



Technology Solutions

TEK-SUB 4800B

Submersible Level Transmitter



LEVEL



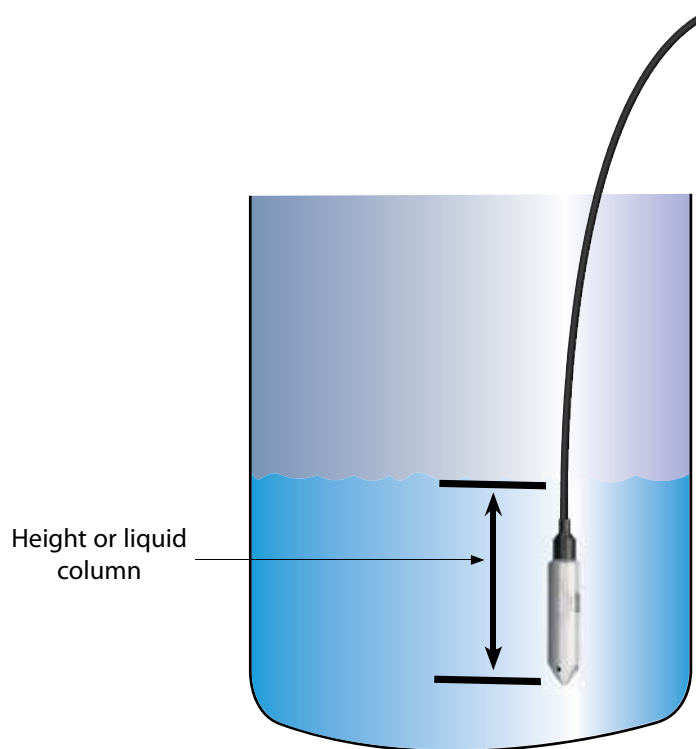
Introduction

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.

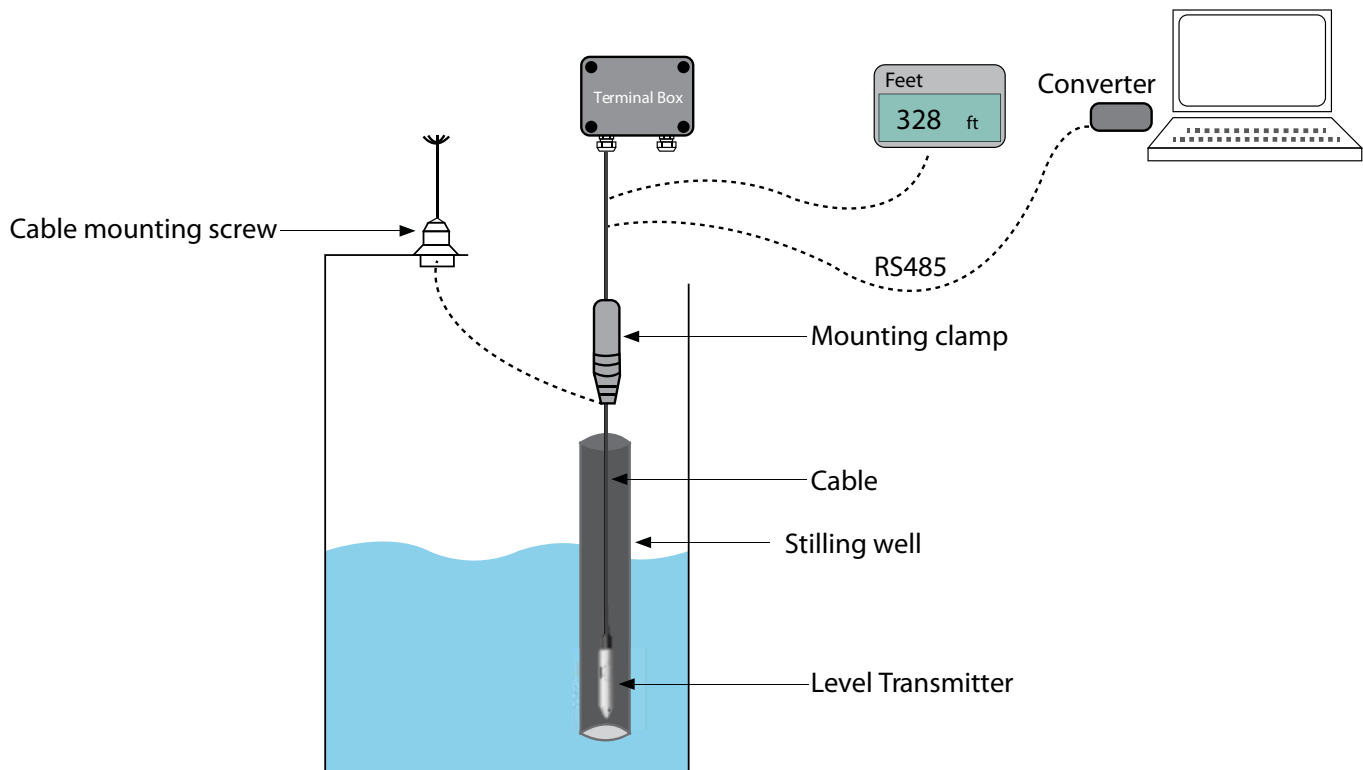
Measuring Principle

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.

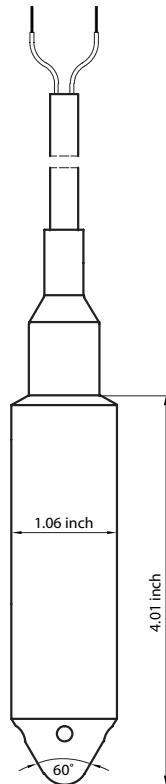
Features

- 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)

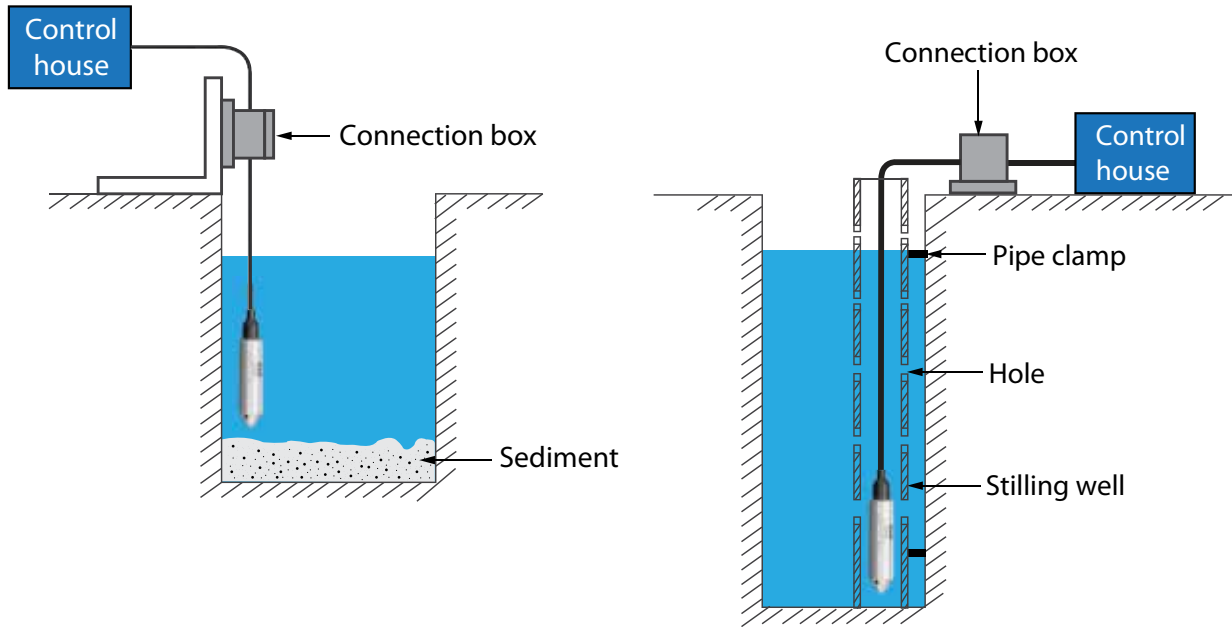
Installation

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

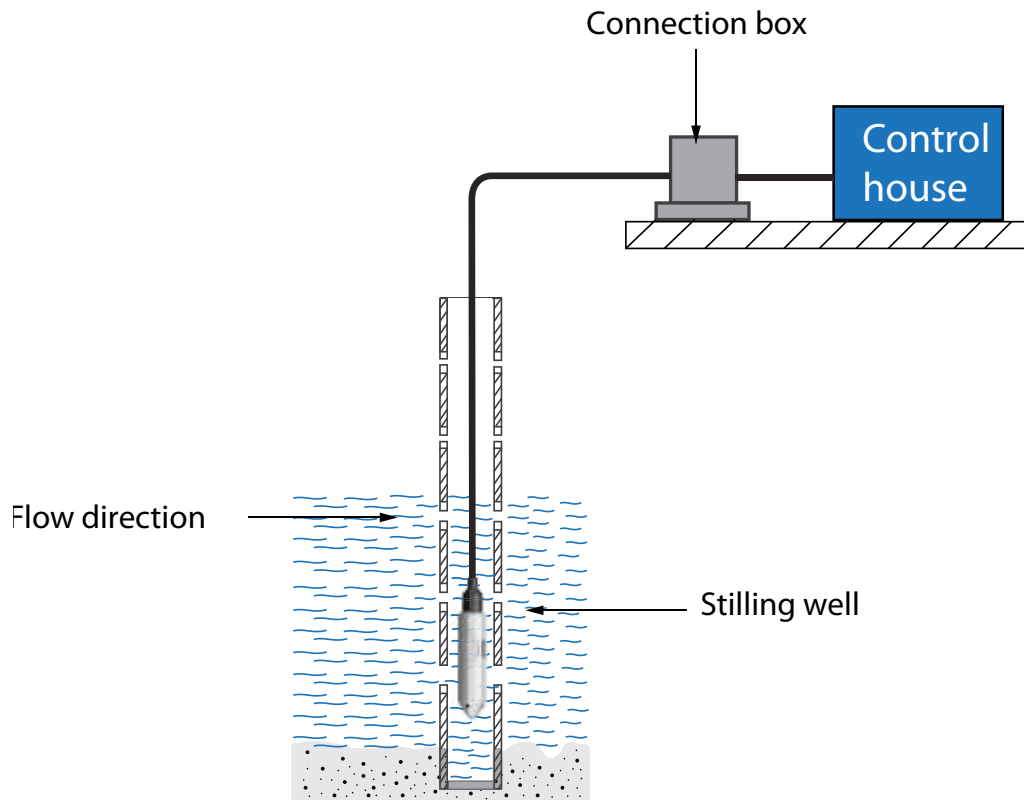
Static Liquid

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

