



Technology Solutions

# TEK-BAR 3120B

## Smart Gauge Pressure Transmitter



PRESSURE



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Flow | Level | Temperature | Pressure | Valves | Analyzers | Accessories | TekValSys

## Introduction

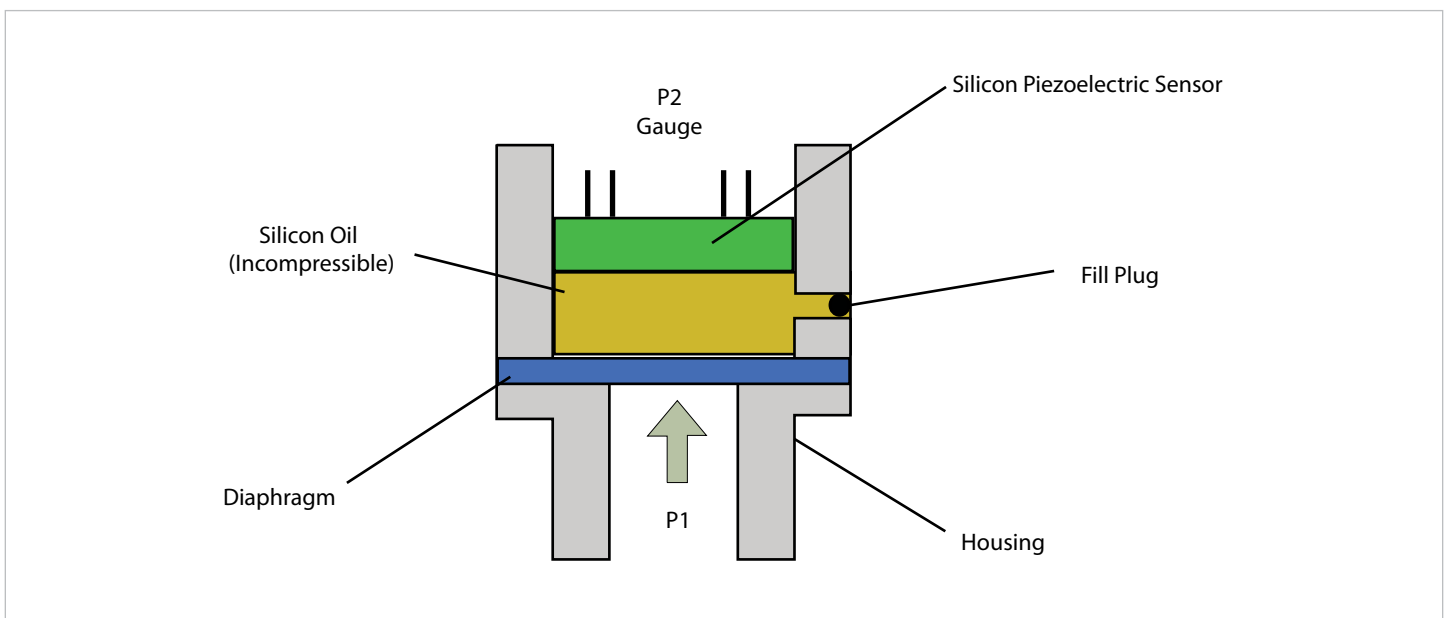
Tek-Bar 3120B Smart Gauge Pressure Transmitter uses the world's advance silicon pressure sensor technology and state of the art encapsulation technology. This is a high performance pressure transmitter with HART communication protocol and is used to measure gauge pressure. It is used to measure liquid, gas, or steam flow as well as liquid level and density of medium. It has a high accuracy of up to 0.075% of URL and has IP66 water-proof protection.

## Measuring Principle

The Tek-Bar 3120B works on the principle of mono silicon technology. The pressure sensor of the transmitter is located on the top of the metal body, away from the service fluid. This enables mechanical and thermal isolation of the sensor from the fluid in service.

When pressure is applied on the diaphragm and the silicon piezoelectric sensor, they become stressed and undergo a change in voltage resistance. This change in resistance is directly proportional to the applied pressure, which is transferred to the transmitter body using lead wires.

Built on semiconductor technology, the resistance change (piezoelectric effect) is notably higher than exhibited in standard strain gauges. Therefore, the sensitivity of mono-crystalline sensors is higher than the sensitivity of most other types.



## Benefits

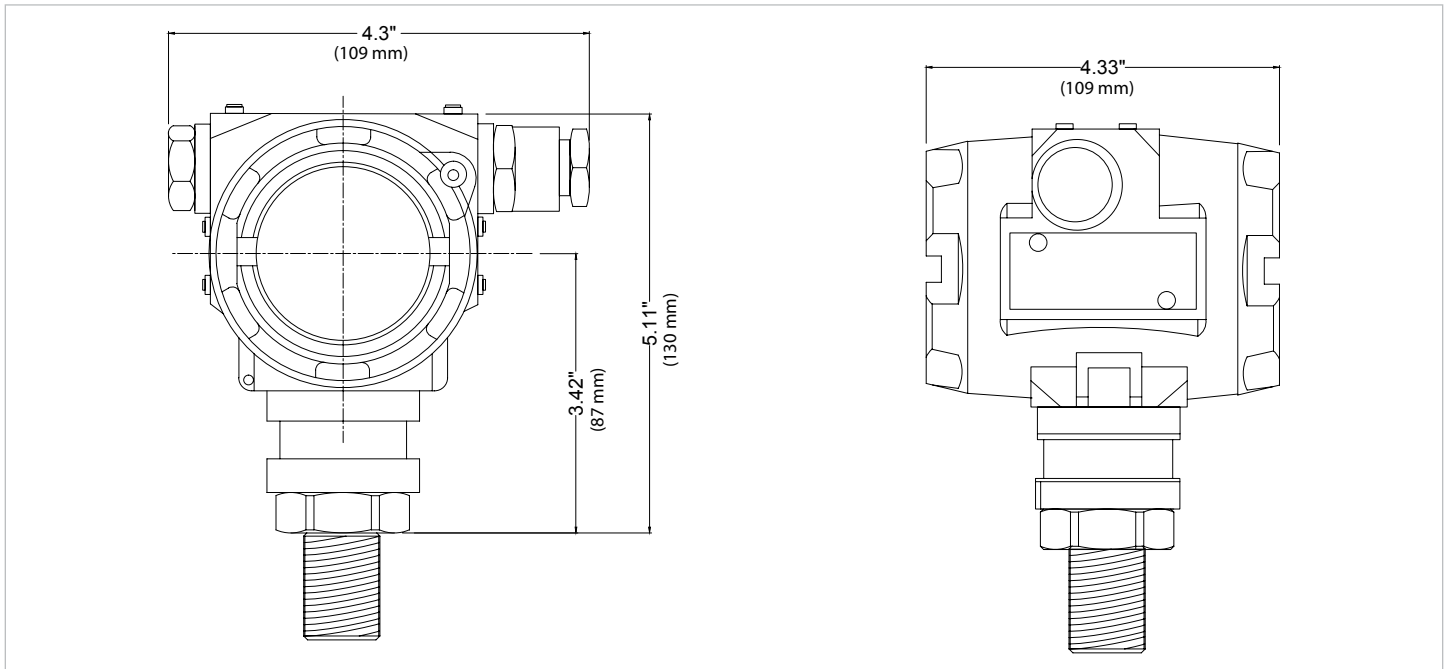
- Digital communication HART protocol
- High accuracy up to  $\pm 0.075\%$
- Various Output: 4-20 mA, digital signals with HART® Communication (Modbus RS485)
- Multiple temperature and linearity compensation to improve accuracy
- Fully-sealed and fully isolated silicon pressure sensor
- Superior stainless steel process flange
- Dual diaphragm overload protection, can easily cope with overload tests
- 355° rotation display module

## Applications

- Water and Waste Water Industry
- Pulp and Paper Industry
- Food Processing Industry

## Dimensional Drawing

### Drawing and dimension with display



## Specifications

Pressure Type	Gauge pressure
Measuring Range	5.8psig to 10000psig
Output Signal	4 mA to 20 mA with HART® Communication (Modbus RS485)
Reference Accuracy	±0.075% of F.S.
Stability	±0.2% URL/ 5 years
Ambient Temperature Effect	-4 °F to 176 °F (-20 °C to 80 °C)
Weight	About 3.43 lb (without mounting brackets and process connection accessory)
Insulation Resistance	≥20 M Ω at 100 VDC
Mounting Position Effect	Apply to any position. Max value lower than 1.6 w.c. (400 Pa) can be corrected by zero clearing function
Agency Approval	CE, CSA
Testing Standard	IEC60770

## Damping Time

Damping time of amplifier	0-100 s adjustable
Diaphragm capsule (isolated diaphragm and silicon oil filling) damping time	≤0.2 s
Start-up after power off	≤6 s
Normal services after data recovery	≤31 s

## Environmental Conditions

Working temperature	-40 °F to 180 °F (-40 °C to 82 °C)
Storage temperature	-40 °F to 230 °F (-40 °C to 110 °C)
Media temperature	Silicon oil filling: -40 °F to 248 °F (-40 °C to 120 °C)
Working humidity	5-100% RH at 104 °F
Protection class	IP66

## Power Supply

Standard/flame proof	10.5-55 VDC
HART protocol	16.5-55 VDC, communication load resistance 250 Ω
Load resistance	0-2119 Ω for working condition, 250- 600 Ω for HART protocol
Transmission distance	<1000 m
Power consumption	≤500 mW at 24 VDC, 20.8 mA

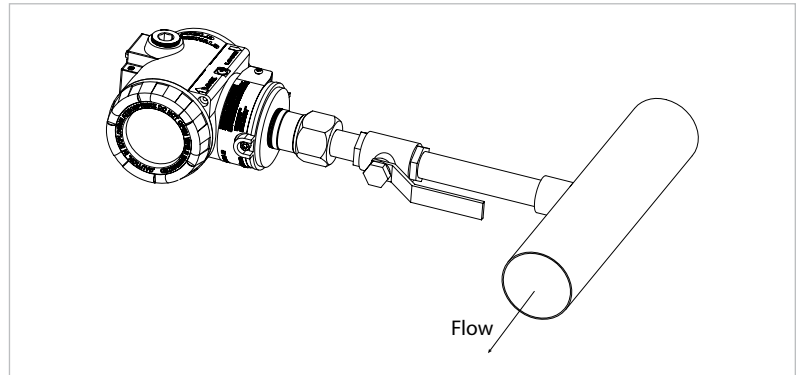
## Measuring Range and Limit

Nominal Value	Smallest Calibrated Span	Lower Range Limit (LRL)	Upper Range Limit (URL)	Overload Limit
5.8psi	8 in.WC	-14.5psi	5.8psi	145psig
36psi	2psi	-14.5psi	36psi	580psig
145psi	7.25psi	-14.5psi	145psi	870psig
435psi	22.25psi	-14.5psi	435psi	2175psig
1450psi	72.5psi	-14.5psi	1450psi	2900psig
6000psi	725psi	-14.5psi	6000psi	11600psig
10000psi	5000psi	-14.5psi	10000psi	16000psig

## Installation

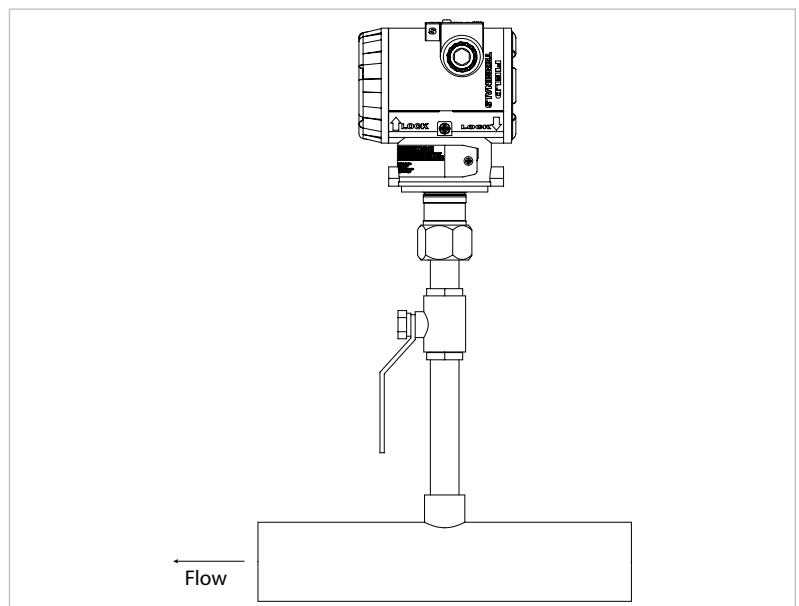
### Mounting in liquid applications

- Place taps to the side of the line.
- Mount beside or below the taps.
- Mount the transmitter so the drain/vent valves are oriented upward.



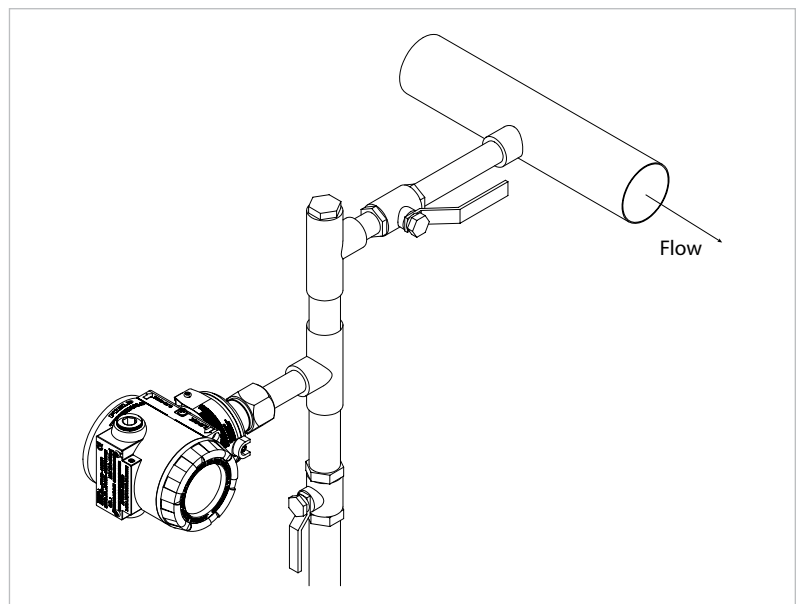
### Mounting in gas applications

- Place taps in the top or side of the line
- Mount beside or above the taps



### Mounting in steam applications

- Place taps to the side of the line.
- Mount beside or below the taps.
- Fill impulse lines with water.



## Model Chart

Example	Tek-Bar 3120B-G	3	WP	1	HC	1	BA	Tek-Bar 3120B-G-3-WP-1-HC-1-BA
Series	Tek-Bar 3120B-G							Smart Gauge Pressure Transmitter
Range Options		1 2 3 4 5 6 7						0psig to 5.8psig (40:1 Turndown, Adj. Range: -5.8psig to 5.8psig) 0psig to 36psig (40:1 Turndown, Adj. Range: -14.5psig to 36psig) 0psig to 145psig (40:1 Turndown, Adj. Range: -14.5psig to 145psig) 0psig to 435psig (40:1 Turndown, Adj. Range: -14.5psig to 435psig) 0psig to 1450psig (40:1 Turndown, Adj. Range: -14.5psig to 1450psig) 0psig to 6000psig (8:1 Turndown, Adj. Range: -14.5psig to 6000psig) 0psig to 10000psig (2:1 Turndown, Adj. Range: -14.5psig to 10000psig)
Approval Rating			WP CSA					General Purpose NEMA 4X/IP66 CSA Class I Div I Explosion-Proof
Process Connections				1 X				½" NPT Male Diaphragm Seal
Diaphragm Material					HC			Hastelloy C
Electrical Connections						1		½" NPT Female
Options							CC FC BA TAG	Custom Calibration with 5 point Calibration Certificate Factory Configuration, No Certificate Stainless Steel Bracket (Angle type) with SST Bolts Custom Etching of the Name Plate (Must specify on P.O.)

## Popular Models

Model Number	Description
3120B-G-1-WP-1-HC-1	GP Pressure Transmitter, 0-5.8psig, LCD
3120B-G-2-WP-1-HC-1	GP Pressure Transmitter, 0-36psig, LCD
3120B-G-3-WP-1-HC-1	GP Pressure Transmitter, 0-145psig, LCD
3120B-G-4-WP-1-HC-1	GP Pressure Transmitter, 0-435psig, LCD
3120B-G-5-WP-1-HC-1	GP Pressure Transmitter, 0-1450psig, LCD
3120B-G-6-WP-1-HC-1	GP Pressure Transmitter, 0-6000psig, LCD
3120B-G-7-WP-1-HC-1	GP Pressure Transmitter, 0-10000psig, LCD

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