



Technology Solutions

TEK-SUB 4800F

Flush Ceramic Submersible Level Transmitter



LEVEL



Introduction

The Tek-Sub 4800F Flush Ceramic Submersible Level Transmitter features a ceramic capacitive pressure sensor housed in durable stainless steel. Designed for accuracy and versatility, it suits a wide range of level measurement tasks. Its waterproof cable is securely sealed with a vented tube, allowing for long-term use in water or other liquids. The transmitter's integrated design and standardized output signal ensure straight-forward installation and reliable automation.

Measuring Principle

The Tek-Sub 4800F Flush Ceramic 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.

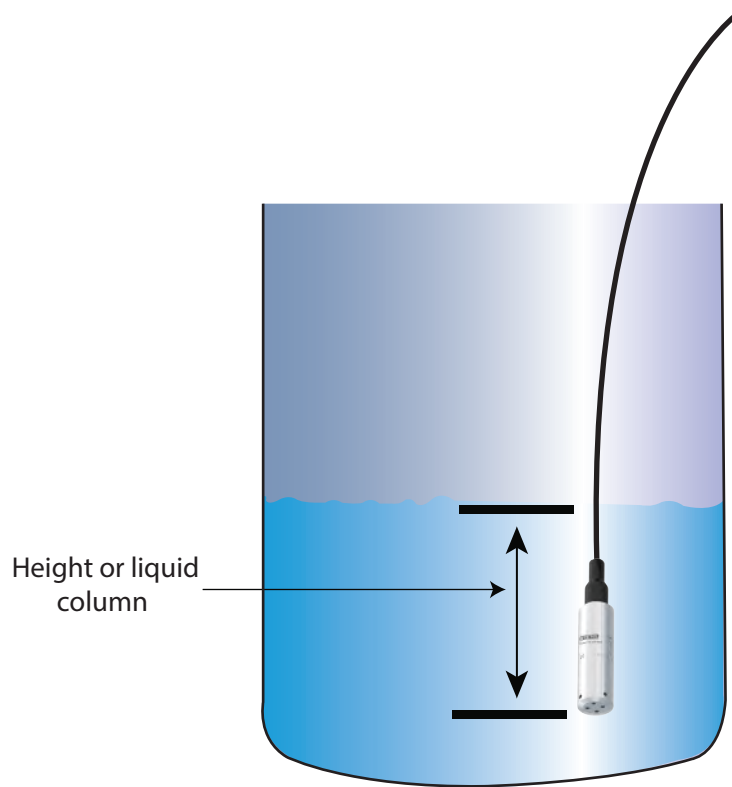


Fig. 1. Measuring Principle

Operations

Typical Tek-Sub 4800F Flush Ceramic Submersible Level Transmitter.

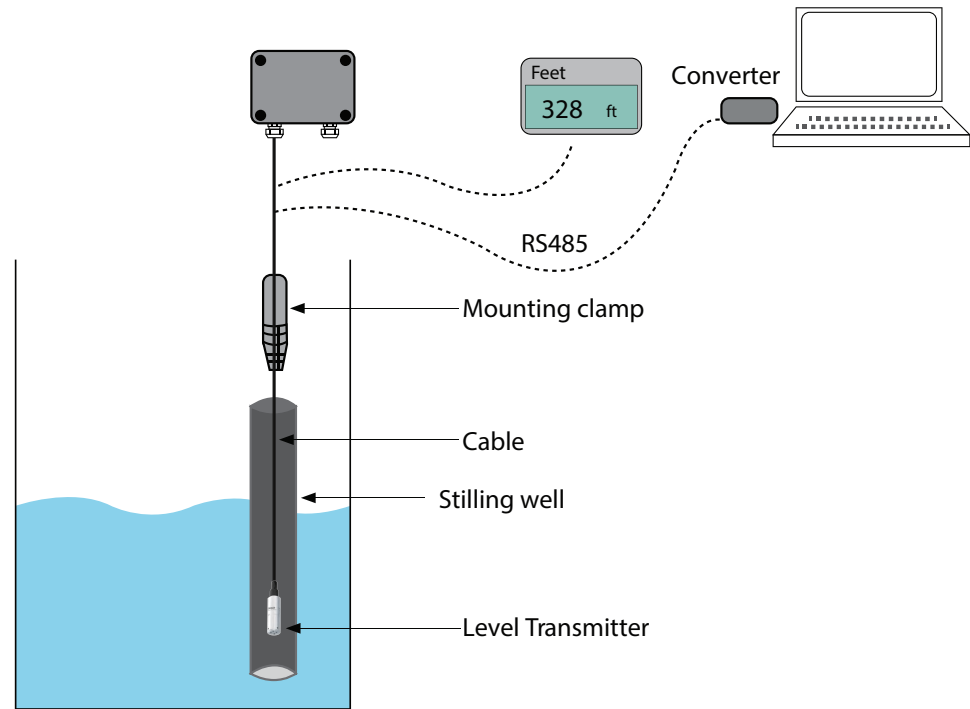


Fig. 2. Mounting the transmitter

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

- Measuring ranges from 5 to 20 Psi (3.5 to 14 mH₂O)
- IP68, Submersible level measurement
- HART communication (setting of offset, span and damping)
- Accuracy: $\pm 0.25\%$ F.S
- Calibrated and temperature compensated
- Ceramic pressure sensor
- Output 4...20mA+HART, RS 485, 0.5-4.5 VDC

Applications

- Drinking Water Systems
- Ground Water Monitoring
- Rain Spillway basin
- Waste Water Treatment Plants
- Water Recycling
- Oil tank level measurement
- Sewage lift systems
- Hydraulic level monitoring
- Muddy liquid and thick slurries

Dimensional Drawing

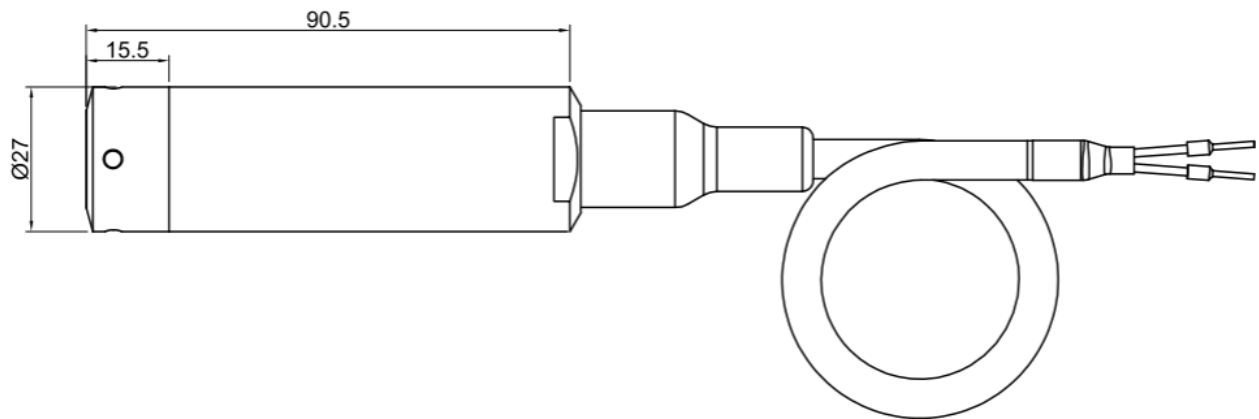


Fig. 3. Dimensional Drawing

Accessories

Filter Element

By preventing dirt and moisture from infiltrating the venting tube, the filter element enhances durability, while the watertight diaphragm provides secure protection for the submersible-level transmitter.



Terminal box

The Flush ceramic submersible level transmitter's electrical termination is guaranteed to be dry and secure thanks to the terminal box's IP 66 ingress protection and watertight ventilation feature. It is suggested that it be mounted within the switch cabinet or in a dry location.



Lighting Surge Protection box

Cable Strain Relief Clamp

The cable strain relief clamp ensures a secure and effortless attachment of the submersible pressure transmitter's cable at the measuring location. It helps guide the cable, preventing mechanical damage and reducing tensile strain.



Specifications

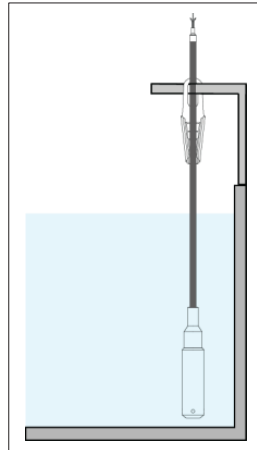
Pressure Range	5 to 20 Psi (3.5 to 14 mH ₂ O)
Pressure Type	Gauge (Vented)
Over Pressure	500% F.S.
Accuracy	±0.25 % F.S.
Temperature Coefficient-Zero	±0.75 F.S. (typ.), ±1.5 F.S. (Max) Over Compensated
Temperature Coefficient-Span	±0.75 F.S. (typ.), ±1.5 F.S. (Max) Over Compensated
Long Term Stability	0.2% FS
Output Signal	4-20 mA + HART, RS 485, 0.5-4.5 VDC
Power Supply (Vs)	12 to 36 VDC
Loop Resistance (RL)	$RL < (Vs - 12) / 0.02A$
Operating Temperature	114°F to 140°F (-10°C to 60°C)
Vibration	10g force (20 to 2000Hz)
Shock	100g force (10ms)
Cycles	10x10 ⁵ cycles
Insulation Resistance	100 MΩ 100VDC
Compensated Temperature Range	32°F to 140°F (0°C to 60°C)
Housing	316 Stainless Steel
Cable	PUR, PE, PTFE
Diaphragm	Ceramic
Seal Ring	Viton
Weight	~1.32 lbs (600 g) [without cable]

Installation

The Tek-Sub 4800F Flush Ceramic 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

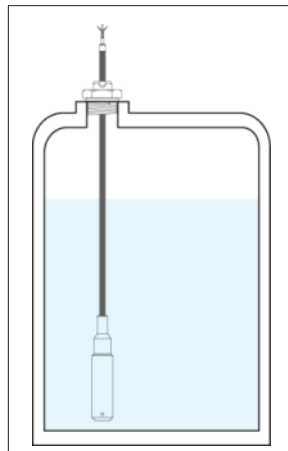
Installation with cable strain relief clamp



Mount the cable strain relief clamp

- Consider both the device's and the extension cable's weight when choosing the attaching location.
- Press the clamping jaws up. Follow the graphic's instructions to position the extension cable between the clamping jaws.
- While holding the extension cable in place, press the clamping jaws. Drop back down. The clamping jaws can be fixed in position by lightly tapping them from above

Consideration would be taken before Installation



- The transmitter FS range may be exceeded by the static pressure generated by the liquid in the installation location.
- Does the measurement liquid work well with the material used to build the transmitter?
- The protective cap's holes may or may not be sealed by the measuring liquid.
- The transmitter is installed vertically downward.
- The acted surface should be parallel to the direction of the water flow when it is flowing.

Model Chart

Example	Tek-Sub 4800F	05	43	05	P14	LP	Tek-Sub 4800F-05-43-05-P14-LP
Series	Tek-Sub 4800F						Wastewater Submersible Level Transmitter
Range		05 10 15 20					5 psig (3.5 meters H ₂ O) 10 psig (7 me ters H ₂ O) 15 psig (10.5 meters H ₂ O) 20 psig (14 meters H ₂ O)
Output			43 45 48 49				4-20mA, HART 0.5 - 4.5VDC Low-Voltage Modbus (5 VDC) Modbus RS-485
Accuracy				05			0.25% 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 JB H	Lighting Surge Protection box Moint Junction box Submersible Cable Hanger

Popular Models

Customer Service & Support



TEK-TROL LLC reserves the right to change the designs and/or materials of its products without notice. The contents of this publication are the property of TEK-TROL LLC and cannot be reproduced by any other party without written permission. All rights reserved. Copyright © 2022 TEK-TROL LLC
DOC # TEK/ITPS/CAT/25027/4800F/00



www.tek-trol.com

Tek-Trol LLC

796 Tek Drive Crystal Lake,
IL 60014, USA



+1 847-857-6076



tektrol@tek-trol.com



www.tek-trol.com

Tek-Trol is a fully owned subsidiary of TEKMATON LLC. We offer our customers a comprehensive range of products and solutions for process, power and oil & gas industries. Tek-Trol provides process measurement and control products for Flow, Level, Temperature & Pressure measurement, Control valves & Analyzer systems. We are present in 15 locations globally and are known for our knowledge, innovative solutions, reliable products and global presence.