

Vibrating Switches

SITRANS LVL100

- transistor (PNP)

Operating Instructions • 07/2013



SITRANS

SIEMENS

Safety Guidelines: Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel: This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Unit Repair and Excluded Liability:

- The user is responsible for all changes and repairs made to the device by the user or the user’s agent.
- All new components are to be provided by Siemens Milltronics Process Instruments.
- Restrict repair to faulty components only.
- Do not reuse faulty components.

Warning: Cardboard shipping package provides limited humidity and moisture protection. This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

This product is intended for use in industrial areas. Operation of this equipment in a residential area may cause interference to several frequency based communications.

Note: Always use product in accordance with specifications.

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Siemens AG
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1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This operating instructions manual is directed to trained specialist personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbolism used



Information, tip, note

This symbol indicates helpful additional information.



Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



Ex applications

This symbol indicates special instructions for Ex applications.



List

The dot set in front indicates a list with no implied sequence.



Action

This arrow indicates a single action.



Sequence of actions

Numbers set in front indicate successive steps in a procedure.



Battery disposal

This symbol indicates special information about the disposal of batteries and accumulators.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

2.2 Appropriate use

The SITRANS LVL100 is a sensor for point level detection.

You can find detailed information on the application range in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

2.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

The device fulfills the legal requirements of the applicable EC guidelines. By affixing the CE marking, we confirm successful testing of the product.

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- SITRANS LVL100 point level switch
- Test magnet
- Documentation
 - this operating instructions manual
 - if necessary, certificates

Constituent parts

The SITRANS LVL100 consists of the components:

- Housing with electronics
- Process fitting with tuning fork



Fig. 1: SITRANS LVL100

Type plate

The nameplate contains the most important data for identification and use of the instrument:

- Article number
- Serial number
- Technical data
- Article numbers, documentation

3.2 Principle of operation

Application area

SITRANS LVL100 is a point level sensor with tuning fork for point level detection.

It is designed for industrial use in all areas of process technology and can be used in liquids.

Typical applications are overflow and dry run protection. With a tuning fork of only 38 mm length, SITRANS LVL100 can be also mounted e.g. in pipelines from DN 25. The small tuning fork allows use in vessels, tanks and pipes. Thanks to its simple and robust measuring system, SITRANS LVL100 is virtually unaffected by the chemical and physical properties of the liquid.

It functions even under difficult conditions such as turbulence, air bubbles, foam generation, buildup, strong external vibration or changing products.

Function monitoring

The electronics module of SITRANS LVL100 continuously monitors via frequency evaluation the following criteria:

- Strong corrosion or damage on the tuning fork
- Loss of vibration
- Line break to the piezo drive

If a malfunction is detected or in case of power failure, the electronics takes on a defined switching condition, i.e. the output is open (safe condition).

Functional principle

The tuning fork is piezoelectrically energised and vibrates at its mechanical resonance frequency of approx. 1100 Hz. When the tuning fork is submerged in the product, the frequency changes. This change is detected by the integrated electronics module and converted into a switching command.

Voltage supply

SITRANS LVL100 is a compact instrument, i.e. it can be operated without external evaluation system. The integrated electronics evaluates the level signal and outputs a switching signal. With this switching signal, a connected device can be operated directly (e.g. a warning system, a pump etc.).

The data for power supply are specified in chapter "*Technical data*".

3.3 Adjustment

The switching status of SITRANS LVL100 can be checked with closed housing (signal lamp). Products with a density $> 0.7 \text{ g/cm}^3$ (0.025 lbs/in^3) can be detected.

3.4 Storage and transport

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- Not in the open
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration

Storage and transport temperature

- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 ... 85 %

4 Mounting

4.1 General instructions

Suitability for the process conditions

Make sure that all parts of the instrument coming in direct contact with the process, especially the sensor element, process seal and process fitting, are suitable for the existing process conditions, such as process pressure, process temperature as well as the chemical properties of the medium.

You can find the specifications in chapter "*Technical data*" and on the nameplate.

Switching point

In general, SITRANS LVL100 can be installed in any position. The instrument only has to be mounted in such a way that the tuning fork is at the height of the desired switching point.

Keep in mind that the switching point can vary dependent on the installation position.

The switching point refers to the medium water ($1 \text{ g/cm}^3/0.036 \text{ lbs/in}^3$). Please keep in mind that the switching point of the instrument shifts when the medium has a density differing from water.

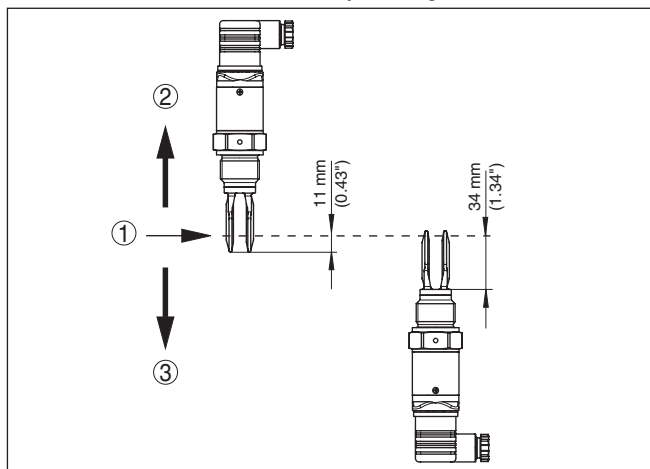


Fig. 2: Vertical mounting

- 1 Switching point in water
- 2 Switching point with lower density
- 3 Switching point with higher density

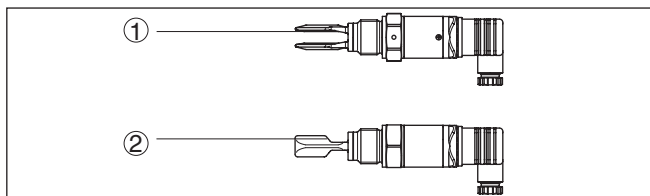


Fig. 3: Horizontal mounting

- 1 Switching point
- 2 Switching point (recommended mounting position, particularly for adhesive products)

Moisture

Use the recommended cables (see chapter "Connecting to power supply") and tighten the cable gland.

You can give your SITRANS LVL100 additional protection against moisture penetration by leading the connection cable downward in front of the cable entry. Rain and condensation water can thus drain off. This applies mainly to outdoor mounting as well as installation in areas where high humidity is expected (e.g. through cleaning processes) or on cooled or heated vessels.

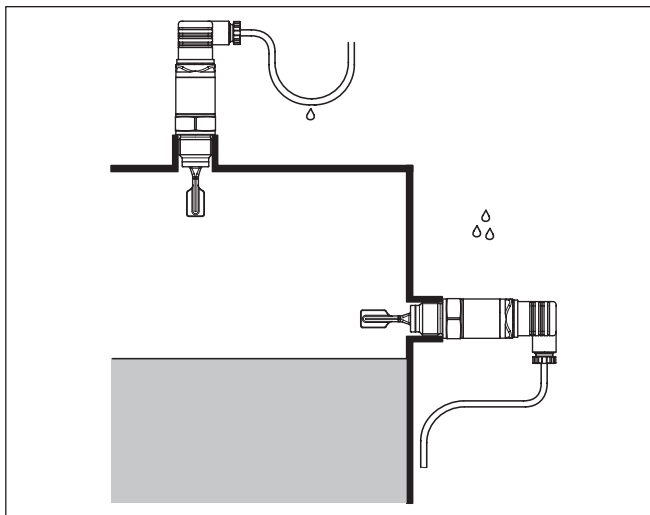


Fig. 4: Measures against moisture penetration

Transport

Do not hold SITRANS LVL100 on the tuning fork.

Pressure/Vacuum

The process fitting must be sealed if there is gauge or low pressure in the vessel. Before use, check if the seal material is resistant against the measured product and the process temperature.

The max. permissible pressure is specified in chapter "Technical data" or on the type label of the sensor.

Handling

The vibrating level switch is a measuring instrument and must be treated accordingly. Bending the vibrating element will destroy the instrument.



Warning:

The housing must not be used to screw the instrument in! Applying tightening force can damage internal parts of the housing.

Use the hexagon above the thread for screwing in.

Welded socket

4.2 Mounting instructions

For threaded versions of SITRANS LVL100 in combination with a mounting boss with O-ring in front and welding marking.

SITRANS LVL100 with thread sizes $\frac{3}{4}$ " and 1" have a defined thread runout. This means that every SITRANS LVL100 is in the same position after being screwed in. Remove therefore the supplied flat seal from the thread of SITRANS LVL100. This flat seal is not required when using a welded socket with front-flush seal.

Before welding, unscrew SITRANS LVL100 and remove the rubber ring from the welded socket.

The welded socket is provided with a marking (notch). For horizontal mounting, weld the socket with the notch facing upward or downward; in pipelines (DN 25 to DN 50) aligned with the direction of flow.

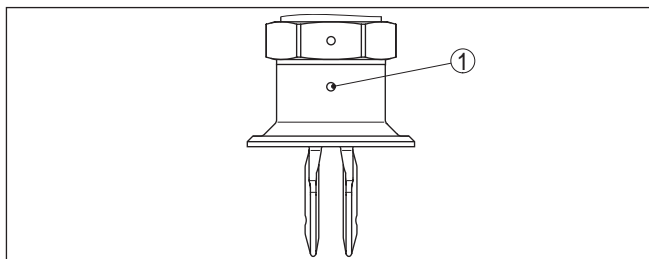


Fig. 5: Marking on the welded socket

1 Marking

Adhesive products

In case of horizontal mounting in adhesive and viscous products, the surfaces of the tuning fork should be vertical in order to reduce buildup on the tuning fork. The position of the tuning fork is indicated by a marking on the hexagon of SITRANS LVL100. With this, you can check the position of the tuning fork when screwing it in. When the hexagon touches the seal, the thread can still be turned by approx. half a turn. This is sufficient to reach the recommended installation position.

In adhesive and viscous products, the surfaces of the tuning fork should protrude into the vessel to avoid buildup. Therefore sockets for flanges and mountings bosses should not exceed a certain length.

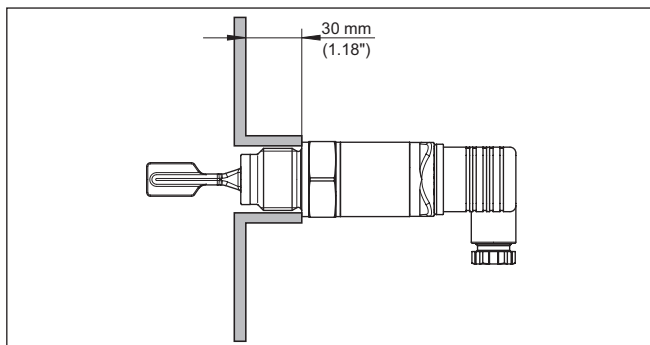


Fig. 6: Adhesive products

Inflowing medium

If SITRANS LVL100 is mounted in the filling stream, unwanted false measurement signals can be generated. For this reason, mount SITRANS LVL100 at a position in the vessel where no disturbances, e.g. from filling openings, agitators, etc., can occur.

Flows

To make sure the tuning fork of SITRANS LVL100 generates as little resistance as possible to product flow, mount the sensor so that the surfaces are parallel to the product movement.

5 Connecting to power supply

5.1 Preparing the connection

Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

Connection cable

The instrument is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

Use cable with round cross section. Depending on the plug connection, you have to select the outer diameter of the cable respectively so that the seal effect of the cable gland is ensured.

- Valve plug ISO 4400, \varnothing 4.5 ... 7 mm
- Valve plug ISO 4400 with IDC crimping technology, \varnothing 5.5 ... 8 mm

Cable glands

Use cable with a round wire cross section and tighten the cable gland.

When mounting outdoors, on cooled vessels or in moist areas in which cleaning is made with steam or high pressure, the sealing of the cable gland is very important.

5.2 Wiring plan

Housing overview

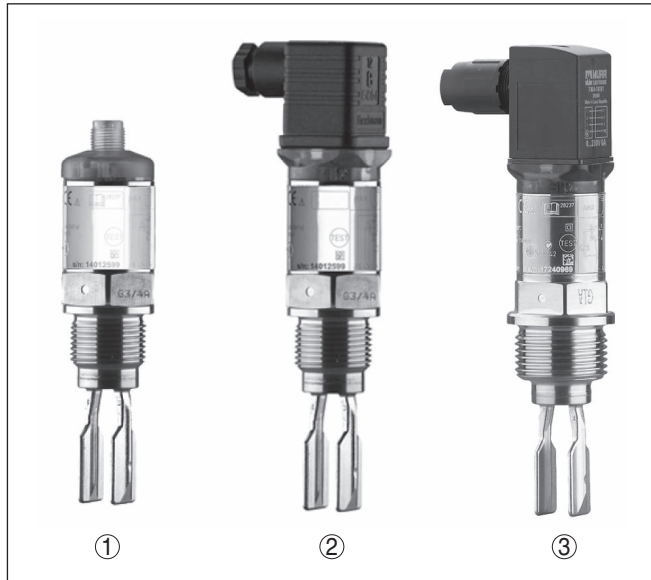


Fig. 7: Overview of the connection versions

- 1 M12 x 1 plug connection
- 2 Valve plug ISO 4400
- 3 Valve plug ISO 4400 with IDC method of termination

Plug versions

M12 x 1 plug connection

This plug connection requires a prefabricated cable with plug. Depending on the version, protection IP 66/IP 67 or IP 68 (0.2 bar).

Valve plug ISO 4400

For this plug version, standard cable with round wire cross-section can be used. Cable diameter 4.5 ... 7 mm, protection IP 65.

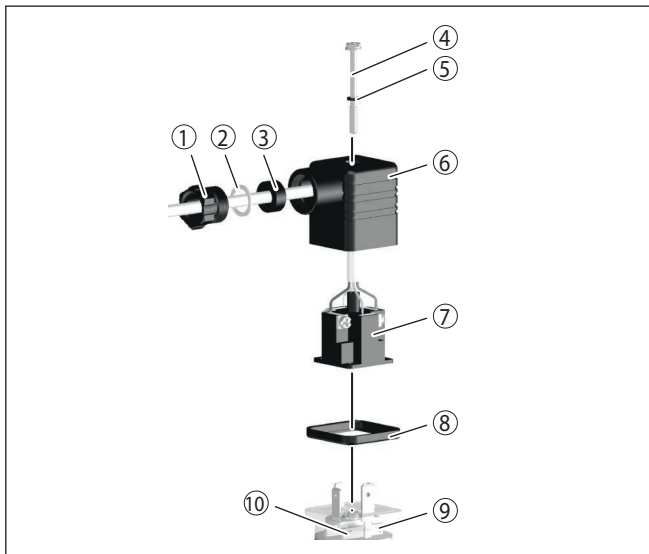


Fig. 8: Connection, valve plug ISO 4400

- 1 Pressure screw
- 2 Pressure disc
- 3 Seal ring
- 4 Fixing screw
- 5 Seal washer
- 6 Plug housing
- 7 Plug insert
- 8 Profile seal
- 9 Control lamp
- 10 SITRANS LVL100

Valve plug ISO 4400 with IDC method of termination

For this plug version you can use standard cable with round wire cross-section. The inner conductors do not have to be stripped. The plug connects the conductors automatically when screwing in. Cable diameter 5.5 ... 8 mm, protection IP 67.

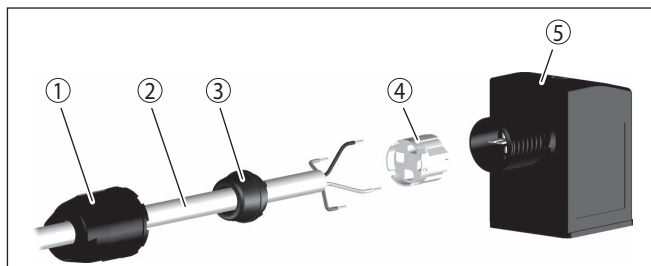


Fig. 9: Connection, valve plug ISO 4400 with IDC crimping technology

- 1 Compression nut
- 2 Cable
- 3 Seal ring
- 4 Terminal insert
- 5 Plug housing

Transistor output

For connection to binary inputs of a PLC.

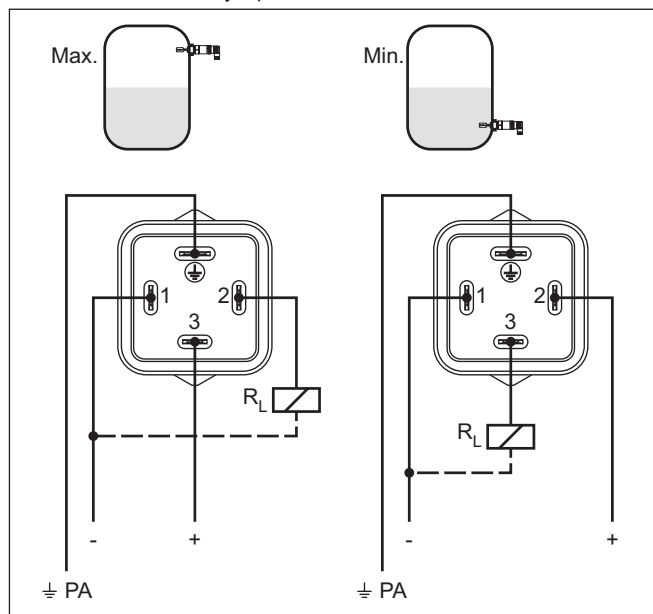


Fig. 10: Wiring plan, Transistor output with valve plug ISO 4400

PA Potential equalisation

R_L Load resistance (contactor, relay, etc.)

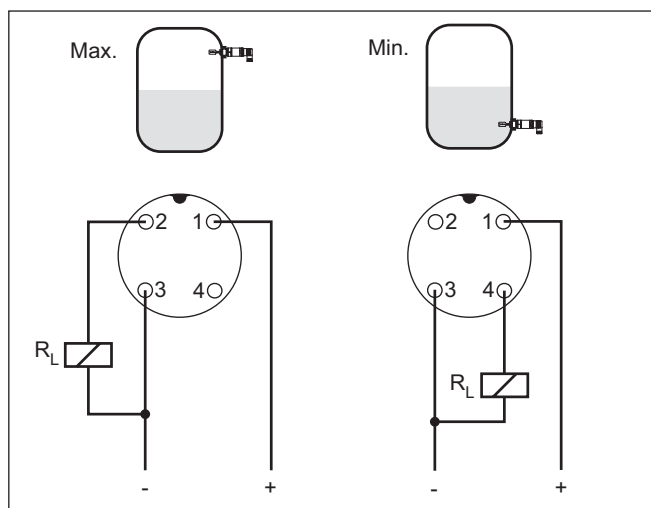


Fig. 11: Wiring plan (housing), transistor output with M12 x 1 plug connection

1 Brown

2 White

3 Blue

4 Black

R_L Load resistance (contactor, relay, etc.)

6 Setup

6.1 Indication of the switching status

The switching status of the electronics can be checked via the signal lamps (LEDs) integrated in the upper part of the housing.

The signal lamps have the following meaning:

- Green lights - voltage supply connected
- Yellow lights - vibrating element covered
- Red lights briefly - function test during instrument start (for 0.5 s)
- Red lights - shortcircuit or overload in the load circuit (sensor output high-impedance)
- Red flashes - Error on the vibrating element or the electronics (sensor output high impedance)

6.2 Simulation

The SITRANS LVL100 has an integrated function for simulation of the output signal which can be activated magnetically. Please proceed as follows:

- Hold the test magnet (accessory) against the circle symbol with the label "TEST" on the instrument housing



Fig. 12: Simulation of the output signal

The test magnet changes the current switching condition of the instrument. You can check the change on the signal lamp. Please note that all connected device are activated during the simulation.



















If SITRANS LVL100 does not switch over after several tests with the test magnet, you have to check the plug connection and the connection cable and try it again. If there is no switching function, the electronics will be defective. In this case you have to exchange the electronics or return the instrument to our repair department.

**Caution:**

It is absolutely necessary that you remove the test magnet from the instrument housing after the simulation.

6.3 Function chart

The following chart provides an overview of the switching conditions depending on the set mode and the level.

	Level	Switching status	Control lamp Yellow - coverage	Control lamp Green - voltage indication	Control lamp Red - fault signal
Mode max.		closed			
Mode max.		open			
Mode min.		closed			
Mode min.		open			
Fault	any	open	any		

7 Maintenance and fault rectification

7.1 Maintenance

If the instrument is used properly, no special maintenance is required in normal operation.

7.2 Rectify faults

Reaction when malfunctions occur

The operator of the system is responsible for taking suitable measures to rectify faults.

Failure reasons

SITRANS LVL100 offers maximum reliability. Nevertheless, faults can occur during operation. These may be caused by the following, e.g.:

- Sensor
- Process
- Voltage supply
- Signal processing

Fault rectification

The first measure to be taken is to check the output signal. In many cases, the causes can be determined this way and the faults rectified.

Checking the switching signal

Error	Cause	Rectification
Green signal lamp off	Voltage supply interrupted.	Check the voltage supply and the cable connection
	Electronics defective	Exchange the instrument or send it in for repair
Red signal lamp lights (switching output high-impedance)	Error with the electrical connection	Connect the instrument according to the wiring plan
	Shortcircuit or overload	Check the electrical connection
Red signal lamp flashes (switching output high-impedance)	Vibrating frequency out of specification	Check the vibrating element on build-up and remove it
	Buildup on the vibrating element	Check the vibrating element and the sensor if there is buildup and remove it
	Vibrating element damaged	Check if the vibrating element is damaged or extremely corroded

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "Set up" may have to be carried out again.

7.3 Instrument repair

If it is necessary to repair the instrument, please contact Siemens Milltronics Process Instruments Inc. You find the locations on our homepage "www.siemens.com/processautomation".

8 Dismounting

8.1 Dismounting steps



Warning:

Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the parts to be easily separable.

WEEE directive 2002/96/EG

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

9 Supplement

9.1 Technical data

General data

Material 316L corresponds to 1.4404 or 1.4435

Materials, wetted parts

- Tuning fork 316L
- Process seal Klingersil C-4400
- Process fittings 316L

Materials, non-wetted parts

- Housing 316L and plastic PEI

Weight approx. 250 g (9 oz)

Process fittings

- Pipe thread, cylindrical (DIN 3852-A) G $\frac{1}{2}$, G $\frac{3}{4}$, G1
- American pipe thread, conical (ASME B1.20.1) $\frac{1}{2}$ NPT, $\frac{3}{4}$ NPT, 1 NPT
- hygienic fittings Clamp 1", Clamp 1 $\frac{1}{2}$ ", Clamp 2", PN 16 DIN 32676, ISO 2852/316L, bolting DN 25 PN 40, bolting DN 40 PN 40, bolting DN 50 PN 25, SMS DN 38 PN 6

Max. torque - process fitting

- Thread G $\frac{1}{2}$, $\frac{1}{2}$ NPT 50 Nm (37 lbf ft)
- Thread G $\frac{3}{4}$, $\frac{3}{4}$ NPT 75 Nm (55 lbf ft)
- Thread G1, 1 NPT 100 Nm (73 lbf ft)

Surface quality

- Standard $R_a < 3.2 \mu\text{m}$ (1.26^{-4} in)
- Hygienic version $R_a < 0.8 \mu\text{m}$ (3.15^{-5} in)

Measuring accuracy

Hysteresis approx. 2 mm (0.08 in) with vertical installation

Switching delay approx. 500 ms (on/off)

Measuring frequency approx. 1100 Hz

Ambient conditions

Ambient temperature on the housing -40 ... +70 °C (-40 ... +158 °F)

Storage and transport temperature -40 ... +80 °C (-40 ... +176 °F)

Process conditions

Process pressure -1 ... 64 bar/-100 ... 6400 kPa (-14.5 ... 928 psig)

Process temperature - Standard -40 ... +100 °C (-40 ... +212 °F)

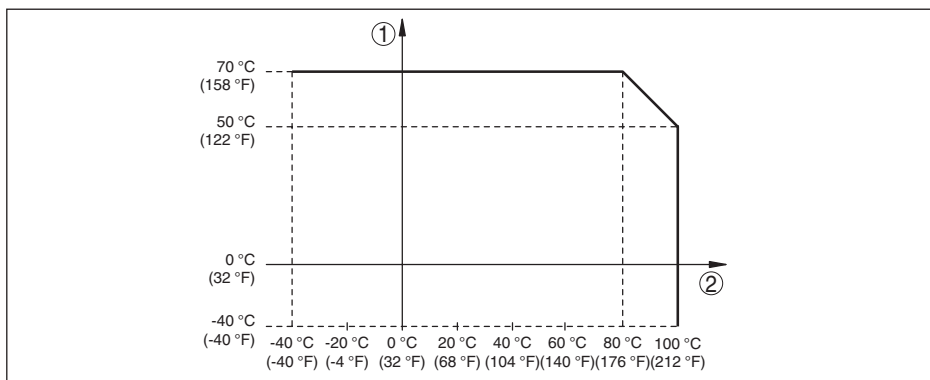


Fig. 31: Dependency ambient temperature to process temperature

1 Ambient temperature in °C (°F)

2 Process temperature in °C (°F)

Process temperature - High temperature -40 ... +150 °C (-40 ... +302 °F)
version (option)

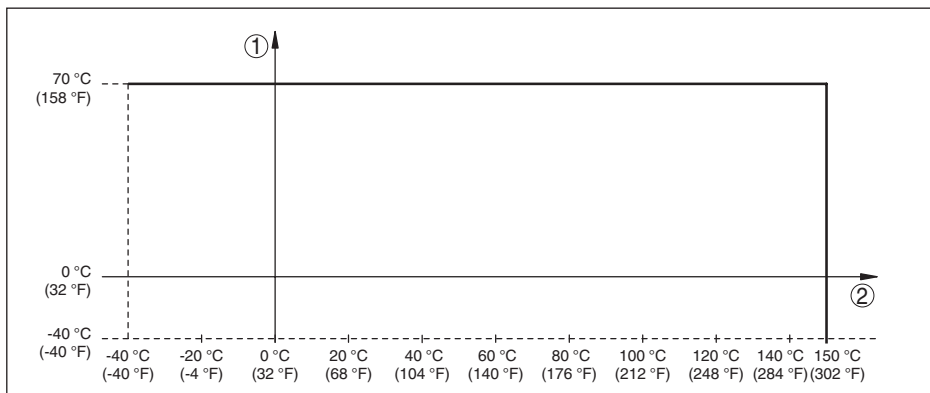


Fig. 32: Dependency ambient temperature to process temperature

1 Ambient temperature in °C (°F)

2 Process temperature in °C (°F)

Viscosity - dynamic

0.1 ... 10000 mPa s

Flow velocity

max. 6 m/s (with a viscosity of 10000 mPa s)

Density

0.7 ... 2.5 g/cm³ (0.025 ... 0.09 lbs/in³)

Adjustment

Plug connections

Specification see "Connecting to power supply"

Signal lamps (LED)

- Green
- Yellow
- Red

Voltage supply on

Vibrating element covered

Fault

Output variable	
Output	Transistor output PNP
Load current	max. 250 mA (output, permanently short-circuit proof)
Voltage loss	< 3 V
Switching voltage	< 34 V DC
Blocking current	< 10 µA
Mode	
– Min./Max.	Changeover by electronic connection
– Max.	Overflow protection
– Min.	Dry run protection

Voltage supply	
Operating voltage	9.6 ... 35 V DC
Power consumption	max. 0.5 W

Electromechanical data	
Valve plug ISO 4400	
– Wire cross-section	1.5 mm ² (0.06 in ²)
– Outer cable diameter	4.5 ... 7 mm (0.18 ... 0.28 in)
Valve plug ISO 4400 with IDC method of termination	
– Wire cross-section	for wire cross-section of 0.5 ... 1 mm ² (0.02 ... 0.04 in ²)
– Single-wire diameter	> 0.1 mm (0.004 in)
– Wire diameter	1.6 ... 2 mm ² (0.06 ... 0.08 in ²)
– Outer cable diameter	5.5 ... 8 mm (0.22 ... 0.31 in)
– Connection frequency	10 x (on the same cross-section)

Electrical protective measures	
Protection rating	
– Valve plug ISO 4400	IP 65
– Valve plug ISO 4400 with IDC method of termination	IP 67
– M12 x 1 plug connection	IP 66/IP 67 or IP 68 (0.2 bar)
Overvoltage category	III
Protection class	II

Approvals

Depending on the version, instruments with approvals can have different technical data. For these instruments, please note the corresponding approval documents. They are included in the scope of delivery.

9.2 Dimensions

SITRANS LVL100, standard version - thread

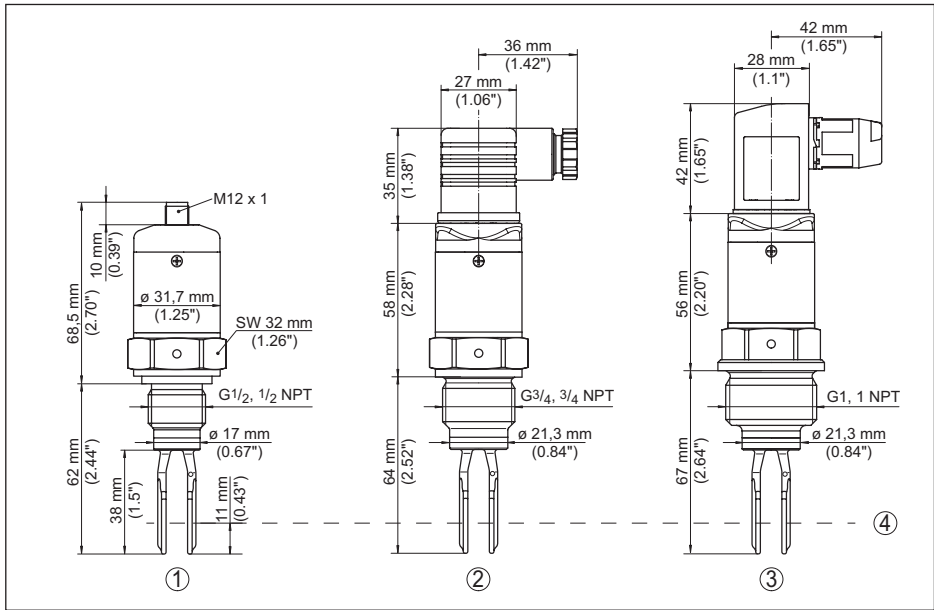


Fig. 33: SITRANS LVL100, standard version - thread

- 1 Thread G1/2 (DIN ISO 228/1), 1/2 NPT (M12 x 1)¹⁾
- 2 Thread G3/4 (DIN ISO 228/1), 3/4 NPT (valve plug ISO 4400)
- 3 Thread G1 (DIN ISO 228/1), 1 NPT (valve plug ISO 4400 with DC method of termination)
- 4 Switching point

¹⁾ Keep in mind that the total length is extended by the plug connection.

SITRANS LVL100, standard version - thread G $\frac{3}{4}$, G1, $\frac{3}{4}$ NPT, 1 NPT

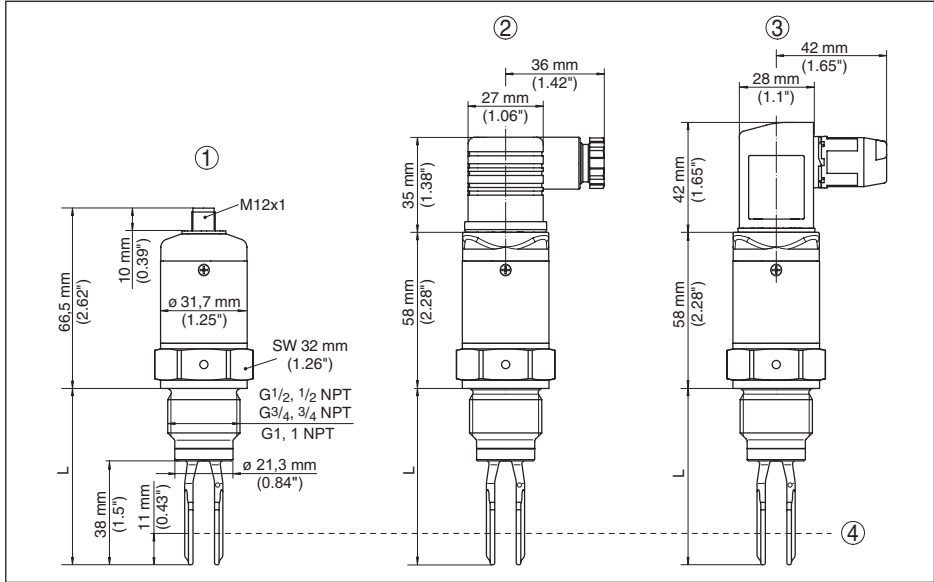


Fig. 34: SITRANS LVL100, standard version - thread G $\frac{3}{4}$, G1, $\frac{3}{4}$ NPT, 1 NPT

- 1 Thread G $\frac{3}{4}$, G1 (DIN ISO 228/1), $\frac{3}{4}$ NPT or 1 NPT (M12 x 1)²⁾
- 2 Thread G $\frac{3}{4}$, G1 (DIN ISO 228/1), $\frac{3}{4}$ NPT or 1 NPT (valve plug ISO 4400)
- 3 Thread G $\frac{3}{4}$, G1 (DIN ISO 228/1), $\frac{3}{4}$ NPT or 1 NPT (valve plug ISO 4400 with IDC crimping technology)
- 4 Switching point
- L Length with G $\frac{3}{4}$ (DIN ISO 228/1), $\frac{3}{4}$ NPT: 64 mm (2.5 in)
- L Length with G1 (DIN ISO 228/1), 1 NPT: 67 mm (2.64 in)

²⁾ Keep in mind that the total length is extended by the plug connection.

SITRANS LVL100, high temperature version

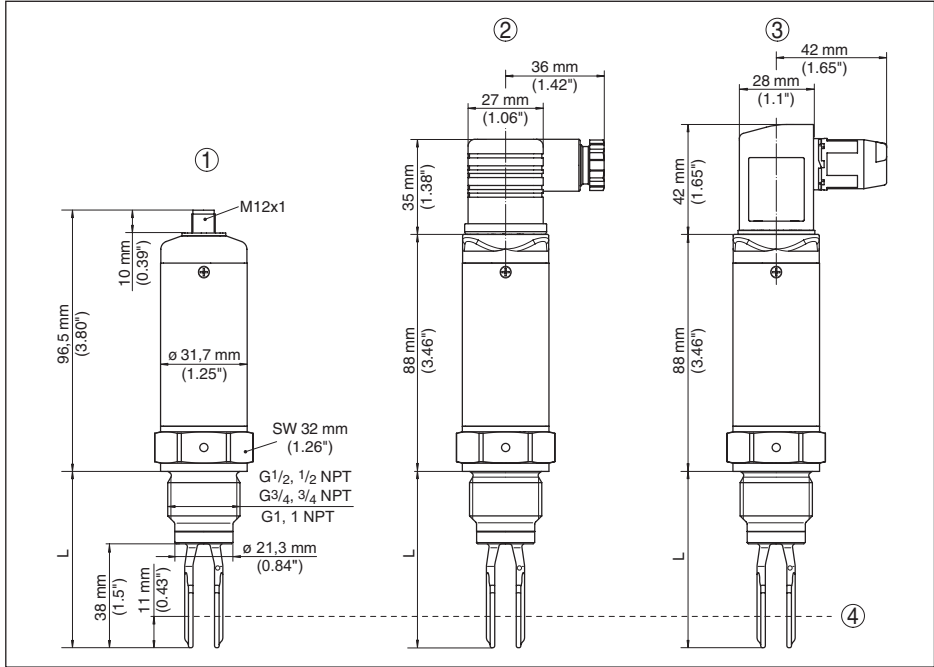


Fig. 35: SITRANS LVL100, high temperature version

- 1 Thread $G\frac{1}{2}$, $G\frac{3}{4}$, $G1$ (DIN ISO 228/1), $\frac{1}{2}$ NPT, $\frac{3}{4}$ NPT or 1 NPT (M12 x 1)³⁾
 - 2 Thread $G\frac{1}{2}$, $G\frac{3}{4}$, $G1$ (DIN ISO 228/1), $\frac{1}{2}$ NPT, $\frac{3}{4}$ NPT or 1 NPT (valve plug ISO 4400)
 - 3 Thread $G\frac{1}{2}$, $G\frac{3}{4}$, $G1$ (DIN ISO 228/1), $\frac{1}{2}$ NPT, $\frac{3}{4}$ NPT or 1 NPT (valve plug ISO 4400 with IDC crimping technology)
 - 4 Switching point
- L Length with $G\frac{1}{2}$ (DIN ISO 228/1), $\frac{1}{2}$ NPT: 62 mm (2.44 in)
- L Length with $G\frac{3}{4}$ (DIN ISO 228/1), $\frac{3}{4}$ NPT: 64 mm (2.5 in)
- L Length with $G1$ (DIN ISO 228/1), 1 NPT: 67 mm (2.64 in)

³⁾ Keep in mind that the total length is extended by the plug connection.

SITRANS LVL100, hygienic versions

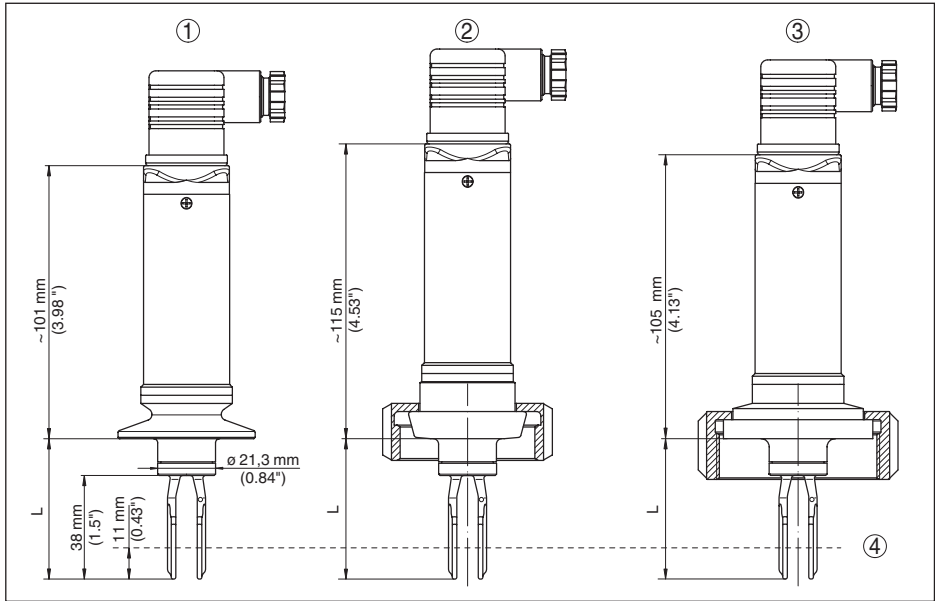


Fig. 36: SITRANS LVL100, hygienic versions

- 1 Clamp (valve plug ISO 4400)
- 2 Bolting (valve plug ISO 4400)
- 3 SMS 1145 (valve plug ISO 4400)
- 4 Switching point
- L Length with Clamp: 53 mm (2.1 in)
- L Length with bolting: 53 mm (2.1 in)
- L Length with SMS 1145: 53 mm (2.1 in)

Notes

Notes

Notes

For more information

www.siemens.com/level

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Siemens AG
Industry sector
1954 Technology Drive
P.O. Box 4225
Peterborough, ON
Canada K9J7B1

email: techpubs.smpi@siemens.com

www.siemens.com/processautomation

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