 5 A at 30 V DC, non-inductive | • Minimum material density | Approx. 20 g/l (1.2 lb/ft ³) |
| Sensitivity | Four sensitivity settings, switch selectable | Design | |
| | | Material | Aluminum powder coat |
| | | • Enclosure | |
| | | Process connection | <ul style="list-style-type: none"> • G 1", G 1 1/4", G 1 1/2" DIN 228; NPT 1", NPT 1 1/4", NPT 1 1/2" ANSI B 1.20.1 • Flange: according to selection 1.4541 (321) or 1.4404 (316L) • Tri-clamp: stainless steel 1.4301 (304) or 1.4404 (316L) • 2" (DN 50) ISO 2852 |
| | | Probe material | <ul style="list-style-type: none"> • Oscillator material: stainless steel 1.4404 (316L) • Stainless steel 1.4301 (304)/1.4541 (321) or 1.4404 (316L) (process connection and tube extension) |
| | | Degree of protection | IP67 (EN 60529), NEMA Type 4X |
| | | Conduit entry | 2 x M20 x 1.5 or 2 x 1/2" NPT |
| | | Weight | <ul style="list-style-type: none"> • Standard version: 1.3 kg (2.9 lb) + 1.3 kg/m (+2.9 lb per 39.3 inch) extension • Customer supplied pipe: 1.8 kg (4.0 lb) + 1.3 kg/m (+2.9 lb per 39.3 inch) extension |
| | | Power supply | <ul style="list-style-type: none"> • Relay DPDT 21 ... 230 V, 50 ... 60 Hz, ± 10 %* 22 VA, 22 ... 45 V DC, ± 10 %* 2W *incl. ± 10 % of EN 61010 • 3-wire PNP 20 ... 40 V DC, ± 10 %* *incl. ± 10 % of EN 61010 |
| | | Certificates and approvals | CE, ATEX, FM |

| Selection and ordering data | Article No. | Order code |
|--|--|--|
| SITRANS LVS300 Vibrating rod point level switch, compact design Level and material detection in solids. Compact, with 160 mm (6.30 inch) insertion. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | 7ML5736- | |
| Power supply Relays DPDT 21 ... 230 V AC 22 ... 45 V DC PNP 20 ... 40 V DC | 1 2 | |
| Process temperature Without temperature isolator [up to T _{process} = 150 °C (302 °F) at T _{amb} < 40 °C (104 °F)] With temperature isolator [up to T _{process} = 150 °C (302 °F) at T _{amb} > 40 °C (104 °F)] | A B | |
| Process connection <u>Threaded</u> Thread G 1½" (BSPP) EN ISO 228-1 Thread G 1¼" (BSPP) EN ISO 228-1 Thread G 1" (BSPP) EN ISO 228-1 Thread NPT 1½" (Taper) ANSI B1.20.1 Thread NPT 1¼" (Taper) ANSI B1.20.1 Thread NPT 1" (Taper) ANSI B1.20.1 Tri-clamp 2" (DN50) ISO 2852 <u>Flanged</u> Flange DN 100 PN6, EN1092-1 ¹⁾ Flange DN 100 PN16, EN1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5 | A B C D E F G H J K L M | |
| Extension length Standard length, 160 mm (6.3 inch) | 1 1 | |
| Material process connection/extension Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316 L (1.4404) | 1 2 | |
| Approvals CE ATEX II 1/2D Ex ta/tb IIIC TI Da/Db IP6X FM _{US} and FM _C General Purpose FM _{US} and FM _C DIP Class II, III Div.1 Groups E, F, G | A B C D | |
| | | Further designs Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [(70 mm x 13 mm (2.76 x 0.51 inch))]: Measuring-point number/identification (max. 27 characters) specify in plain text Signal bulb inserted in M20 cable gland ²⁾ Factory test certificate - M to DIN 55350, Part 18 Y14 A20 C11 |
| | | Operating Instructions All literature is available to download for free, in a range of languages, at https://intranet.entry.siemens.com ¹⁾ Max. 6 bar (87 psi). ²⁾ Available only with Approval option A. |

Level measurement

Point level measurement

Vibrating switches

SITRANS LVS300

Selection and ordering data

Article No.

Order code

SITRANS LVS300 Vibrating rod point level switch, pipe extended design

Level and material detection in solids.
Extension options up to 4 m (13.12 ft).

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Power supply

Relays DPDT 21 ... 230 V AC 22 ... 45 V DC
PNP 20 ... 40 V DC

Process temperature

Without temperature isolator [up to T_{process} = 150 °C (302 °F) at Tamb < 40 °C (104 °F)]
With temperature isolator [up to T_{process} = 150 °C (302 °F) at Tamb > 40 °C (104 °F)]

Process connection

Threaded

Thread G 1½" (BSP) EN ISO 228-1
Thread G 1¼" (BSP) EN ISO 228-1
Thread G 1" (BSP) EN ISO 228-1
Thread NPT 1½" (Taper) ANSI B1.20.1
Thread NPT 1¼" (Taper) ANSI B1.20.1
Thread NPT 1" (Taper) ANSI B1.20.1
Tri-clamp 2" (DN50) ISO 2852

Flanged

Flange DN 100 PN6, EN1092-1¹⁾
Flange DN 100 PN16, EN1092-1
2" ASME 150 lb B16.5
3" ASME 150 lb B16.5
4" ASME 150 lb B16.5

Extension length

Extension length Stainless steel threads
304 (1.4301), flanges 321 (1.4541)

200 ... 500 mm (7.87 ... 19.69 inch) 1 2
501 ... 750 mm (19.72 ... 29.53 inch) 1 3
751 ... 1 000 mm (29.57 ... 39.37 inch) 1 4
1 001 ... 1 250 mm (39.41 ... 49.21 inch) 1 5
1 251 ... 1 500 mm (49.25 ... 59.06 inch) 1 6
1 501 ... 1 750 mm (59.09 ... 68.90 inch) 1 7
1 751 ... 2 000 mm (68.94 ... 78.74 inch) 1 8
2 001 ... 2 250 mm (78.78 ... 88.58 inch) 2 1
2 251 ... 2 500 mm (88.62 ... 98.43 inch) 2 2
2 501 ... 2 750 mm (98.46 ... 108.27 inch) 2 3
2 751 ... 3 000 mm (108.31 ... 118.11 inch) 2 4
3 001 ... 3 250 mm (118.15 ... 127.95 inch) 2 5
3 251 ... 3 500 mm (127.99 ... 137.80 inch) 2 6
3 501 ... 3 750 mm (137.83 ... 147.64 inch) 2 7
3 751 ... 4 000 mm (147.68 ... 157.48 inch) 2 8

Extension length Stainless steel 316 L (1.4404)

200 ... 500 mm (7.87 ... 19.69 inch) 4 2
501 ... 750 mm (19.72 ... 29.53 inch) 4 3
751 ... 1 000 mm (29.57 ... 39.37 inch) 4 4
1 001 ... 1 250 mm (39.41 ... 49.21 inch) 4 5
1 251 ... 1 500 mm (49.25 ... 59.06 inch) 4 6
1 501 ... 1 750 mm (59.09 ... 68.90 inch) 4 7
1 751 ... 2 000 mm (68.94 ... 78.74 inch) 4 8
2 001 ... 2 250 mm (78.78 ... 88.58 inch) 5 1
2 251 ... 2 500 mm (88.62 ... 98.43 inch) 5 2
2 501 ... 2 750 mm (98.46 ... 108.27 inch) 5 3
2 751 ... 3 000 mm (108.31 ... 118.11 inch) 5 4
3 001 ... 3 250 mm (118.15 ... 127.95 inch) 5 5
3 251 ... 3 500 mm (127.99 ... 137.80 inch) 5 6
3 501 ... 3 750 mm (137.83 ... 147.64 inch) 5 7
3 751 ... 4 000 mm (147.68 ... 157.48 inch) 5 8

Material process connection/extension

Stainless steel threads 304 (1.4301),
flanges 321 (1.4541), Tri-clamp 304 (1.4301)²⁾
Stainless steel 316 L (1.4404)³⁾

Approvals

CE
ATEX II 1/2D Ex ta/tb IIIC T! Da/Db IP6X
FM_{US} and FM_C General Purpose
FM_{US} and FM_C DIP Class II, III Div.1, Groups E, F, G

7ML5737-

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | A | B | A | B | C | D | E | F | G | H | J | K | L | M | 1 | 2 | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Further designs

Please add "-Z" to Article No.
and specify Order code(s).

Enter the total insertion length in plain text
description, max. 4 000 mm (157.48 inch)

Y01

Stainless steel tag
[(70 mm x 13 mm (2.76 x 0.51 inch)):
Measuring-point number/identification
(max. 27 characters) specify in plain text

Y14

Signal bulb inserted in M20 cable gland⁴⁾

A20

Sliding sleeve, for application without overpressure
max. 150 °C (302 °F), min. length 501 mm
(19.72 inch)⁵⁾⁶⁾⁷⁾

P12

Sliding sleeve, for application with overpressure,
max. 16 bar (232 psi), max. 150 °C (302 °F),
min. length 501 mm (19.72 inch)⁶⁾

P13

Factory test certificate - M to DIN 55350, Part 18

C11

Operating Instructions

All literature is available to download for free, in a
range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

Spare parts

Replacement Electronics Modules are available.
Contact factory for pricing.

1) Max. 6 bar (87 psi).

2) Available with extension length 12.

3) Available with extension length 42.

4) Available only with Approval option A.

5) Available only with Approval options A and C.

6) Available only with Process connection options A, D, H, J, K, L, M, not
available with extension length 12 and 42.

7) Available only with Material Process connection/extension option 1.

| Selection and ordering data | Article No. | Order code | |
|--|--|---|-------------------|
| SITRANS LVS300 Vibrating rod point level switch, customer supplied tube Level and material detection in solids. Requires flexible, customer supplied, pipe extensions with insertion to 4 m (13.12 ft). Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | 7ML5738- | | |
| Power supply Relays DPDT 21 ... 230 V AC 22 ... 45 V DC PNP 20 ... 40 V DC | 1 2 | | |
| Process temperature Without temperature isolator [up to T _{process} = 150 °C (302 °F) at Tamb < 40 °C (104 °F)] | A | | |
| Process connection <u>Threaded</u> Thread G 1½" (BSPP) EN ISO 228-1 Thread NPT 1½" (Taper) ANSI B1.20.1 Tri-clamp 2" (DN50) ISO 2852 <u>Flanged</u> Flange DN 100 PN6, EN1092-1 ¹⁾ Flange DN 100 PN16, EN1092-1 2" ASME 150 lb B16.5 3" ASME 150 lb B16.5 4" ASME 150 lb B16.5 | A D G H J K L M | | |
| Extension length 1 500 mm (59 inch), adjustable cable length 4 000 mm (157 inch), adjustable cable length | 1 1 1 2 | | |
| Material process connection/extension Stainless steel threads 304 (1.4301), flanges 321 (1.4541), Tri-clamp 304 (1.4301) Stainless steel 316 L (1.4404) | | 1 2 | |
| Approvals CE ATEX II 1/2D Ex ta/tb IIIC T! Da/Db IP6X FM _{US} and FM _C General Purpose FM _{US} and FM _C DIP Class II, III Div.1, Groups E, F, G | | A B C D | |
| | | Further designs Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [(70 mm x 13 mm (2.76 x 0.51 inch))]: Measuring-point number/identification (max. 27 characters) specify in plain text Signal bulb inserted in M20 cable gland ²⁾ Factory test certificate - M to DIN 55350, Part 18 | Y14 A20 C11 |
| | | Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation | |
| | | Spare parts Replacement Electronics Modules are available. Contact factory for pricing. 1) Max. 6 bar (87 psi). 2) Available only with Approval option A. | |

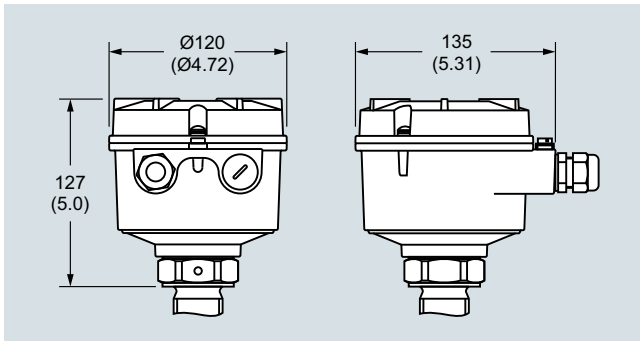
Level measurement

Point level measurement

Vibrating switches

SITRANS LVS300

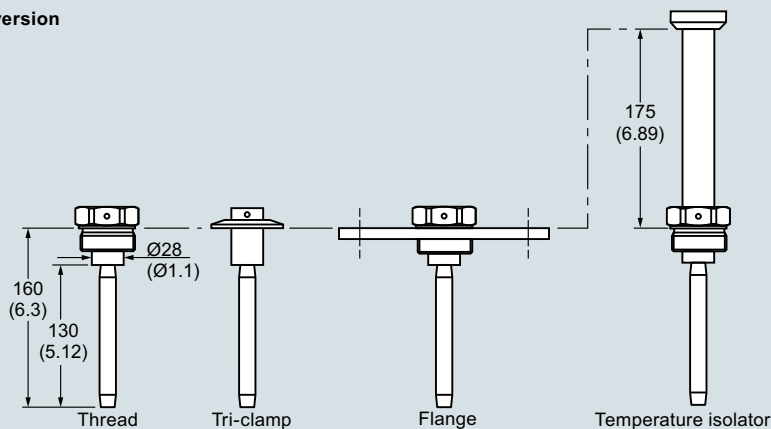
Dimensional drawings



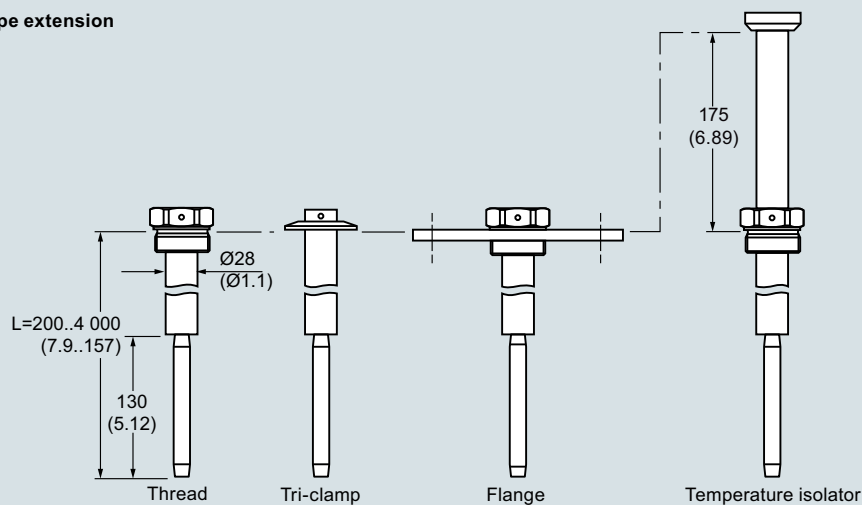
SITRANS LVS300 enclosure, dimensions in mm (inch)

Dimensional drawings

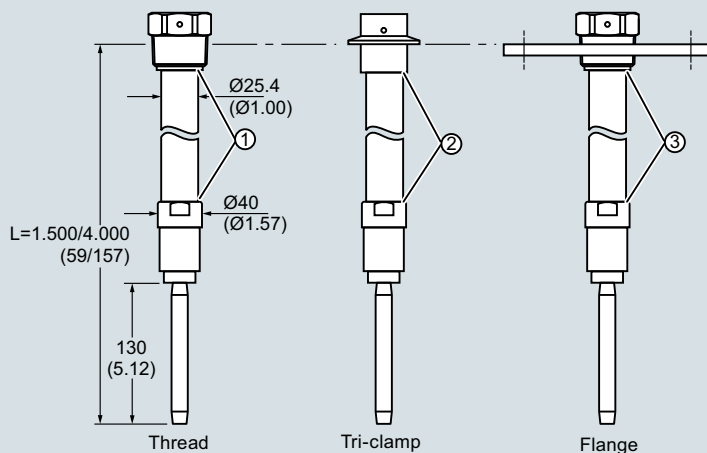
Compact version



Pipe extension



Pipe extension - customer mounted



| | Approval | Process connection | Thread on extension pipe |
|----|--------------------------|--------------------------|--------------------------|
| ① | CE, ATEX | G 1½" | R 1" |
| | FM | NPT 1½" | NPT 1" |
| ② | Approval | Thread on extension pipe | |
| | CE, ATEX | R 1" | |
| | FM | NPT 1" | |
| ③ | Approval | Process connection | Thread on extension pipe |
| | CE, ATEX | Flange DN | R 1" |
| | | Flange ANSI | NPT 1" |
| FM | Flange DN Flange ANSI | NPT 1" | |

SITRANS LVS300, dimensions in mm (inch)

Level measurement

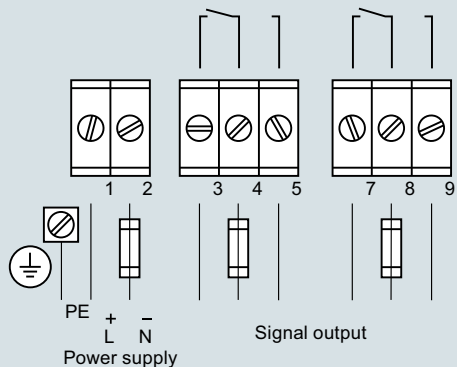
Point level measurement
Vibrating switches

SITRANS LVS300

Circuit diagrams

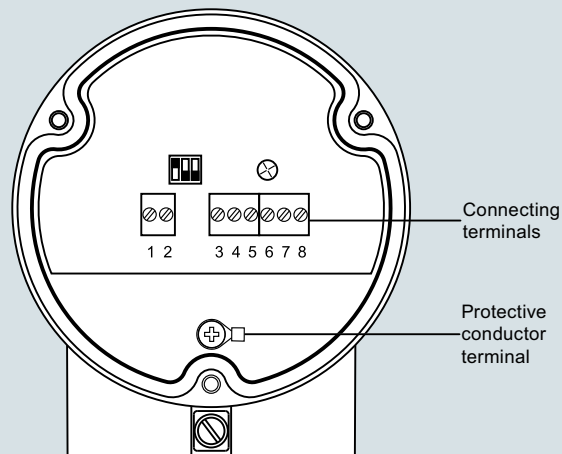
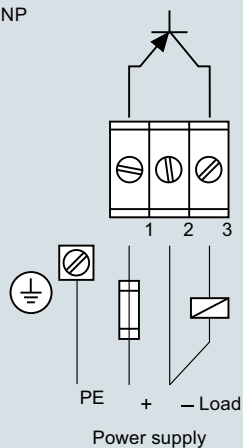
Universal voltage

Relay DPDT



3-wire

PNP



SITRANS LVS300 connections