

# Submersible pressure transmitter for level measurement

## Model LS-10, standard version

## Model LH-10, high performance

WIKA data sheet PE 81.09



### Applications

Level measurement in vessels, tanks, flowing waters, drinking water wells, bore holes and wastewater plants.

### Special features

- Measuring ranges from 0 ... 1 mWS to 0 ... 250 mWS
- Temperature measurement with Pt100 element, 4-wire
- Overvoltage protection (lightning protection)
- Maximum tensile strength of the cable 1000 N
- Hastelloy case and FEP cable for aggressive media



Fig. left: Submersible pressure transmitter model LS-10  
 Fig. centre: Submersible pressure transmitter model LH-10  
 Fig. right: Submersible pressure transmitter model LH-10  
 in Hastelloy

### Description

#### Simple measuring tasks

The submersible pressure transmitter LS-10 has been designed for simple, inexpensive and yet reliable level measurements. It features an output signal of 4 ... 20 mA with an accuracy of 0.5 %. The LS-10 can be operated up to a maximum water depth of 100 m with an ingress protection of IP 68.

#### Special demands

For higher demands the model LH-10 is available. It offers a high accuracy of better than 0.25 % and various special options such as temperature measurement, lightning protection and special output signals.

In conjunction with the 0.5 ... 4.5 V output signal (3-wire connection), the instrument has a current consumption of approx. 2 mA. For mains-free operation in the field the

submersible pressure transmitter can be manufactured to operate with a supply voltage from DC 5 V.

The maximum immersion depth of the LH-10 in water is 300 m, with an ingress protection of IP 68.

An important advantage of this submersible pressure transmitter is its standard longitudinal water resistance, which guarantees that water cannot get into the transmitter, even if the cable jacket is damaged. Should such damage occur, only the cable needs to be replaced while the probe remains completely functional.

Both submersible pressure transmitters offer a hermetically sealed, robust stainless steel case.

Through an internally-vented cable the pressure compensation towards the atmosphere is enabled for hydrostatic pressure measurement.

# Specifications

# Model LS-10, LH-10

Measuring range															
■ LS-10, {LH-10 with FEP cable}	bar <sup>1)</sup>	0.25	0.4	0.6	1	1.6	2.5	4	6	10					
Overpressure safety	bar <sup>1)</sup>	2	2	4	5	10	10	10	10	10					
Burst pressure	bar <sup>1)</sup>	2.4	2.4	4.8	6	12	12	12	12	12					
Measuring range															
■ LH-10 with PUR cable	bar <sup>1)</sup>	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	
Overpressure safety	bar <sup>1)</sup>	1	1.5	2	2	4	5	10	10	17	35	35	35	35	
Burst pressure	bar <sup>1)</sup>	2	2	2.4	2.4	4.8	6	12	12	20.5	42	42	42	42	
		<b>LS-10</b>							<b>LH-10</b>						
Material															
■ Wetted parts															
- Case		Stainless steel							Stainless steel {Hastelloy}						
- Process connection / Diaphragm		Stainless steel							Stainless steel {Hastelloy}						
- Protection cap		PA							PA {Stainless steel} {Hastelloy}						
- Cable		PUR							PUR {FEP}						
Power supply U <sub>+</sub>	DC	10 ... 30 V							10 ... 30V (14 ... 30 V with output 0 ... 10 V) (5 ... 30 V with battery operation, output 0.5 ... 2.5 V and 0.5 ... 4.5 V)						
Output signal		4 ... 20 mA, 2-wire							4 ... 20 mA, 2-wire 0 ... 20 mA, 3-wire {0 ... 5 V, 3-wire} {0 ... 10 V, 3-wire} {0.5 ... 2.5 V, 3-wire, with battery operation} {0.5 ... 4.5 V, 3-wire, with battery operation, from measuring range 0 ... 0.25 bar} {Pt100, 4-wire; IEC 60751}						
Pt100															
■ I <sub>max</sub>	mA	-							3						
■ I <sub>meas</sub>	mA	-							1						
Permissible max. load R <sub>A</sub>	RA in ohm														
■ Current output		R <sub>A</sub> ≤ (U <sub>+</sub> - 10 V) / 0.02 A - (cable length in m x 0.14 Ω)													
■ Voltage output		-							R <sub>A</sub> > 100 k						
Insulation voltage	DC	500 V <sup>2)</sup>													
Accuracy	% of span	≤ 0.25 (BFSL)							≤ 0.125 (BFSL)						
	% of span	≤ 0.5 <sup>3)</sup>							≤ 0.25 <sup>3)</sup>						
Non-linearity	% of span	≤ 0.2 (BFSL) per IEC 61298-2													
Non-repeatability	% of span	≤ 0.1													
Long-term stability	% of span	≤ 0.2 / year (at reference conditions)													
Permissible temperature ranges															
■ Medium <sup>4)</sup>	°C	-10 ... +50							-10 ... +50 {-10 ... +85 with FEP cable}						
■ Storage <sup>4)</sup>	°C	-30 ... +80													
Rated temperature range	°C	0 ... +50													
Temperature coefficients in rated temperature range															
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for measuring ranges ≤ 0.25 bar)													
■ Mean TC of span	% of span	≤ 0.2 / 10 K													
CE conformity															
■ EMC directive		2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)													
Lightning protection		-							{1.5 J per EN 61000-4-5}						
Short-circuit resistance		S <sub>+</sub> vs. U-													
Reverse polarity protection		U <sub>+</sub> vs. U-													
Weight															
■ Submersible pressure transmitter	kg	approx. 0.18							approx. 0.2						
■ Cable	kg/m	approx. 0.08													
■ Additional weight	kg	approx. 0.5													

{ } Items in curved brackets are optional extras for an additional price.

1) 1 bar corresponds to 10.2 mWs

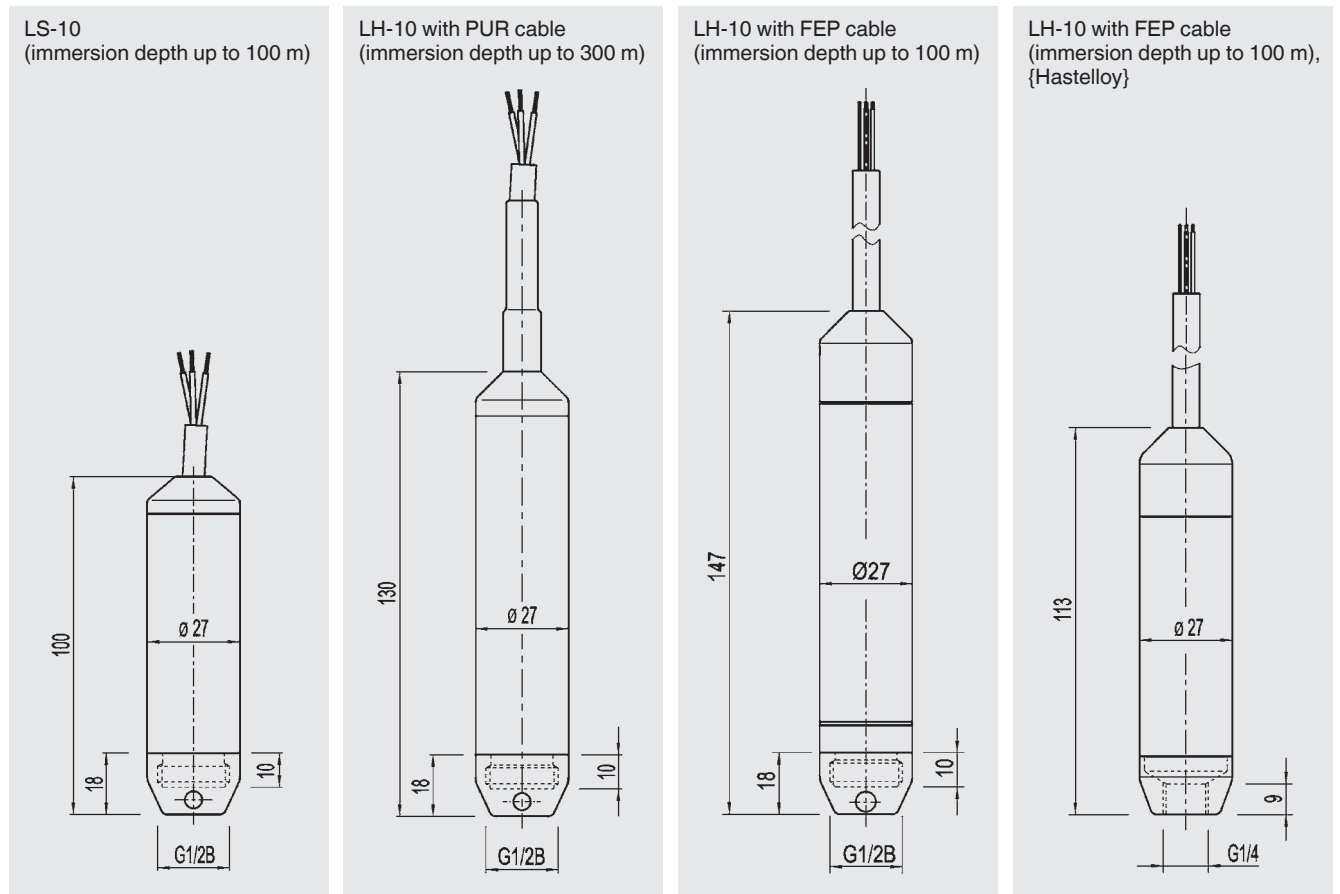
2) NEC class 02 power supply (low voltage and low current max. 100 VA even under fault conditions)

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

Calibrated in vertical mounting position with process connection facing downwards.

4) Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

## Dimensions in mm

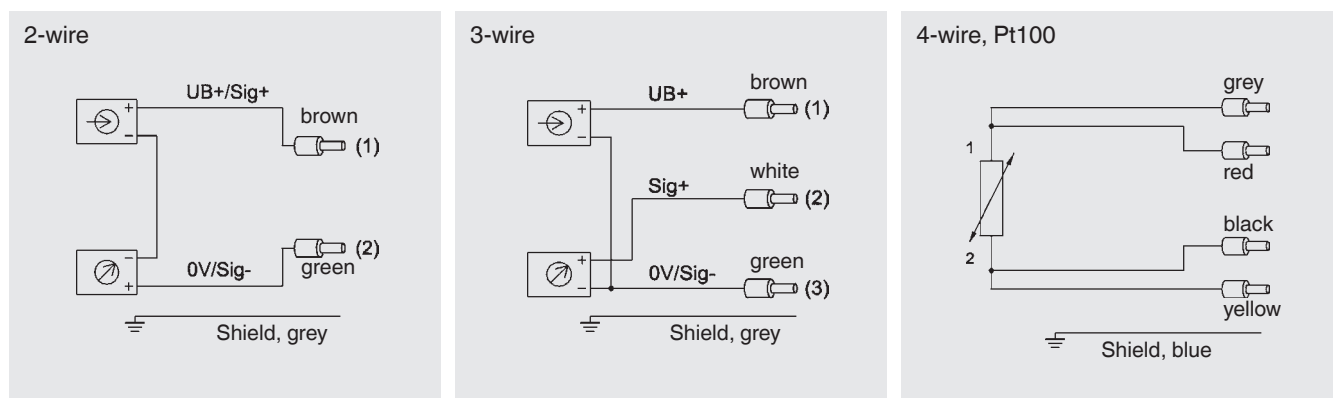


100 mm = 3.937 inch

For mounting no additional strain relief is required, since the connection cable has a maximum tensile strength of 1,000 N (500 N for FEP).

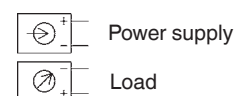
## Electrical connections

### Connection diagrams

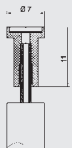
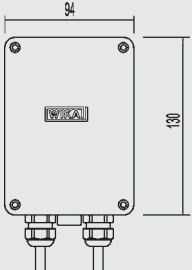
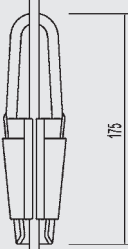
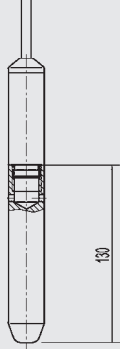


All versions have an ingress protection of IP 68 (per IEC 60529)

### Legend



## Accessories

	Order number	Description
	7193131	<p><b>Filter element</b></p> <p>In order to avoid the ingress of contamination and water into the pressure-compensating venting tube, WIKA offers an optional filter element for fitting by the end user.</p>
	2459686	<p><b>Terminal box</b></p> <p>The optional terminal box, ingress protection IP 67, with venting element, is mounted outside of shafts or vessels, or directly in the switch cabinet in a dry environment.</p>
	2074257	<p><b>Cable straining clamp</b></p> <p>For the mechanical mounting of the submersible pressure transmitter we offer an optional cable straining clamp.</p>
	1524399	<p><b>Additional weight</b></p> <p>In order to increase the dead weight of the submersible pressure transmitter an additional weight (approx. 500 g) can be screwed on.</p>

Dimensions in mm

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 The specifications given in this document represent the state of engineering at the time of publishing.  
 We reserve the right to make modifications to the specifications and materials.



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