



Technology Solutions

TEK-BAR 3800XH

Multivariable Transmitter



PRESSURE



Introduction

Tek-Trol's advanced Tek-Bar 3800XH Multivariable Transmitter provides a reliable and accurate measurement of direct process variables. Tek-Trol's Multivariable Transmitter consists of multisensor and microprocessor technologies. Therefore, the transmitter is capable of measuring three different process variables at the same time. The Tek-Bar 3800XH Multivariable Transmitter is a best-in-class design solution to obtain measurement combinations of different process variables, including DP (Differential Pressure), SP (Static Pressure), PT (Process Temperature), Flow, Totalizer and MBT (Meter Body Temperature). Its innovative and modular design supports the end user's ability to replace meter bodies, indicators or change electronic modules without affecting the overall performance, reducing maintenance costs. Also, its universal calibration and input capability minimize inventory requirements. This stable compensated flow measurement solution is used across industry verticals, including Oil & Gas, Chemical, Petrochemical, Power, Glass, Pulp & Paper, Metal and other process industries.

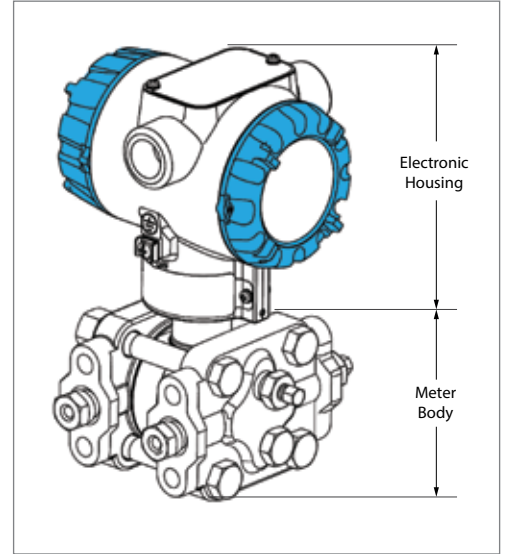


Fig 1: Tek-Bar 3800XH Multivariable Transmitter

Measuring Principle

The Tek-Bar 3800XH Multivariable Transmitter measures differential pressure, static pressure (absolute or gauge), and process temperature. The volumetric and mass flow rates are calculated through these measurements. A connected host can read the measured values and calculated flow. Tek-Trol's Digitally Enhanced (DE), HART, and Modbus RTU are the available communication protocols with digital or analog (4-20mA) output modes. The Tek-Bar 3800XH measures process temperature from an external RTD or thermocouple. Universal temperature input is available with the device as a selectable feature or as an upgradeable field option, which is license enabled. The flow calculation capability is also available with Modbus protocol as a selectable feature with the device or an enabled license, upgradeable field option, while this is a standard feature with HART and DE protocols.

Electronic Housing Component

The Tek-Bar 3800XH comprises two major assemblies, including the electronics housing and the meter body, shown in figure 2. The electronic housing elements respond to setup commands and execute the software and protocol for the different pressure measurement types. The meter body provides a connection to a process system. Various physical interface configurations are available, as determined by the mounting and mechanical connections.

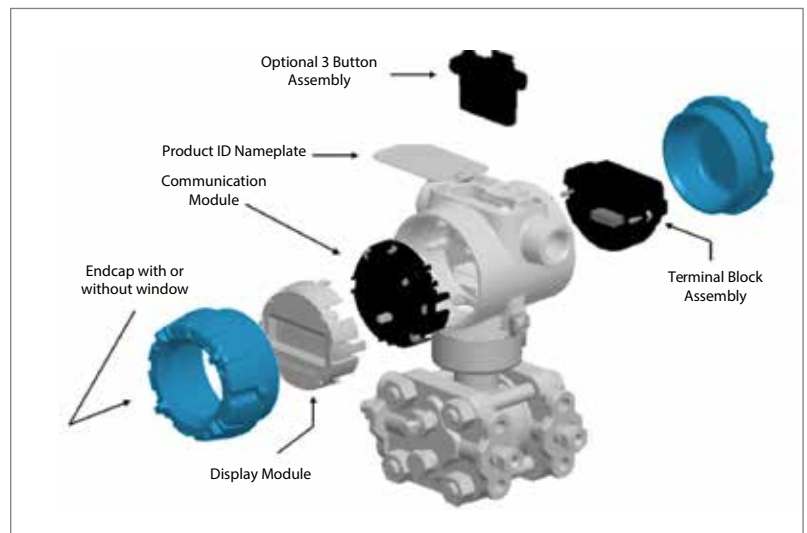


Fig 2: Assemblies of Tek-Bar 3800XH

Features

- Automatic static pressure and temperature compensation.
- Wide turndown ratio up to 400:1.
- Multiple local display capabilities.
- External zero, span and configuration capability.
- Comprehensive on-board diagnostic capabilities.
- Integral Dual Seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0.
- World-class overpressure protection.
- Field-replaceable modules reduce downtime.
- Universal transmitter terminals save installation and startup time.
- Low cost and maintenance.

Applications

- Steam and Natural Gas
- Compressed Air
- Nitrogen, Oxygen, Argon, Hydrogen Gases
- Boiler Control
- Power Plant

Specifications

Accuracy	Differential Pressure: up to $\pm 0.0400\%$ Static Pressure: up to $\pm 0.0375\%$ Temperature: up to 0.2°C Mass Flow: up to 0.6% Totalizer: up to 0.4%	
Measuring Range	Differential Pressure:	-25 to +25" H ₂ O; -400 to +400" H ₂ O; -400 to +400" H ₂ O; -2000 to +2000" H ₂ O
	Static Pressure:	0 to 100psia; 0 to 1500psia; -14.7 to 4500psig; -14.7 to 4500psig
Operating Temperature	-40 to 185°F (-40 to 85°C)	
Storage Temperature	-67 to 248°F (-55 to 120°C)	
Humidity	0 to 100%	
Output Signal	Two-wire, 4 to 20mA (HART & DE Transmitters only) Tek-Trol DE, HART 7 and Modbus protocol Modbus Model: RS-485 Half duplex communication interface All transmitters, irrespective of protocol have polarity insensitive connection	
Power Supply	HART Models: 10.8 to 42.4VDC, DE Models: 15V to 42.4VDC, Modbus (RS-485) Models: 9.5 to 30VDC	
Material	316L SS, Hastelloy® C-2762, Monel® 400 3, Tantalum, Gold-plated 316L SS, Gold-plated Hastelloy® C-276, Gold-plated Monel® 400	
Electronic Housing Material	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum	
Fill Fluid	Silicone Oil DC200, Silicone Oil 704, NEOBEE® M-20 or CTFE (Chlorotrifluoroethylene)	
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2" (50mm) vertical or horizontal pipe.	
Process Connections	¼"- NPT or ½"- NPT with adapter	
Net Weight	8.3pounds (3.8kg) with Aluminum Housing	
Approvals	ATEX, CSA, FM, IECEx, NEPSI	

Dimensional Drawing

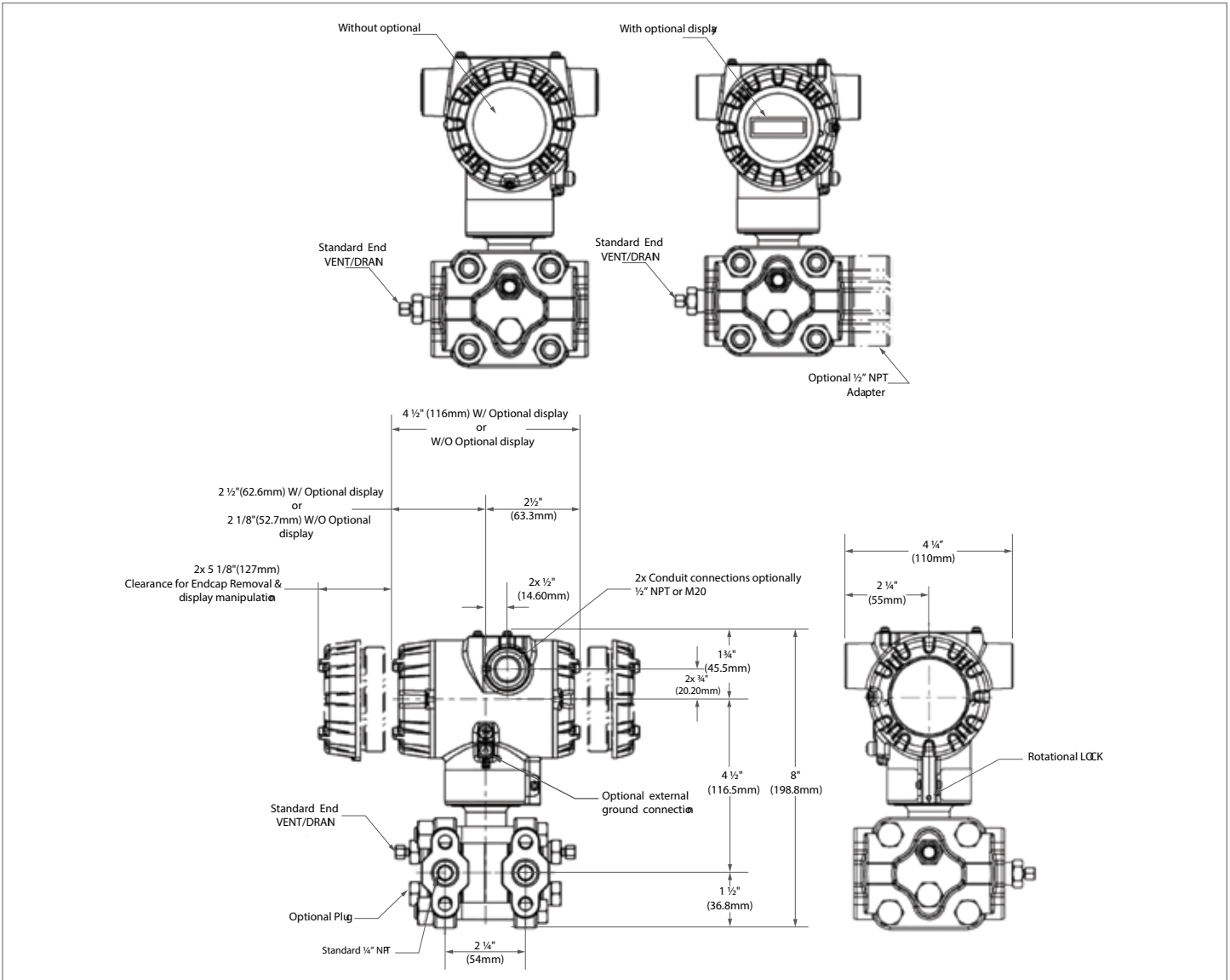


Fig 3: Mounting Dimensions

Installations

- Transmitter Mounting**

Transmitter can be attached to a 2" (50mm) vertical or horizontal pipe with optional angle or flat mounting bracket.

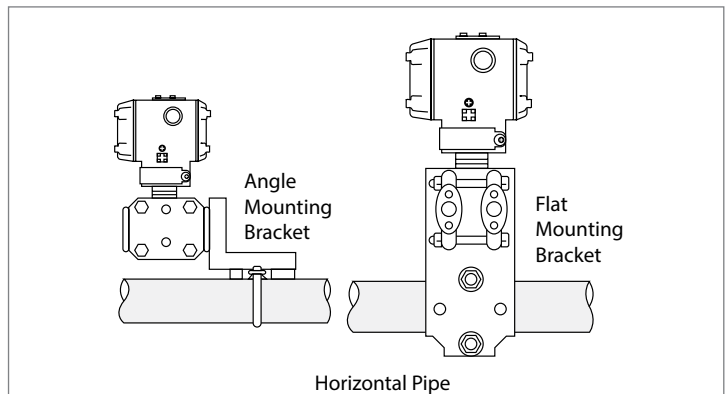


Fig 4: Transmitter Mounting

Bracket Mounting

Position bracket on 2" (50mm) and install "U" bolt around the pipe and through holes in the bracket. Secure with nuts and lock washers provided.

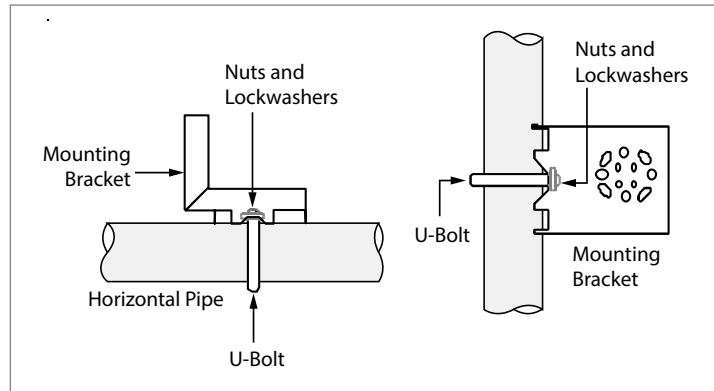


Fig 5: Angle Mounting Bracket

- **Transmitter Housing Rotation**

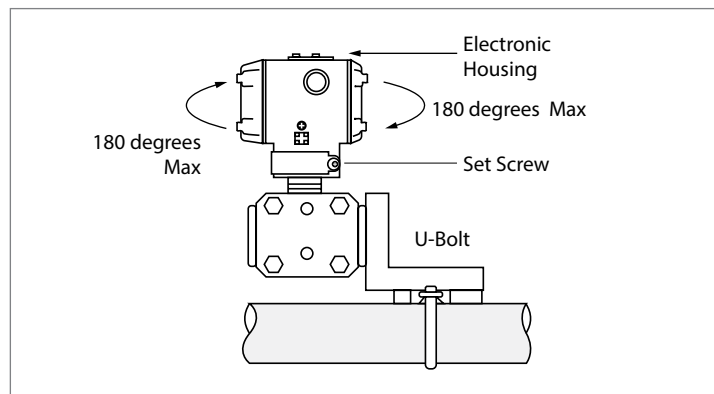


Fig 6: Rotating Transmitter Housing

- **Leveling Transmitters with Small Absolute or Differential Pressure Spans**

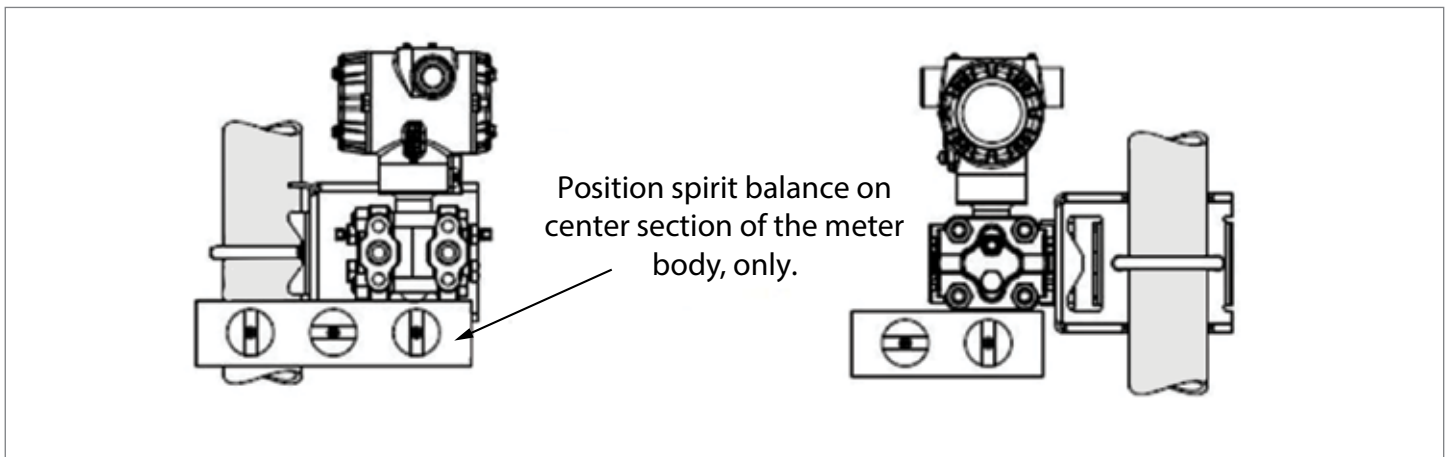


Fig 7: Using Level to Mount Transmitter

Model Chart

Example	Tek-Bar 3800XH	1	1	A	A	01	01	B	01	A	A	01	CIS	Tek-Bar 3800XH-1-1-A-A-01-01-B-01-A-A-01-CIS
Series	Tek-Bar 3800XH													Multivariable Transmitter
Range Options		1												DP: -25 to +25" H ₂ O / Static: 0 to 100psia DP: -400 to +400" H ₂ O / Static: 0 to 1500psia DP: -400 to +400" H ₂ O / Static: -14.7 to 4500psig DP: -2000 to +2000" H ₂ O / Static: -14.7 to 4500psig
Temperature Sensor input			1											Single Input - RTD (2/3/4 Wire) Single Input - Universal
Wetted or Diaphragm Material				A										316L SS Hastelloy® C-276c Monel® 400 Tantalum Gold Plated Stainless Steel1 Gold Plated Hastelloy C-2762 Gold Plated Monel 4003
Fill Fluid					A									Silicone Oil Fluorinated Oil CTFE
Process Connection						01								1/2" NPT female None (1/4" NPTF female thread Std)
Electrical Connection							01							½" NPT M20
Bolt or Nut Material								A						Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Monel K500 Super Duplex B7M
Vent or Drain Type or Location									01					Side w/Vent Side w/Center Vent End w/Vent End w/Center Vent Side w/Vent and End w/Plug None
Gasket Material										A				Teflon or PTFE Viton or Fluorocarbon Elastomer Graphite

Orientation	A	High Side Left, Low Side Right2 / Std Head Orientation
	B	Low Side Left, High Side Right2 / Std Head Orientation
	C	High Side Left, Low Side Right2 / 900 Head Rotation
Output	01	4 to 20mA dc
	02	HART Protocol
	03	DE Protocol
	04	Modbus Protocol (RS485) - Direct Process Variables
	05	Modbus Protocol (RS485) - Fully Compensated Flow
Options	CIS	Customer Interface Selections
	AS	Application Software (Diagnostics)
	OL	Output Limit Failsafe and Write Protect Settings
	GC	General Configuration



Fig 8: Side view of 3800XH Multivariable Transmitter

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 © 2021 TEK-TROL LLC
TEK-TROL LLC
DOC # TEK/PO/CAT/210318/3800XH/00.1



www.tek-trol.com

Tek-Trol LLC

796 Tek Drive Crystal Lake, IL 60014,
USA
Sales: +1 847-857-6076

Tek-DPro Flow Solutions

PO Box 121 Windsor, Colorado 80550,
USA
Sales: +1 847-857-6076

Tek-Trol Solutions BV

Florijnstraat 18, 4879 AH Etten-Leur,
Netherlands
Sales: +31 76-2031908

Tek-Trol Middle East FZE

SAIF Zone, Y1-067, PO BOX No.
21125, Sharjah, UAE
Sales: +971-6526-8344

Support: +1 847-857-6076

Email: tektrol@tek-trol.com

www.tek-trol.com

Tek-Trol is a fully owned subsidiary of TEKMATIION 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.