

# Submersible Liquid Level Transmitters Type LS-10, LH-10

Datasheet LS-10, LH-10



## Applications

- Level measurement in water and wastewater treatment plants, wells, holding tanks, wet wells, rivers

## Special Features

- Ranges from 50 InWC to 400 psi
- Rated IP 68 for permanent submersion
- Hastelloy® case available for aggressive media
- 4-20 mA 2-wire output signal, others available
- Lightning protection available
- Cable supports over 220 pounds of strain

The LS-10 liquid level transmitter is designed for economical and reliable performance in a wide variety of level measurement applications. The LS-10 provides a signal output of 4-20mA and an accuracy of 0.25% of span. Standard stocked pressure ranges are assembled with any length cable for fast delivery.

The high performance Type LH-10 provides 0.125% accuracy and is available with many custom features for special requirements. LH-10 options include lightning protection, temperature measurement, special output signals, plus FEP cable and Hastelloy® construction for aggressive media.

The LH-10 is available with a low power 0.5-2.5V output signal and 5VDC supply voltage. This is ideal for solar or battery powered installations.

The LH-10 includes a dual cable entry design that prevents ingress of moisture into the electronics even if the cable is damaged. Both types feature watertight vented cable that can withstand over 220 pounds of strain. This allows the transmitter to be supported without any additional cabling.

Compensation for atmospheric pressure changes is accomplished through a vent tube in the cable. Many accessories, including cable clamps, desiccant drying cartridges, additional weights, and junction boxes are available for specific installation requirements. Both models can be equipped with the LevelGuard attachment for protection in difficult environments.



Left: LS-10 level transmitter  
Center: LH-10 high performance level transmitter  
Right: LH-10 with optional Hastelloy case and FEP cable



Optional WIKA LevelGuard Anti-clog attachment for submersible level transmitters. For use in lift stations, wet wells and other difficult level applications. For more information request bulletin LG-1.

## Specifications

## Type LS-10 / LH-10

### Pressure ranges

|                                     |          |           |           |           |           |           |        |         |         |         |         |
|-------------------------------------|----------|-----------|-----------|-----------|-----------|-----------|--------|---------|---------|---------|---------|
| LS-10 or LH-10 pressure ranges      | 100 InWC | 150 InWC  | 250 InWC  | 400 InWC  | 5 psi     | 10 psi    | 15 psi | 25 psi  | 30 psi  | 50 psi  | 100 psi |
| Maximum pressure*                   | 30 psi   | 30 psi    | 60 psi    | 72 psi    | 30 psi    | 60 psi    | 72 psi | 145 psi | 145 psi | 240 psi | 500 psi |
| Burst pressure**                    | 35 psi   | 35 psi    | 70 psi    | 87 psi    | 35 psi    | 70 psi    | 87 psi | 170 psi | 170 psi | 290 psi | 600 psi |
| LH-10 pressure ranges <sup>1)</sup> | 50 InWC  | 160 psi   | 200 psi   | 250 psi   | 300 psi   | 400 psi   |        |         |         |         |         |
| Maximum pressure*                   | 14 psi   | 1,160 psi | 1,160 psi | 1,160 psi | 1,160 psi | 1,160 psi |        |         |         |         |         |
| Burst pressure**                    | 29 psi   | 1,390 psi | 1,390 psi | 1,390 psi | 1,390 psi | 1,390 psi |        |         |         |         |         |

<sup>1)</sup> Maximum range for LH-10 with FEP cable is 150 psi

|                                     |      | Type LS-10          | Type LH-10                                                                                                                                                                                                                           |
|-------------------------------------|------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Materials                           |      |                     |                                                                                                                                                                                                                                      |
| ■ Body                              |      | Stainless steel     | Stainless steel {Hastelloy <sup>®</sup> }                                                                                                                                                                                            |
| ■ Pressure connection and diaphragm |      | Stainless steel     | Stainless steel {Hastelloy <sup>®</sup> }                                                                                                                                                                                            |
| ■ Protective cap                    |      | PA                  | PA {Stainless steel} {Hastelloy <sup>®</sup> }                                                                                                                                                                                       |
| ■ Cable                             |      | PUR (polyurethane)  | PUR {FEP, to 150 psi maximum}                                                                                                                                                                                                        |
| Power supply $U_B$                  | DC V | $10 < U_B \leq 30$  | $10 < U_B \leq 30$<br>(14 ... 30 with 0 ... 10 V output signal)<br>(5 ... 30 for battery powered operation, output signal 0.5 ... 2.5 V) <sup>2)</sup>                                                                               |
| Output signal                       |      | 4 ... 20 mA, 2-wire | 4 ... 20 mA, 2-wire<br>0 ... 20 mA, 3-wire<br>{0 ... 5 V, 3-wire}<br>{0 ... 10 V, 3-wire}<br>{0.5 ... 2.5 V, 3-wire for battery powered operation} <sup>3)</sup><br>{Pt 100, 4-wire; IEC 60751}<br>{Other signal outputs on request} |

<sup>2)</sup> Power supply 5 ... 10 VDC with optional lightning protection

<sup>3)</sup> Available with pressure ranges  $\geq 0$  100InWC

### Pt 100 RTD temperature sensor

|          |    |               |   |
|----------|----|---------------|---|
| ■ I max  | mA | Not available | 3 |
| ■ I mess | mA | Not available | 1 |

|                         |      |                                                                                      |                          |
|-------------------------|------|--------------------------------------------------------------------------------------|--------------------------|
| Maximum load $R_A$      |      | $R_A < (U_B - 10V) / 0.02A - (0.043 \text{ Ohm} \times \text{cable length in feet})$ |                          |
| ■ Current output signal |      | -                                                                                    | $R_A > 100 \text{ kOhm}$ |
| ■ Voltage output signal |      |                                                                                      |                          |
| Isolation voltage       | DC V | 500 <sup>4)</sup>                                                                    | 500 <sup>4)</sup>        |

<sup>4)</sup> NEC Class 02 power supply (low voltage and low current max. 100 VA even in fault conditions)

|                        |           |                                      |                                                     |
|------------------------|-----------|--------------------------------------|-----------------------------------------------------|
| Accuracy <sup>5)</sup> | % of span | $\leq 0.25$ (BFSL)                   | $\leq 0.125$ <sup>6)</sup> (BFSL)                   |
|                        | % of span | $\leq 0.5$ (limit point calibration) | $\leq 0.25$ <sup>6)</sup> (limit point calibration) |

<sup>5)</sup> Including non-linearity, hysteresis, zero point and full scale error per IEC 61298-2

Limit point calibration method performed in vertical mounting position with pressure connection facing down.

<sup>6)</sup> For pressure ranges  $< 0$  ... 100InWC accuracy  $\leq 0.25\%$  of span (BFSL)  
 $\leq 0.5\%$  of span (limit point calibration)

|                   |           |                                      |                                      |
|-------------------|-----------|--------------------------------------|--------------------------------------|
| Non-linearity     | % of span | $\leq 0.2$ (BFSL) per IE-61298-2     |                                      |
| Non-repeatability | % of span | $\leq 0.1$                           | $\leq 0.1$                           |
| 1-year stability  | % of span | $\leq 0.2$ (at reference conditions) | $\leq 0.2$ (at reference conditions) |

|                            |  |                                  |                                                                                              |
|----------------------------|--|----------------------------------|----------------------------------------------------------------------------------------------|
| Permissible temperature of |  |                                  |                                                                                              |
| ■ Medium <sup>7)</sup>     |  | +14 ... +122 °F   -10 ... +50 °C | +14 ... +122 °F   -10 ... +50 °C<br>{+14 ... +185 °F (-10 ... +85 °C) with FEP-cable option} |
| ■ Storage <sup>7)</sup>    |  | -22 ... +176 °F   -30 ... +80 °C | -22 ... +176 °F   -30 ... +80 °C                                                             |

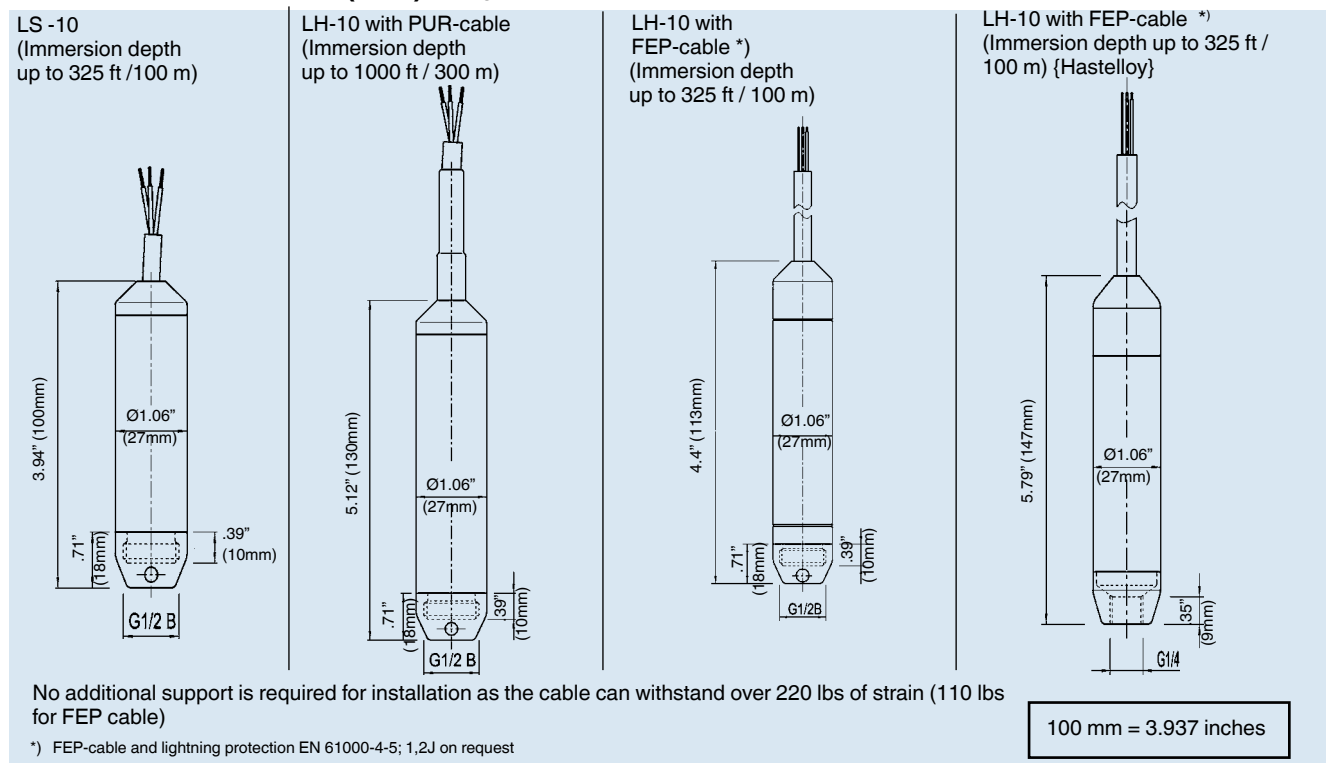
<sup>7)</sup> Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport

|                                                                     |           |                                                  |                                |
|---------------------------------------------------------------------|-----------|--------------------------------------------------|--------------------------------|
| Compensated temperature range                                       |           | 0 ... +50 °C   +32 ... +122 °F                   | 0 ... +50 °C   +32 ... +122 °F |
| Temperature coefficients (TC) within compensated temperature range: |           |                                                  |                                |
| ■ Mean TC of zero                                                   | % of span | $\leq 0.2 / 10 \text{ K}$ ( $< 0.4$ for 50 InWC) |                                |
| ■ Mean TC of range                                                  | % of span | $\leq 0.2 / 10 \text{ K}$                        | $\leq 0.2 / 10 \text{ K}$      |

| Specifications      |             | Type LS-10 / LH-10                                                                          |             |
|---------------------|-------------|---------------------------------------------------------------------------------------------|-------------|
| CE-conformity       |             | 2004/108/EEC, EN 61 326 Emission (Group 1, Class B) and Immunity (industrial locations)     |             |
| Wiring protection   |             | Protected against reverse polarity, overvoltage and short circuiting on the instrument side |             |
|                     |             | {Lightning protection EN 61000-4-5; 1.5J}                                                   |             |
| Weight              |             |                                                                                             |             |
| ■ Level transmitter | lb          |                                                                                             | Approx. 0.4 |
| ■ Cable             | oz per foot |                                                                                             | Approx. 1.0 |
| ■ Additional weight | lb          |                                                                                             | Approx. 1.1 |

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

## Dimensions in inches (mm) - Ingress Protection NEMA 6P ( IP 68 per IEC 60 529)

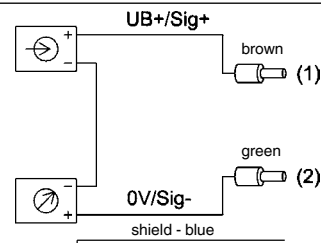


## Wiring

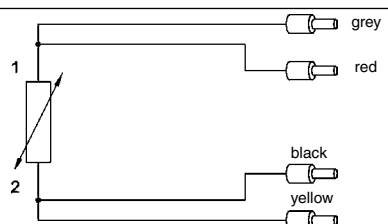
Vented PUR-cable  
tensile strength 220 Lbs  
(110 lbs with FEP-cable)

Pt 100 RTD temperature  
sensor

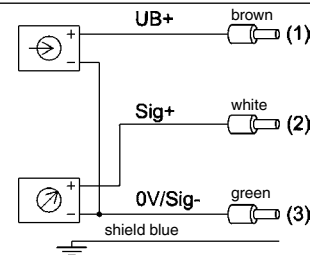
### 2-wire



### 4-wire



### 3-wire

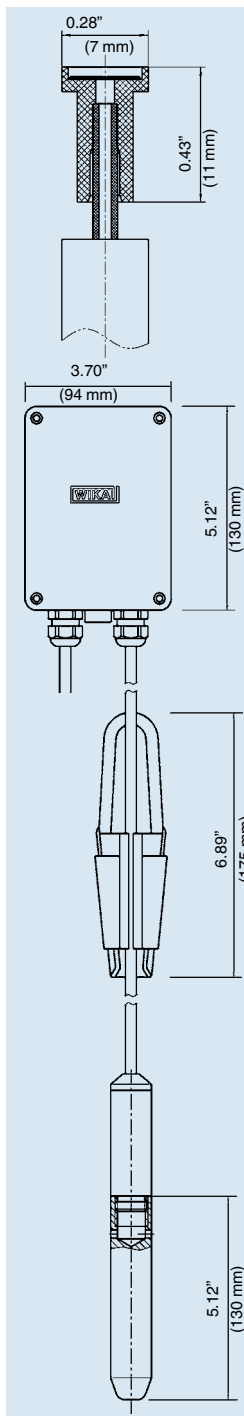


### Legend:

|  |                           |                              |
|--|---------------------------|------------------------------|
|  | power supply              | Sig+ output signal positive  |
|  | UB+ power supply positive |                              |
|  | 0V power supply negative  |                              |
|  | load (e.g. display)       | Sig - output signal negative |

## 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.

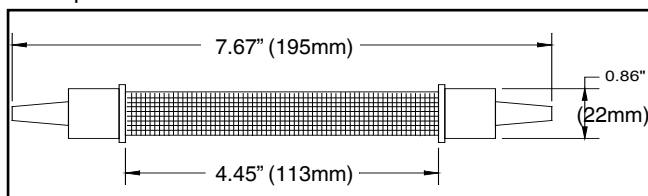
**Cable clamp** Part# 2074257  
The cable clamp secures the cable without bending or kinking that can damage the cable vent tube or outer jacket.

**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

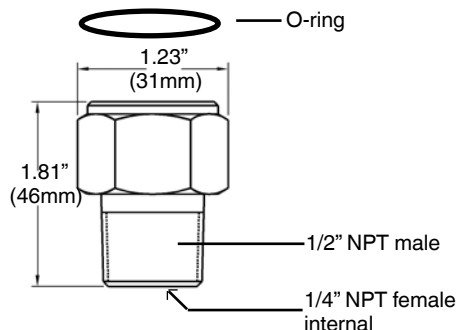
The desiccant drying cartridge helps prevent moisture buildup inside the vent tube.



### NPT adapter

Part# 1631322

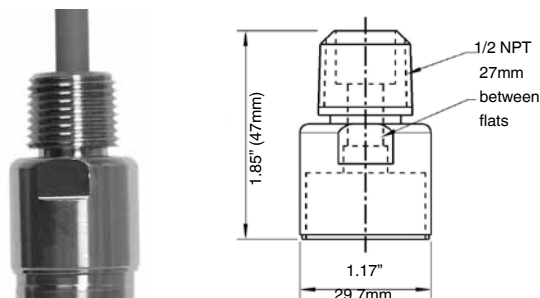
The 316 SS G1/2 adapter replaces the removable protective cap and converts the threads to 1/2"NPT male external, 1/4" female internal threads. Includes O-ring.



### 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.



### WIKAL Instrument Corporation

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