

SensorsX SX-LWTB Series

Tuning Fork Level Switch

Compact, maintenance-free point-level detection for liquids and free-flowing solids



WIDE MEDIA COMPATIBILITY

Liquids, slurries, aerated liquids, and free-flowing powders

FAST RESPONSE

Approx. 1 s response time

MULTIPLE OUTPUT OPTIONS

SPDT, DPDT, SPST, or PNP/NPN

■ PRODUCT OVERVIEW

The SX-LWTB Series is a tuning fork level switch designed for reliable point-level detection of liquids and free-flowing solids. Piezoelectric elements excite the fork at its natural frequency, while the electronics continuously monitor frequency changes as the fork is covered or uncovered by the process medium. With no moving parts, the series provides maintenance-free high- and low-level detection and automatic level control across a wide range of industrial applications.

■ KEY FEATURES

- Designed for reliable switching under agitation, turbulence, bubbles, moderate viscosity, and similar demanding process conditions.
- Point-level detection for liquids and free-flowing solids.
- Suitable for slurries, aerated liquids, coating liquids, and non-adhering powders.
- Piezoelectric tuning-fork sensing with continuous frequency monitoring.
- High- and low-level alarm and automatic level-control functions.
- No moving parts for maintenance-free operation.

- Approx. 1 s response time and 3 s start-up time.
- Minimum medium density of 0.6 g/cm³.
- Operating pressure below 2 MPa.
- Fork operating temperature from -30 to +150 °C.
- 24 V DC, 220 V AC, and universal power-supply options.
- SPDT, DPDT, SPST, and PNP/NPN output options.
- Optional 1–30 s switching delay.
- 304 stainless steel, 316L stainless steel, and PTFE-coated stainless-steel wetted materials.
- Threaded, flanged, and sanitary-clamp process connections available.
- Standard, compact short-fork, compact long-fork, high-temperature, corrosion-resistant single-rod, and extended single-rod configurations available.
- Side or top mounting, with pipe installation available for pump dry-run protection.

■ TYPICAL APPLICATIONS

Liquids & Beverages

- Tap / mineral water level
- Beer and brewer's yeast processing
- Beverage and diesel storage

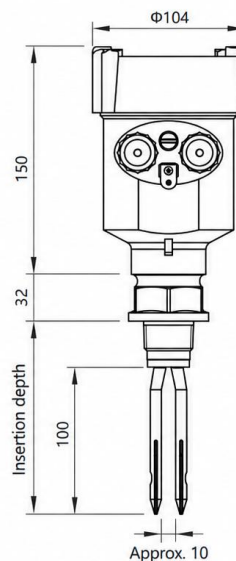
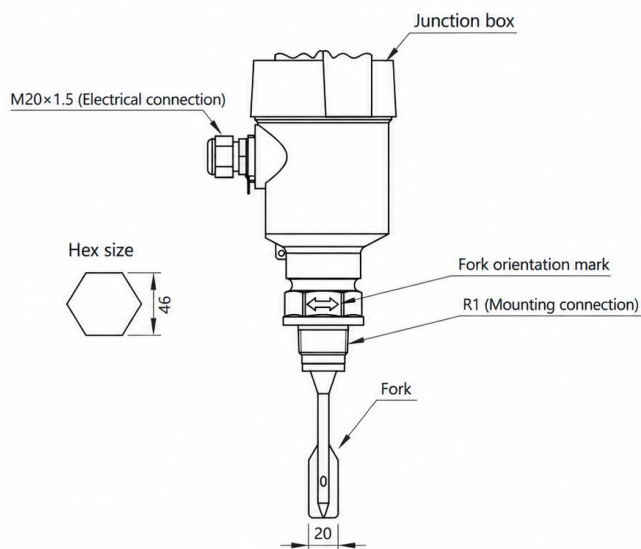
Process & Industrial Liquids

- Glue, dye and wastewater level
- Acid and alkaline solution level
- Slurry and moderate-viscosity liquid level

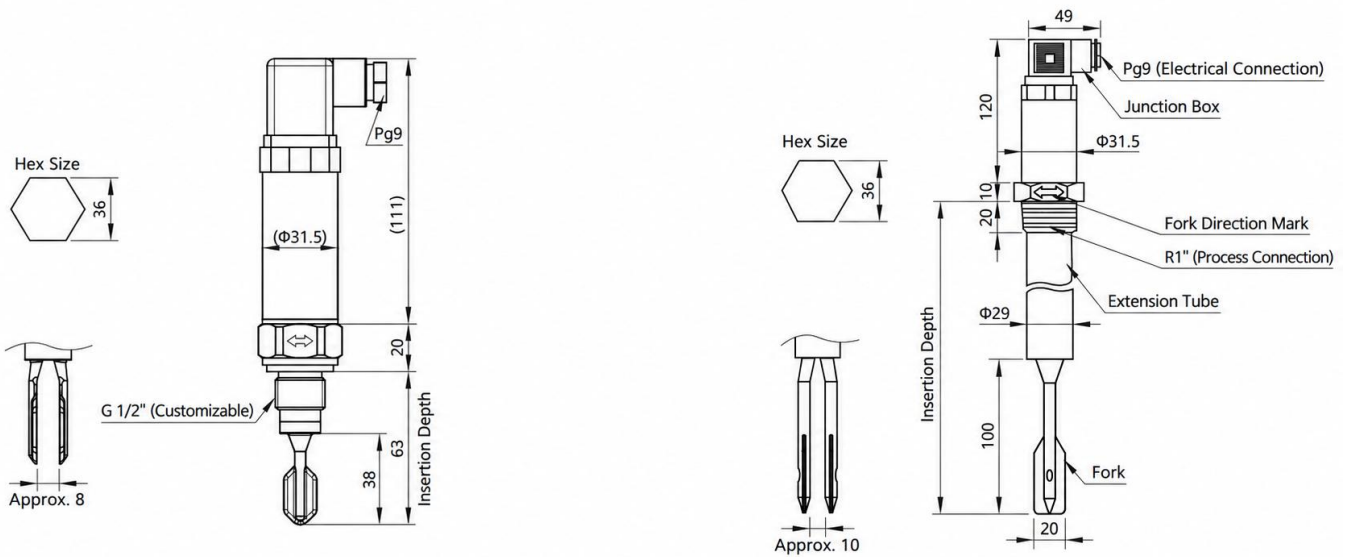
Solids & Hazardous Areas

- Free-flowing solid powders
- Gas-generating liquid service
- Hazardous-area installations

■ REFERENCE OUTLINE DRAWINGS



Industrial Standard Type Outline Drawing (Reference) — Dimensions in mm



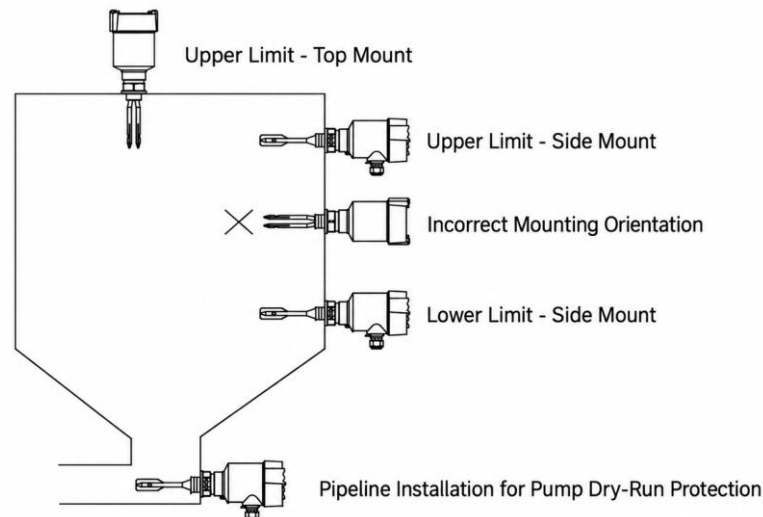
a Short Fork Compact Type

b Long Fork Compact Type

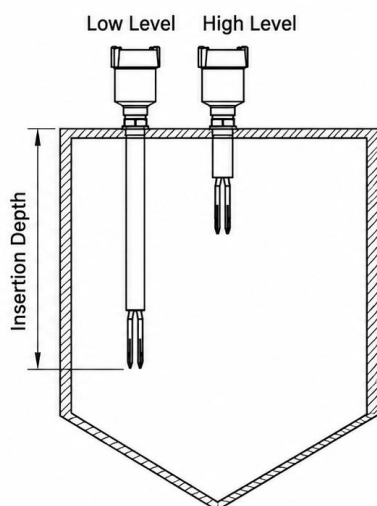
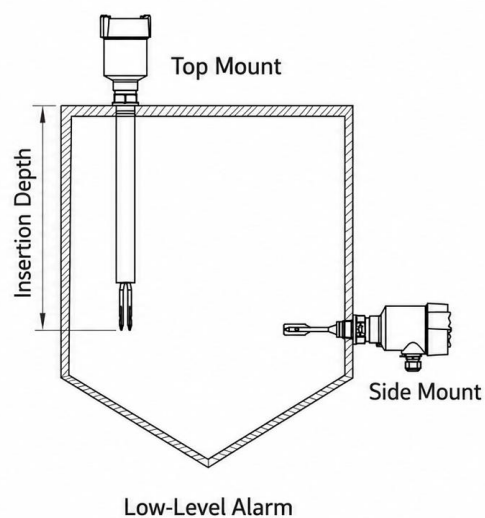
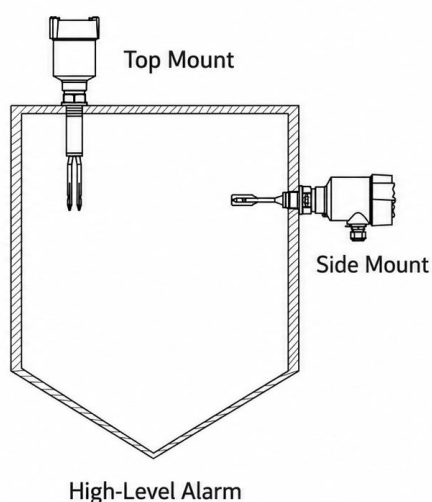
Compact Product Outline Structure Drawing (Reference) — Dimensions in mm

■ SX-LWTB SERIES INSTALLATION

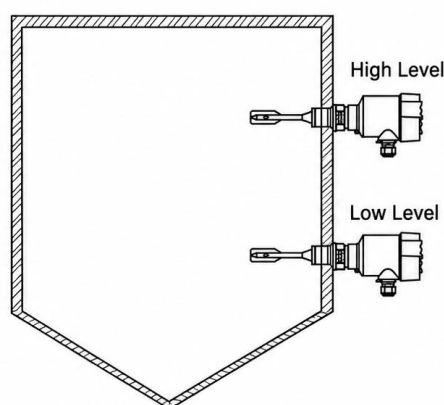
The tuning fork level switch is normally side-mounted through the vessel wall to detect upper and lower material-level positions. Where a side opening is inconvenient, it may be top-mounted. Select a location away from the impact of incoming material. It may also be mounted on piping to prevent dry running of a pump.



■ INDUSTRIAL TUNING FORK SWITCH INSTALLATION FOR HIGH/LOW LEVEL ALARMS



Automatic High/Low Level Control (Top Mount)



Automatic High/Low Level Control (Side Mount)

■ TECHNICAL PERFORMANCE

Parameter	Specification
Supply voltage	220 VAC / 24 VDC
Output	SPDT relay, DPDT, SPST, or PNP/NPN
Operating temperature	Fork: -30 to 150 °C; instrument: -30 to 70 °C
Operating pressure	Less than 2 MPa
Medium density	Minimum 0.6 g/cm ³
Switching point	Approximately 25 mm when vertically inserted in water
Start-up time	Approximately 3 s

Parameter	Specification
Response time	Approximately 1 s
Contact rating	One relay-contact output: 220 VAC / 3 A; 30 VDC / 3 A
Hysteresis	Approximately 3 mm
Delay	1-30 s
Power consumption	Less than 1 W
Process connection	Threaded, flanged, and sanitary-clamp process connections; custom configurations available on request.
Electrical interface	M20 × 1.5; Cable outer diameter: 6–8 mm
Wetted materials	304 stainless steel, 316L stainless steel, stainless steel with PTFE coating, optional

■ NOTES

The compact tuning fork level switch is suitable for detecting most liquids. It is most suitable when liquid viscosity is moderate and flowability is good. Free-flowing powders and solid particles smaller than 3 mm may also be detected. The product is unsuitable when material viscosity is excessively high, particle diameter exceeds 5 mm, vessel temperature exceeds 150 °C, pressure exceeds 2 MPa, or the vessel is subject to strong vibration.

Keep sensor power and signal cables from being laid parallel with, twisted together with, or routed in the same conduit as power cables for other high-power equipment. When driving an inductive load such as an AC contactor, connect a surge suppressor across the load. Where high-power or variable-frequency equipment is present, use 24 VDC supply where possible.

■ ORDERING INFORMATION

Complete model number example: **SX-LWTB.D04DNZC22135**

Power Supply	
D	24 VDC
A	220 VAC
X	Universal power supply
Time Delay	
0	Without
1	With, 1-30 s
Material	
4	304 stainless steel
6	316L stainless steel
F	Stainless steel with PTFE coating
Connection Size	
C	3/4 in (DN20)
D	1 in (DN25)
E	1-1/2 in (DN40)
F	2 in (DN50)
G	2-1/2 in (DN65)
H	3 in (DN80)
I	4 in (DN100)

J	5 in (DN125)
K	6 in (DN150)
3	1-1/4 in (DN32)
Connection Type	
N	Class 150 flange
O	Class 300 flange
P	PT
Q	PF
F	NPT
T	GAS
U	PN6 flange
V	PN10 flange
W	PN16 flange
X	PN25 flange
Y	PN40 flange
Z	PN63 flange
Explosion Protection	
E	Explosion-protected version
Z	Without
Temperature Range	
C	Within 80 °C
T	High-temperature type, within 170 °C
Electrical Connection	
1	Hirschmann connector
2	Standard junction box
3	Direct cable outlet
Fork Structure	
1	Compact fork type
2	Standard fork type
3	Single-rod vibration type
Insertion Depth	
63 mm	63 mm for compact short-fork type
135 mm	135 mm for compact long-fork type
200 mm	200 mm for single-rod type
Optional	
D	Customized information; specify in order remarks