



Technology Solutions

TEK-SUB 4800B

Submersible Level Transmitter



LEVEL



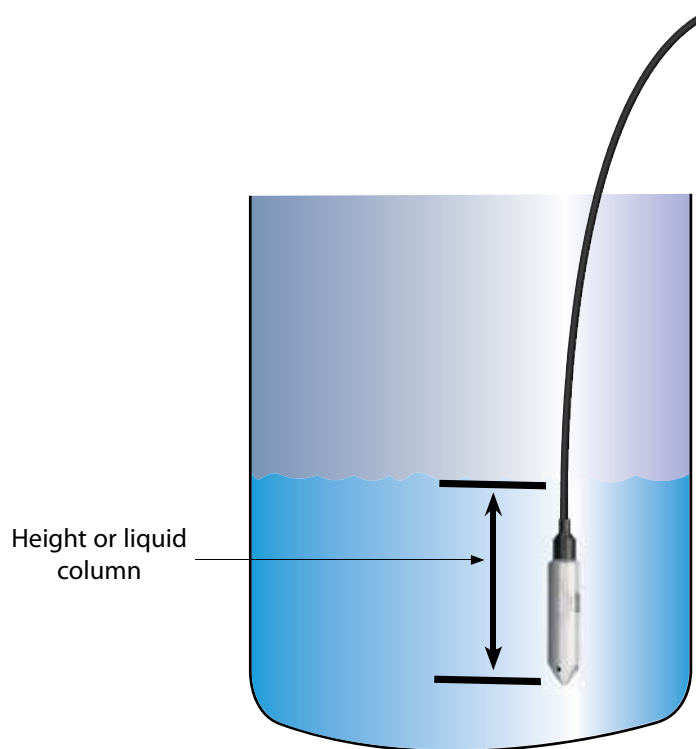
Introduction

The Tek-Sub 4800B Submersible Level Transmitter is a high-performance level transmitter specially designed for measuring the level of liquids and slurries. The transmitter has a highly accurate silicon piezoresistive pressure sensor as a sensing element. It is capable of continuously sensing and measuring liquid level with high precision.

Tek-Trol's Submersible Level Transmitters have several level ranges, output options, and custom cable lengths, ensuring a perfect fit for new or existing installations. They are frequently used with a SCADA, PLC, or compatible display/control system for liquid level indication or control.

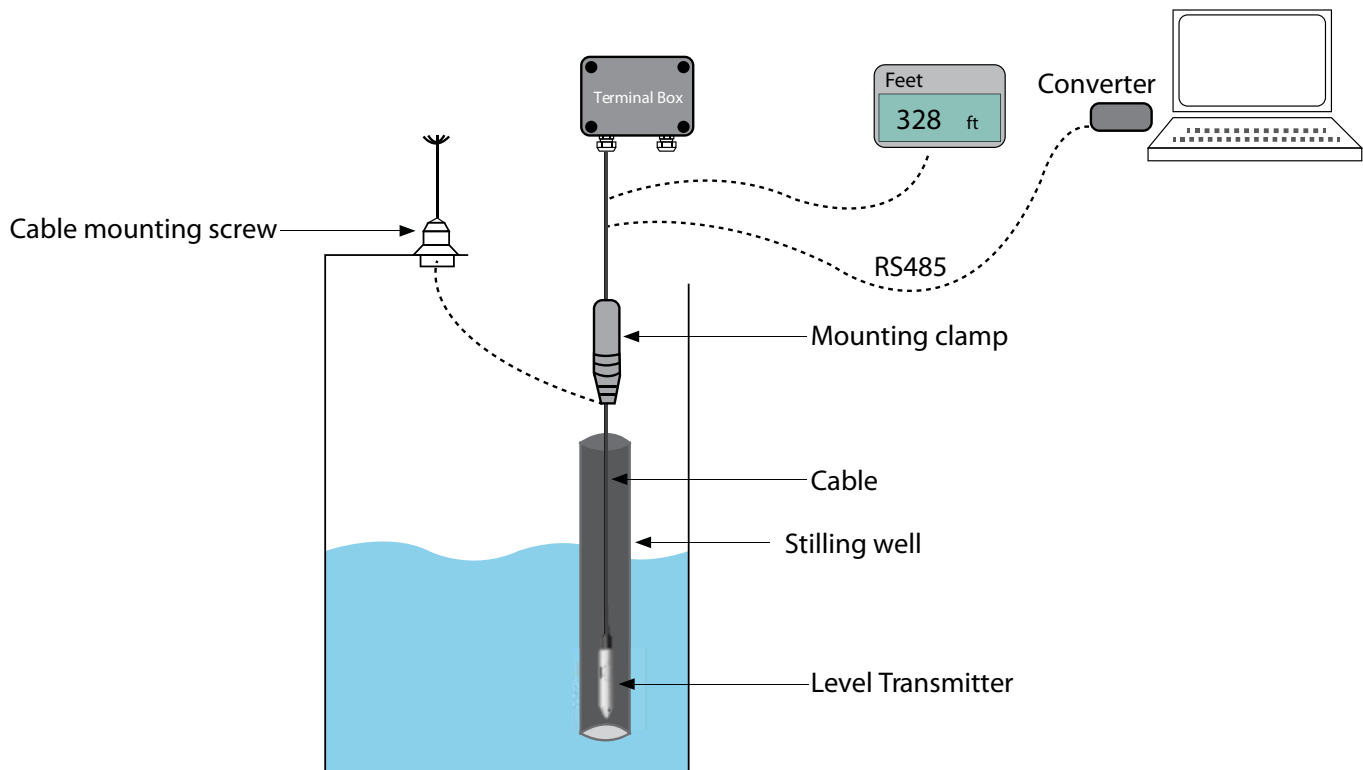
Measuring Principle

The Tek-Sub 4800B Submersible Level Transmitter consists of a sensor attached to a long cable, which is lowered to the bottom of a tank or well. The sensor operates by measuring the hydrostatic pressure of the liquid. Hydrostatic pressure (or head pressure) is the pressure exerted by the liquid in the tank or well. The hydrostatic pressure measured by the sensor is determined by two parameters: the density and height of the liquid. With liquid density remaining constant, changes in hydrostatic pressure necessarily reflect a difference in liquid level.



Operation

Typical Tek-Sub 4800B Submersible Level Transmitter application.



The pressure at the bottom of the tank is related to the height of the liquid. This pressure is called hydrostatic pressure or head pressure. Typical units for measurement of hydrostatic pressure are inches, feet, or meters of water column. In a water column, the hydrostatic pressure of 27.7" w.c. is approximately equivalent of 1 PSI. The volume of water or shape of the tank or vessel does not affect the hydrostatic head pressure; as it is height of water that affects the pressure. Whether it is in a large water tank or a small bucket of water, the hydrostatic pressure of 27.7" w.c. is the same.

Modern PLC's and HMI's can calculate the liquid level of a tank by entering the geometry of the tank and the specific gravity of the liquid.

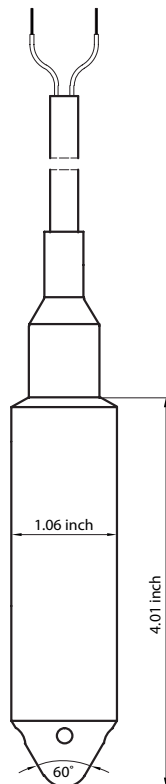
Features

- Compact design
- Shielded cable with vent tube
- Completely sealed, stainless steel transmitter
- Temperature compensated
- No need for external adjustment and calibration
- Low maintenance, no moving parts
- Standard Output 4-20 mA, RS-485, 0.5-4.5 VDC
- Accuracy: $\pm 0.5\%$ FS

Applications

- Water and wastewater treatment plants
- Beverages packaging plants
- Well monitoring
- Hydraulic level monitoring in sea, rivers, lakes and dams
- Chemical applications
- Muddy liquid, slurry level measurement
- Ground water monitoring
- Environmental remediation
- Water tanks
- Leachate monitoring

Dimensional Drawing



Accessories



Lighting Surge Protection box

Specifications

| | |
|-----------------------------------|--|
| Pressure range | 5 psig to 20 psig (3.5 mH ₂ O to 14 mH ₂ O), Optional ranges available |
| Pressure type | Gauge (vented) |
| Over pressure | 150% FS |
| Accuracy | ±0.5% FS |
| Temperature coefficient-zero | ±0.75% FS (typ.), ±1.5% FS (max.) Over compensated temperature range |
| Temperature coefficient-span | ±0.75% FS (typ.), ±1.5% FS (max.) Over compensated temperature range |
| Long term stability | ±0.2% FS/year (typ.), ±0.3% FS/year (max.) |
| Output signal | 4-20 mA, RS-485, 0.5-4.5 VDC |
| Power supply (Vs) | 12 to 36 VDC |
| Load resistance (R _L) | $R_L < (V_s - 12) / 0.02A$ |
| Vibration | 10g-force (20-2000 Hz) |
| Shock | 100g-force (10 ms) |
| Cycles | 10x10 ⁶ cycles |
| Insulation resistance | 100 MΩ/50 VDC |
| Compensated temperature range | 32 °F to 140 °F (0 °C to 60 °C) |
| Storage temperature range | -40 °F to 257 °F (-40 °C to 125 °C) |
| Housing | 304 SS |
| Cable | PTFE or Polyurethane |
| Diaphragm | 316L SS |
| Seal ring | Viton |
| Oil filling | Silicone oil |
| Weight | 0.9 lbs (408 g) |

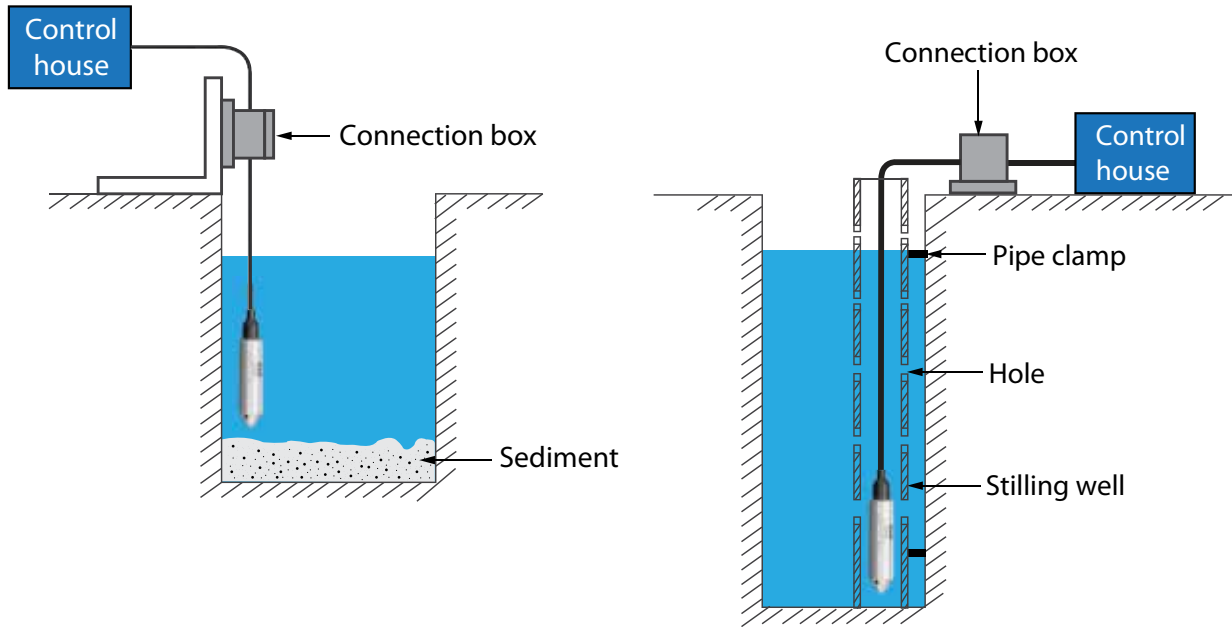
Installation

The Tek-Sub 4800B Submersible Level Transmitter is suitable for static, as well as flowing liquid level measurement applications. The transmitter is factory calibrated and ready for operation without adjustment.

- Ensure that the measuring liquid is compatible with the transmitter's construction material
- Insert the transmitter vertically down in the measurement container
- Ensure that the transmitter is completely immersed in the liquid for maximum accuracy
- Ensure the protection cap holes are not blocked due to suspended particles in the measuring liquid
- Avoid areas subject to electrical noise, excessive vibrations and radiant heat while mounting the transmitter

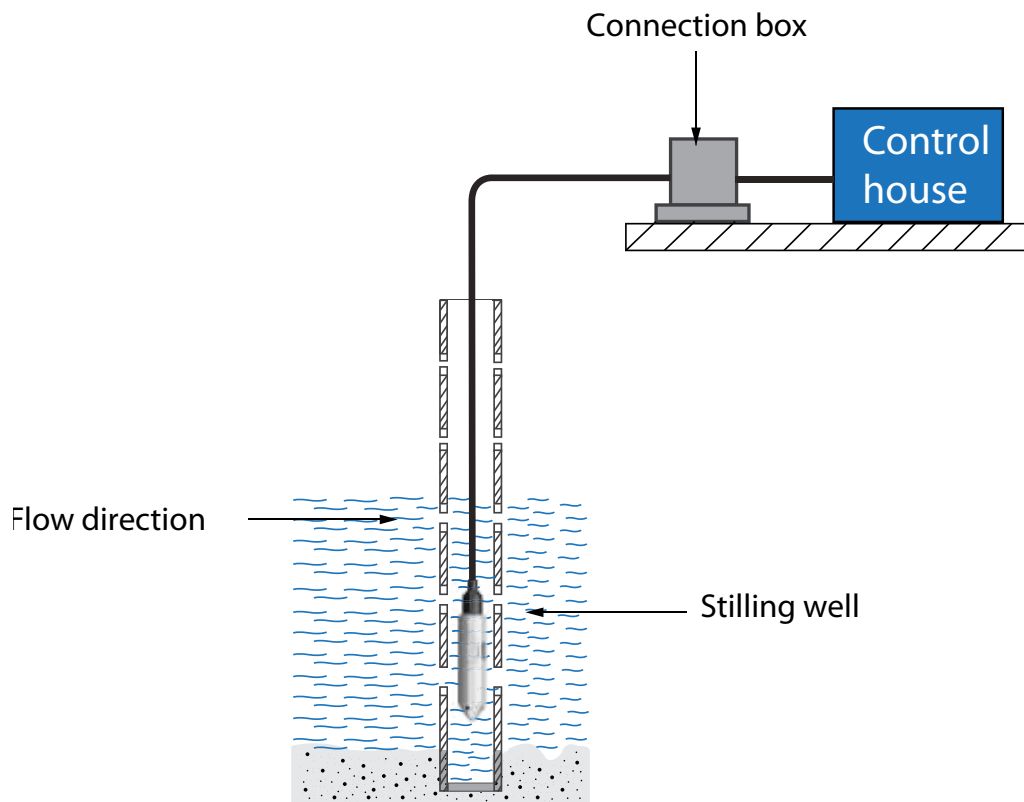
Static Liquid

Place the transmitter away from liquid resource to avoid effects of vibration and pressure influence. A stilling well is recommended for the best results.



Flowing Liquid

A stilling well is recommended when there is a flowing liquid. A stilling well will dampen disruptions and provide a steady level for an accurate measurement.



Model Chart

| Example | Tek-Sub 4800B | 05 | 42 | 05 | T14 | # | Tek-Sub 4800B-05-42-05-T14 |
|------------------------------|---------------|----------------------|----------------------------|----|--|----|--|
| Series | Tek-Sub 4800B | | | | | | Submersible Level Transmitter |
| Range | | 05 10 15 20 | | | | | 5 psig (3.5 meters H ₂ O) 10 psig (7 meters H ₂ O) 15 psig (10.5 meters H ₂ O) 20 psig (14 meters H ₂ O) |
| Output | | | 42 43 45 48 49 | | | | 4-20mA 4-20mA, HART 0.5 - 4.5VDC Low-Voltage Modbus (5 VDC) Modbus RS-485 |
| Accuracy | | | | 05 | | | 0.5% FS |
| Cable Length and Type | | | | | P14 P20 P34 T14 T20 T34 | | 40 Feet of Polyurethane Cable 60 Feet of Polyurethane Cable 100 Feet of Polyurethane Cable 40 Feet of PTFE Cable 60 Feet of PTFE Cable 100 Feet of PTFE Cable |
| Option | | | | | | LP | Lighting Surge Protection box |

Popular Models

| Model Number | Description |
|--------------------|---|
| 4800B-05-42-05-P14 | Submersible Level Transmitter, Range 5 psig, 40 Feet Polyurethane Cable |
| 4800B-10-42-05-P14 | Submersible Level Transmitter, Range 10 psig, 40 Feet Polyurethane Cable |
| 4800B-15-42-05-P20 | Submersible Level Transmitter, Range 15 psig, 60 Feet Polyurethane Cable |
| 4800B-20-42-05-P20 | Submersible Level Transmitter, Range 20 psig, 60 Feet Polyurethane Cable |
| 4800B-15-42-05-P34 | Submersible Level Transmitter, Range 15 psig, 100 Feet Polyurethane Cable |
| 4800B-05-42-05-T14 | Submersible Level Transmitter, Range 5 psig, 40 Feet PTFE Cable |
| 4800B-10-42-05-T14 | Submersible Level Transmitter, Range 10 psig, 40 Feet PTFE Cable |
| 4800B-15-42-05-T20 | Submersible Level Transmitter, Range 15 psig, 60 Feet PTFE Cable |
| 4800B-20-42-05-T20 | Submersible Level Transmitter, Range 20 psig, 60 Feet PTFE Cable |

Accessories

| Model Number | Description |
|--------------|-------------------------------|
| 4800-LP | Lighting Surge Protection box |
| 4800-Hanger | Submersible Cable Hanger |

Cable Hanger



Customer Service & Support



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