

High-performance submersible pressure transmitter

For level measurement

Model LH-10

WIKA data sheet PE 81.09



Applications

- Level measurement in rivers and lakes
- Deep well and groundwater monitoring
- Level measurement in vessel and storage systems
- Control of sewage lift and pumping stations
- Monitoring of sewage, settling and stormwater retention basins

Special features

- Precise and reliable
- Integrated temperature measurement (option)
- Design out of Hastelloy® and FEP cable for especially high resistance (option)
- Ingress protection IP 68 permanently up to 984 ft (300 m) water column



Submersible pressure transmitter model LH-10

Fig. left: with PUR cable

Fig. right: in Hastelloy® with FEP cable

Description

For demanding measurement tasks

The model LH-10 submersible pressure transmitter has been designed for level measurement in contact with the medium in harsh operating conditions. It offers an accuracy of 0.25 % and, with an ingress protection of IP 68, is suitable for permanent level measurements up to 984 ft. (300 m) water column.

It offers excellent quality, is reliable and, through a multitude of options, can be used in all conventional level measurement applications. For instance, integrated temperature measurement, lightning protection, a Hastelloy® case or FEP cable are available as options.

For the highest accuracy requirements, the optional temperature measurement enables the compensation of temperature fluctuations in the medium on the measuring result.

Robust and reliable

A hermetically-sealed, fully-welded and exceptionally robust stainless steel case ensures a long service life and permanent sealing.

Specifically for external applications, integrated lightning protection is available, in order to ensure a maximum operating life in harsh environments.

For the highest media resistance, this submersible pressure transmitter is available in an optional design out of Hastelloy® and high-resistance FEP cable.

Measuring ranges

Relative pressure						
bar	Measuring range	0 ... 0.1	0 ... 0.16	0 ... 0.25	0 ... 0.4	0 ... 0.6
	Overpressure limit	1	1.5	2	2	3
	Burst pressure	2	2	2.4	2.4	4
	Measuring range	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4	0 ... 6
	Overpressure limit	5	8	8	10	10
	Burst pressure	6	10	10	10	10
	Measuring range	0 ... 10	0 ... 16	0 ... 25		
	Overpressure limit	10	16	25		
	Burst pressure	10	16	25		
inWC	Measuring range	0 ... 50	0 ... 100	0 ... 150	0 ... 250	
	Overpressure limit	750	750	750	1,100	
	Burst pressure	950	950	950	1,600	
psi	Measuring range	0 ... 5	0 ... 10	0 ... 15	0 ... 25	0 ... 50
	Overpressure limit	30	45	70	120	150
	Burst pressure	35	60	90	180	150
	Measuring range	0 ... 100	0 ... 150	0 ... 160	0 ... 200	0 ... 300
	Overpressure limit	150	150	160	200	300
	Burst pressure	150	150	160	200	300
mH₂O	Measuring range	0 ... 1	0 ... 1.6	0 ... 2.5	0 ... 4	0 ... 6
	Overpressure limit	10	15	20	20	30
	Burst pressure	20	20	24	24	40
	Measuring range	0 ... 10	0 ... 16	0 ... 25	0 ... 40	0 .. 60
	Overpressure limit	50	80	80	100	100
	Burst pressure	60	100	100	100	100
	Measuring range	0 ... 100	0 ... 160	0 ... 250		
	Overpressure limit	100	160	250		
	Burst pressure	100	160	250		

When choosing the FEP cable, only measuring ranges up to 0 ... 10 bar, 0 ... 150 psi and 0 ... 100 mH₂O are available. The given measuring ranges are also available in mbar, kPa and MPa.

Output signals

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Current (3-wire)	0 ... 20 mA
Voltage (3-wire)	DC 0 ... 5 V
	DC 0 ... 10 V
	DC 0.5 ... 2.5 V

Load in Ω

- Current output (2-wire):
≤ (power supply - 10 V) / 0.02 A (cable length in m x 0.14 Ω)
- Current output (3-wire):
≤ (power supply - 3 V) / 0.02 A (cable length in m x 0.14 Ω)
- Voltage output (3-wire):
> 100 kΩ

Voltage supply

Power supply

The power supply depends on the selected output signal.

- 4 ... 20 mA: DC 10 ... 30 V
- 0 ... 20 mA: DC 10 ... 30 V
- DC 0 ... 5 V: DC 10 ... 30 V
- DC 0 ... 10 V: DC 14 ... 30 V
- DC 0.5 ... 2.5 V: DC 5 ... 30 V (suitable for battery operation)

Reference conditions

Temperature

59 ... 77 °F (15 ... 25 °C)

Atmospheric pressure

12.5 ... 15.4 psi (860 ... 1,060 mbar)

Humidity

45 ... 75 % relative

Mounting position

Calibrated in vertical mounting position with pressure connection facing downwards.

Power supply

DC 24 V

Accuracy data

Accuracy at reference conditions

Measuring ranges < 3.6 psi: $\leq \pm 0.50$ % of span

Measuring ranges ≥ 3.6 psi: $\leq \pm 0.25$ % of span

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).

Non-linearity (per IEC 61298-2)

$\leq \pm 0.2$ % of span

Non-repeatability

$\leq \pm 0.1$ % of span

Temperature error at 32 ... 176 °F (0 ... 50 °C)

■ Mean temperature coefficient of zero point

Measuring ranges ≤ 0.25 bar: $\leq \pm 0.4$ % of span/10 K

Measuring ranges > 0.25 bar: $\leq \pm 0.2$ % of span/10 K

■ Mean temperature coefficient of span

$\leq \pm 0.2$ % of span/10 K

Long-term stability at reference conditions

$\leq \pm 0.2$ % of span/year

Operating conditions

Ingress protection (per IEC 60529)

IP 68

Lightning protection (option)

1.5 J per EN 61000-4-5

The option of lightning protection is not available in combination with the Hastelloy® case version.

Permissible temperature ranges

■ Medium

- PUR cable: 14 ... 122 °F (-10 ... +50 °C)

- FEP cable: 14 ... 185 °F (-10 ... +85 °C)

■ Ambient: 14 ... 122 °F (-10 ... +50 °C)

■ Storage: -22 ... 176 °F (-30 ... +80 °C)

Submersion depths

■ Submersible pressure transmitter with FEP cable:
up to 328 ft. (100 m)

■ Submersible pressure transmitter with PUR cable:
up to 984 ft. (300 m)

Maximum tensile strength of the cable

■ FEP cable: up to 350 N without strain relief
up to 500 N with strain relief

■ PUR cable: up to 350 N without strain relief
up to 1,000 N with strain relief

Weight

■ Level probe approx. 0.44 lbs. (200 g)

■ Cable: approx. 0.054 lbs/ft (80 g/m)

■ Additional weight
(accessories): approx. 1.1 lbs. (500 g)

Additional temperature measurement (option)

The submersible pressure transmitter is optionally available with a Pt100 measuring element for recording the medium temperature.

The option of additional temperature measurement is not available in combination with the Hastelloy® case version.

Specifications:

■ Pt100 per DIN EN 60751

■ 4-wire technology

■ Measuring range -58 ... 185 °F (-50 ... +85 °C)

■ Total current consumption 3 mA

■ Measurement current 1 mA

Process connections

Standard	Thread size
EN 837	G ½ B
-	G ¼ female thread (only for version in Hastelloy®)

Materials

Wetted parts

	Standard	Option
Case and sensor	Stainless steel 316L	Hastelloy®
Protection cap	PA	Stainless steel 316L
Cable	PUR	FEP

Electrical connections

Short-circuit resistance

S₊ vs. U-

Reverse polarity protection

U₊ vs. U-

Overvoltage protection

Lightning protection is available as an option; see "Operating conditions"

Insulation voltage

DC 500 V

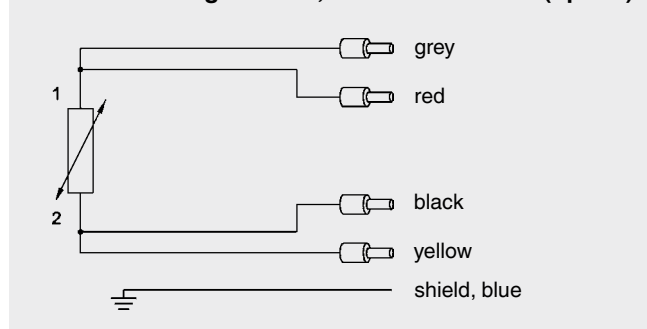
Cable lengths

Available cable lengths					
Meter (m)	1.5	3	5	10	15
	20	25	30	40	50
	60	80	100	200	300
Feet (ft)	5	10	20	30	40
	50				

Connection diagrams

Cable outlet	2-wire	3-wire
		
U ₊	brown	brown
U ₋	green	green
S ₊	-	white
Shield	grey	grey

Pt100 measuring element, 4-wire connection (option)



Approvals, directives and certificates

Approvals

- CSA
- GOST

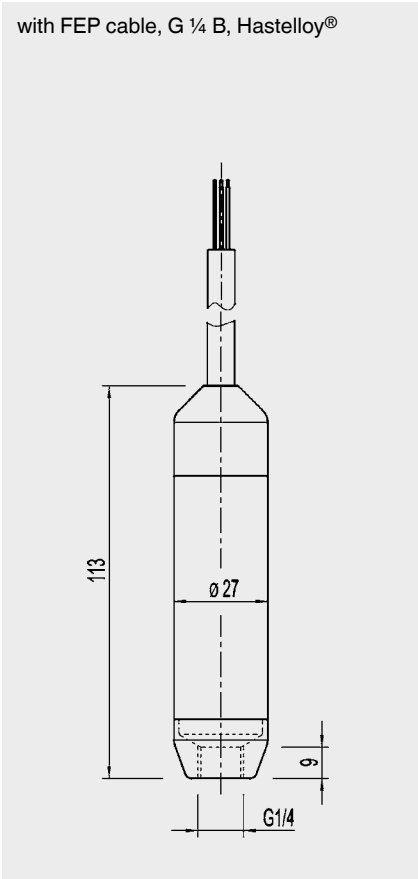
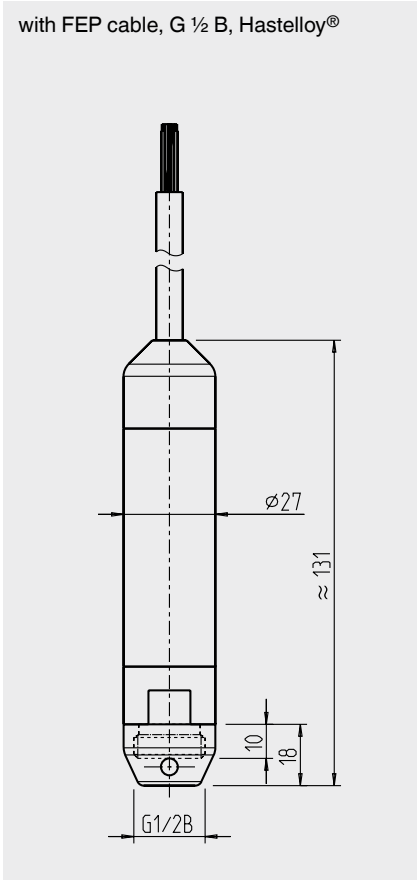
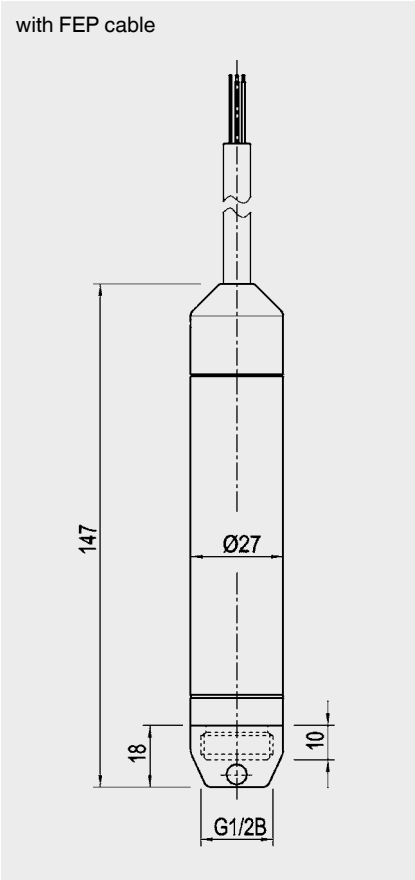
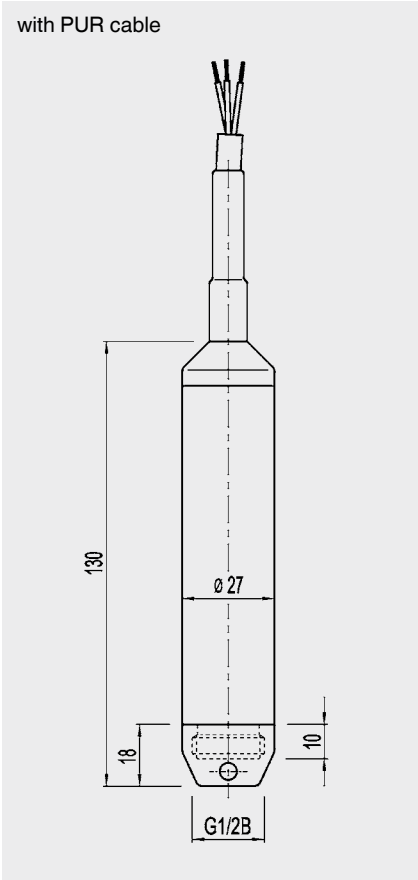
For further approvals, see local website

CE conformity





EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and immunity (industrial application)

Dimensions in mm

Submersible pressure transmitter model LH-10



Accessories

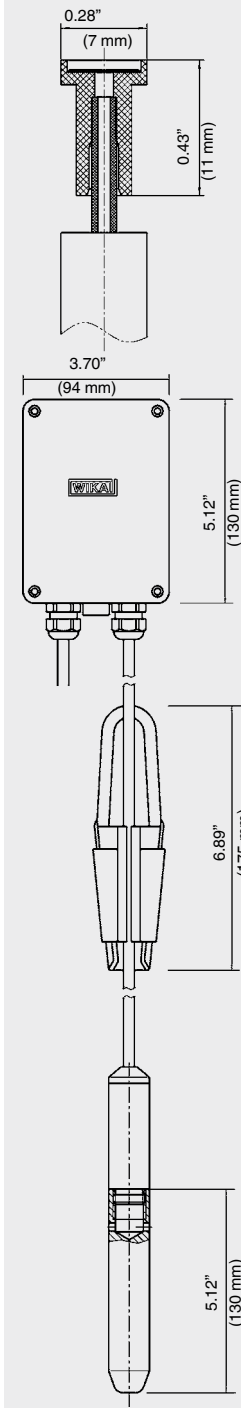
Description	Order number
 <p>Cable strain relief clamp The cable strain relief clamp enables easy and secure mechanical fastening of the submersible pressure transmitter's cable at the measuring point. It acts as a guide for the cable, in order to avoid mechanical damage and to reduce the tensile stress.</p>	14052336
 <p>Additional weight The additional weight increases the dead weight of the submersible pressure transmitter. It simplifies the lowering into monitoring wells, narrow shafts and deep wells. It effectively reduces negative environmental influences on the measuring result from the measured medium (e.g. turbulent flow). Stainless steel 316L, approx. 500 g, length (L) 130 mm</p>	14052341
 <p>Terminal box The terminal box, with IP 67 ingress protection and watertight ventilation element, provides a moisture-free electrical termination for the submersible pressure transmitter. It should be mounted in dry environment or directly in the switch cabinet.</p>	14052339
 <p>Filter element The filter element prevents dirt and moisture from entering the venting tube. The watertight diaphragm also offers a reliable protection for the submersible pressure transmitter.</p>	14052344

Ordering information

Model / Measuring range / Output signal / Temperature measurement / Cable material / Cable length / Case / Lightning protection / Accessories

Accessories

Dimensions in inches (mm)



Vent tube filter

Part# 7193131

The optional Teflon® vent tube filter protects the vent opening and protects against the entry of dirt and moisture.

Cable junction box

Part# 2459686

The cable junction box is rated NEMA 4 / IP 67 and is suitable for mounting outside tanks or shafts or inside dry control boxes. Can be wall or DIN rail mounted.

Cable clamp

Part# 2074257

The cable clamp secures the cable without bending or kinking that can damage the cable vent tube or outer jacket.

Additional weight

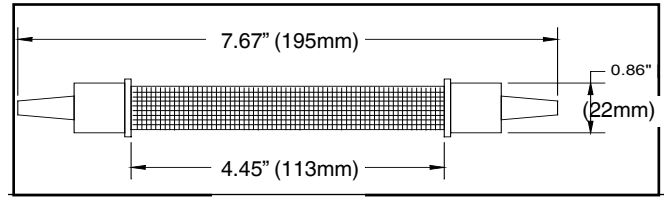
Part# 1524399

The additional weight replaces the protective cap and helps to stabilize the transmitter in turbulent conditions. Weight: approximately 1.1 lb, 316 SS.

Desiccant drying cartridge

part # 9836700

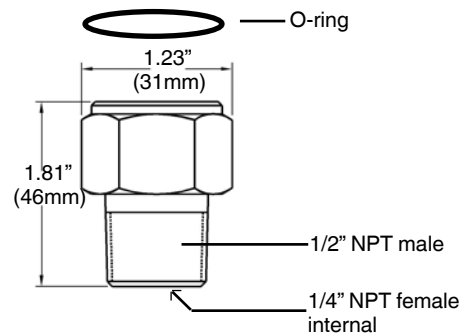
The desiccant drying cartridge helps prevent moisture buildup inside the vent tube.



NPT adapter

Part# 1631322

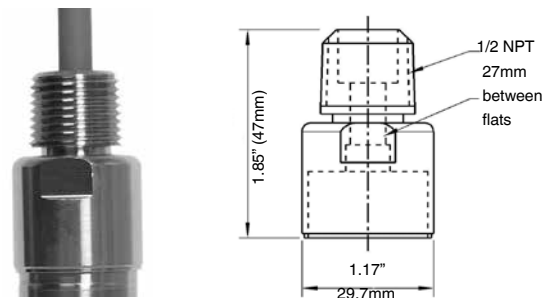
The 316 SS G1/2 adapter replaces the removable protective cap and converts the threads to 1/2" NPT male external, 1/4" female internal threads. Includes O-ring.



Conduit adapter

Part# 50476114

316 SS 1/2" NPT male cable conduit adapter. Must be factory installed.



LevelGuard Anti-clog attachment

Part # 50077091



The stainless steel LevelGuard attachment must be factory installed and calibrated.



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