



TLH

Hydrostatic Two Wire

Level Transmitter

Technical Specification



Applications

- Hydrostatic level transmitter is used in different applications like
 - Level measurement
 - Hydraulic monitoring in rivers and sea
 - Muddy liquid level measurement
 - Water treatment
 - Water diversion project
 - Sewage treatment plant
 - Diesel
 - Oil
 - Sea water

Features

- Compact Size
- Liquid inventory assessment
- Easy Installation
- Measuring ranges from 1mH₂O to 200mH₂O
- Accuracy: ±0.2%FSO or ± 0.5%FSO
- Calibrated and temperature compensated
- Stainless steel construction
- Piezoresistive pressure sensor design
- Variety of Pressure & Electrical connections
- Output 4...20mA, 0...10V, 0...5V, ModBus RS485

Connection Diagram

Cable outlet

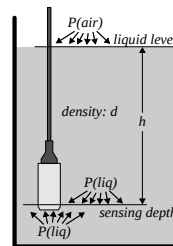


	2-wire(current)	3-wire(voltage)
Supply+	red	red
Signal+	yellow	yellow
Gnd	-	black

Product Overview

Trumen hydrostatic two wire level transmitter model TLH is made from high-quality silicon piezoresistive sensor. The piezoresistive sensor is packaged in stainless steel housing. The TLH is precision engineered to fit most level measurement. The water-proof cable connects with housing sealed, with vented tube putting in, the transmitter could be used in the water or liquid in a long time. Integrated construction and standard output signal could provide easy operation and good automatic control.

Operating Principle



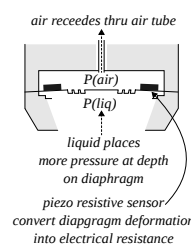
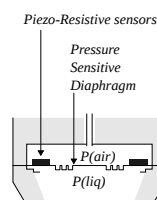
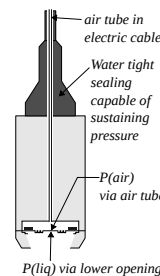
Pressure $P(liq)$ on any surface and container walls at depth h , by the liquid of density d , is:

$$P(liq) = d \times g \times h + P(air)$$

where $P(air)$ is the air pressure and g is the acceleration due to gravity (constant for a given place) at the place of liquid container. Replacing constants the equation becomes:

$$P(liq) - P(air) = K \times h$$

in short: Pressure difference represents liquid level. One convenient unit that clubs pressure with level is mH₂O (pressure felt at depth in meters while being immersed in water)



Trumen hydrostatic pressure transmitter utilizes pressure exerted by liquid $P(liq)$ and subtract it by air pressure $P(air)$ using a single pressure sensitive diaphragm and air-vent in connection cable.

As Trumen hydrostatic pressure transducer is immersed deeper in the liquid, the $P(liq)$ becomes higher than $P(air)$ and the diaphragm minutely deforms.

This diaphragm deformation can't be seen visibly, but it is caught by piezo-resistive sensors secured on the sensitive diaphragm.

Thus pressure exerted by liquid is sensed by Trumen hydrostatic sensor which is directly denotes the depth from the surface of liquid.

TLH: Hydrostatic Two Wire Level Transmitter



Performance Specifications

Parameter	Value
General	

Pressure Range	0-1,....,200 mH2O
Overpressure	1.5xFS

Environmental	
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Operating Temperature Range	-20 to +70 °C
Compensated Temperature Range	0 to +70 °C
Storage Temperature Range	-40 to +125 °C
Vibration	10 g
Shock	100 g
Cycles	10x10 ⁶ cycles

Electrical @ 25°C(77°F)	
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Output Signal	4...20mA	0...5Vdc	1...5Vdc	0...10Vdc	0.5...4.5Vdc(ratiometric)
Power Supply(Vs)	12....36Vdc	12....36Vdc	12....36Vdc	15....36Vdc	5Vdc
Load Resistance	<(Vs-12)/0.02A (For current output), >10kΩ (For voltage output)				
Insulation Resistance	100MΩ @50Vdc				

Physical Specifications	
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Media Compatibility	All media compatible with 316L stainless steel
Housing	304 stainless steel
Diaphragm	316L stainless steel
Seal Ring	Viton or NBR
Oil Filling	Silicone oil
Protection	IP68
Net Weight	Approx. 225g

Parameter	Minimum	Typical	Maximum	Units	Notes
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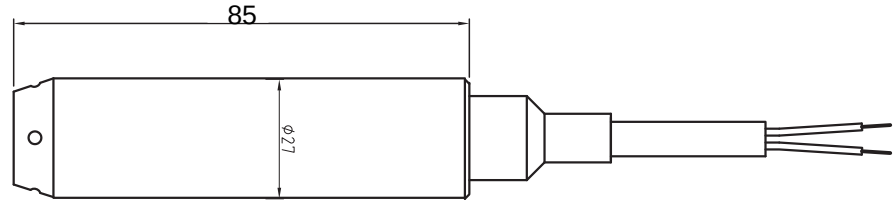
Performance					
Accuracy	0.1	0.2	0.5	%FSO	1,2
Temp Coeff - Zero		±0.75	±1.5	%FSO	3
Temp Coeff - Span		±0.75	±1.5	%FSO	3
Long-Term Stability		±0.2	±0.3	%FSO/year	1

Notes

1. All values measured at 25°C(77°F)
2. Including non-linearity, hysteresis and repeatability.
3. 0°C to 70°C(32°F to 158°F) with reference to 25°C(77°F).

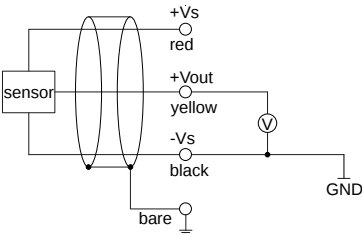
The listed specifications and dimensions are subject to change without prior notice.

Dimensions (in mm)

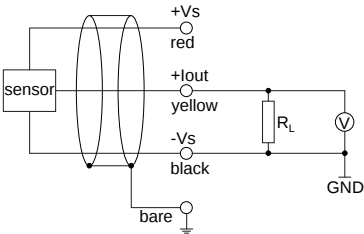


Electrical Connections

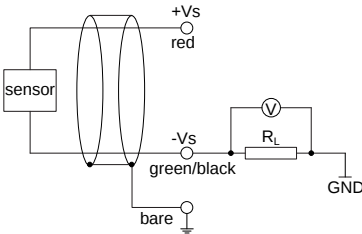
0...10V, 1...5V Output



0...20mA Output



4...20mA Output

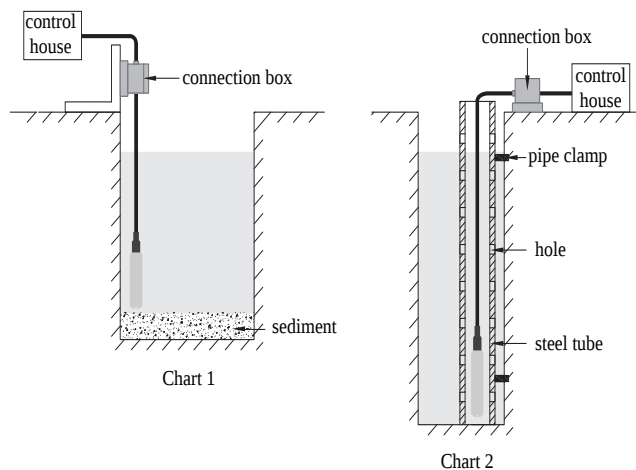


Mechanical Installation

A. Installation in the Static Water

The installation method in the static water indicated as chart 1.

To prevent shaking or destroying the transmitter when pumping, the transmitter should be put away from the liquid resource. Otherwise it should be installed to see chart 2, protected by steel tube.

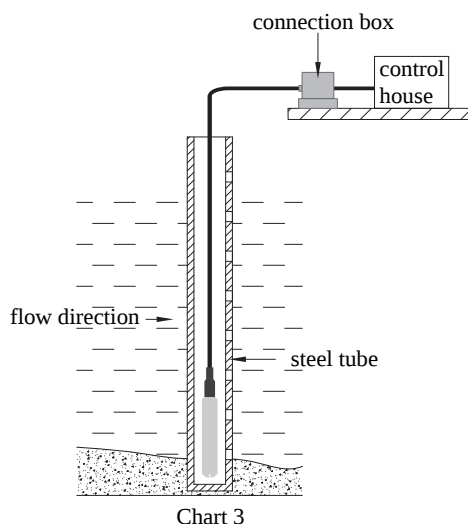


B. Installation in Flowing Water (e.g. river channel, reservoir area)

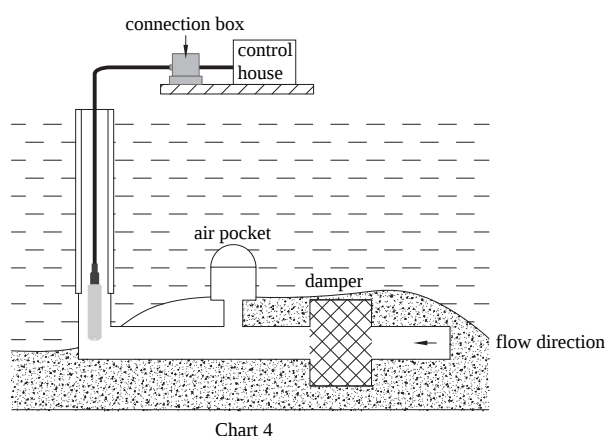
The water-calming equipments are required

- Method one: Insert a steel tube in the water channel (chart 3).

The steel tube wall should be thicker, and several holes should be made on different heights of the tube to damp waves and clear the water pressure influence.



- Method two: Superficial burying is better in the sand and stone channel (chart 4). This method not only can clear water flowing pressure and wave influence, but also can filter the sand and mud.



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Ordering Information

TLH Hxx - Pxx - Cx - Dxx - Bxxx - Lxxxx

Enclosure

HAN: Aluminum Non-Hazardous IP-67 / 68
HPN: Polycarbonate (Plastic)

Cable Length

Process Connection Type

PB1: 1" BSP
PB2: 1-1/2" BSP
PB4: 1-1/4" BSP
PB5: 2" BSP
PN1: 1" NPT
PN2: 1-1/2" NPT
PN4: 1-1/4" NPT
PN5: 2" NPT
PFL: Flanged Type (Fxxx)
F001: 1/2" B16.5 ANSI/ASA 150#RF
F002: 3/4" B16.5 ANSI/ASA 150#RF
F003: 1" B16.5 ANSI/ASA 150#RF
F004: 1-1/4" B16.5 ANSI/ASA 150#RF
F005: 1-1/2" B16.5 ANSI/ASA 150#RF
F006: 2" B16.5 ANSI/ASA 150#RF
F007: 2-1/2" B16.5 ANSI/ASA 150#RF
F008: 3" B16.5 ANSI/ASA 150#RF
F009: 4" B16.5 ANSI/ASA 150#RF
F010: 5" B16.5 ANSI/ASA 150#RF
F011: 6" B16.5 ANSI/ASA 150#RF
PCS: Special Process Connection

Pressure Range in Meters

B1: 0...1mH₂O
B2: 0...2mH₂O
B3: 0...3mH₂O
B4: 0...4mH₂O
B5: 0...5mH₂O
B6: 0...6mH₂O
B7: 0...7mH₂O
B8: 0...8mH₂O
B9: 0...9mH₂O
B10: 0...10mH₂O
B11: 0...11mH₂O
B12: 0...12mH₂O
B13: 0...13mH₂O
B14: 0...14mH₂O
B15: 0...15mH₂O
B20: 0...20mH₂O
B25: 0...25mH₂O

Process Connection Material

C4: SS 304
C6: SS 316
CL: SS 316L
CS: Special Surface

Output Options

DLP: DC Loop Powered 4-20mA
DVO: DC Powered 0...10Vdc
DMB: DC Powered ModBus Over RS485