



Technology Solutions

# TEK-HYDRO 4500A-G

## Gauge Pressure Level Transmitter



LEVEL



## Introduction

Tek-Hydro 4500A-G series Gauge Pressure Level Transmitter is a commonly used instrument which measures the level of a liquid in a tank. It is a simple device used in a wide range of liquids, including corrosive, non-corrosive and abrasive liquids and slurries in tanks of any size. It can handle broad temperature and pressure ranges under different process conditions. It is a multi-variable instrument which measures not only the liquid level, but also other parameters such as the flow rate and density.

## Working Principle

The device does not measure the liquid level directly, but infers it based on the liquid's hydrostatic pressure which is the pressure exerted by the liquid in the tank.

It is calculated using the following formula:

$$P_g = h \times \rho g$$

Where,

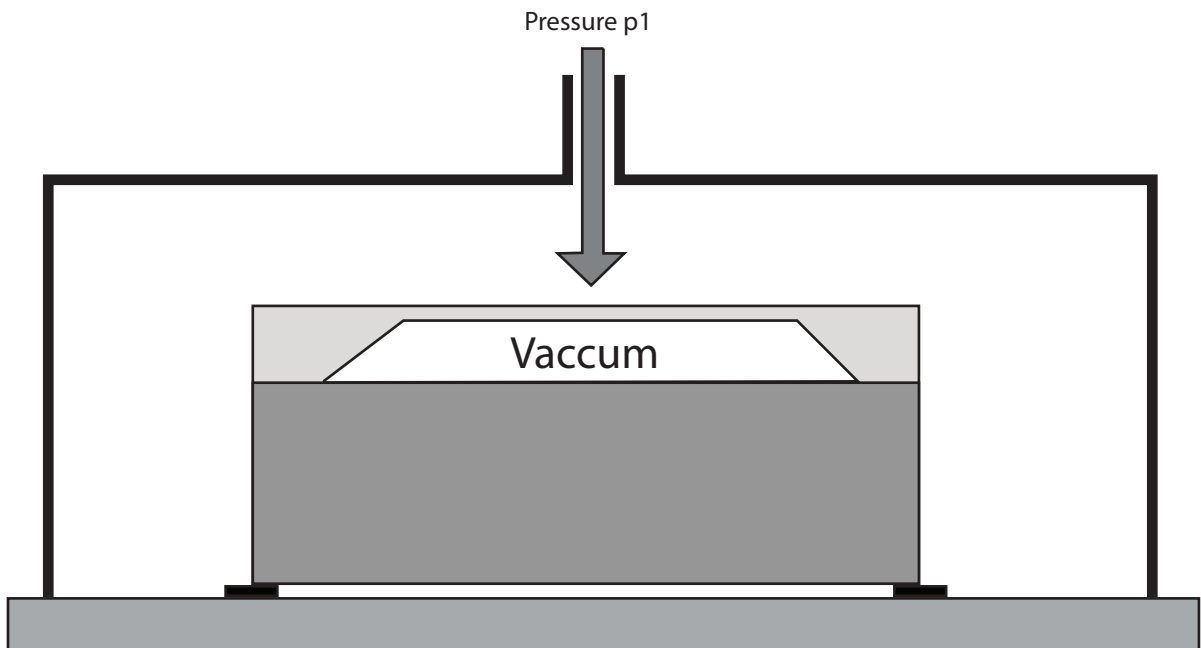
$P_g$  = Hydrostatic pressure of the liquid

$h$  = Liquid level

$\rho g$  = Specific gravity of the liquid

The liquid level is thus derived as follows:

$$h = P_g / \rho g$$



A diaphragm which comes into direct contact with the liquid in the tank constitutes the sensing element of the transmitter. Some transmitters use remote seals in case of corrosive or abrasive liquids. A remote seal protects the sensor from the liquid and enables the pressure to be measured from a distance. It consists of a diaphragm that senses pressure and a capillary that connects to the transmitter. When the liquid in the tank exerts pressure against the remote seal diaphragm, it deflects and exerts a force on the liquid inside the capillary. This force is then transferred to the diaphragm in the transmitter, causing it to deflect. The liquid pressure is measured depending on this deflection. The above mentioned equation shows that the liquid level is directly proportional to the hydrostatic pressure.

## Benefits

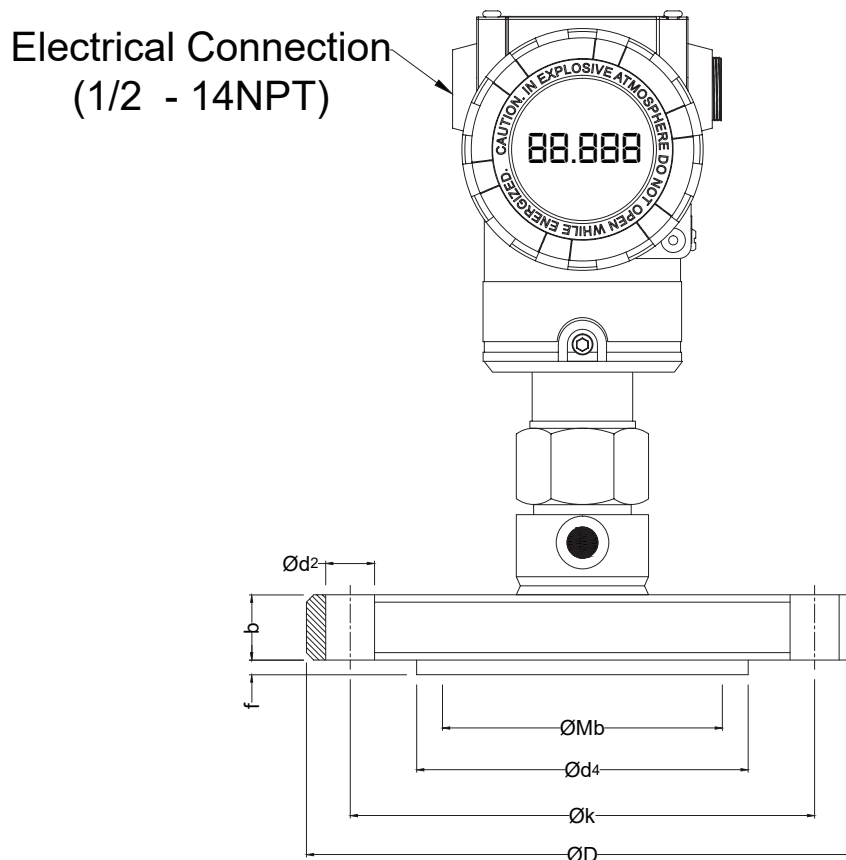
- Operator can calibrate device using zero/span button, no hand-held calibrator required.
- Digital communication HART protocol.
- Fail-safe mode process function for detecting any abnormal condition occurred.
- High accuracy up to  $\pm 0.075\%$ .
- Automatic ambient temperature compensation improves performance of device.
- Various Output: 4-20 mA, digital signals.
- The mounting bracket rotated up to  $360^\circ$  and LCD display up to  $270^\circ$ .
- EEPROM write protection.
- Wide range of certifications and approval.

## Application

- It is used in level monitoring applications.

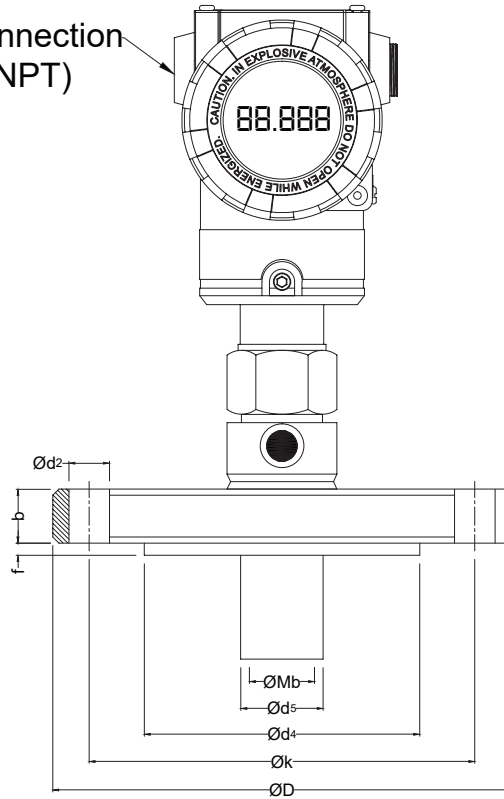
## Dimensional Drawing

Tek-Hydro 4500A-G-LFD

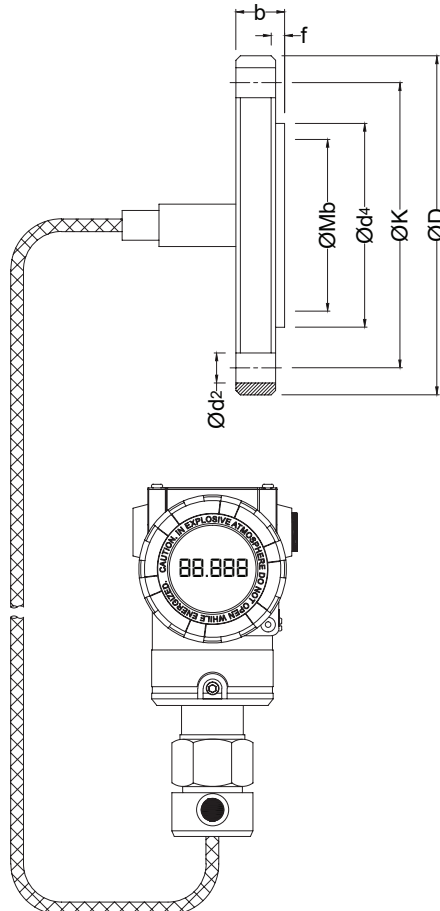


Tek-Hydro 4500A-G-LED

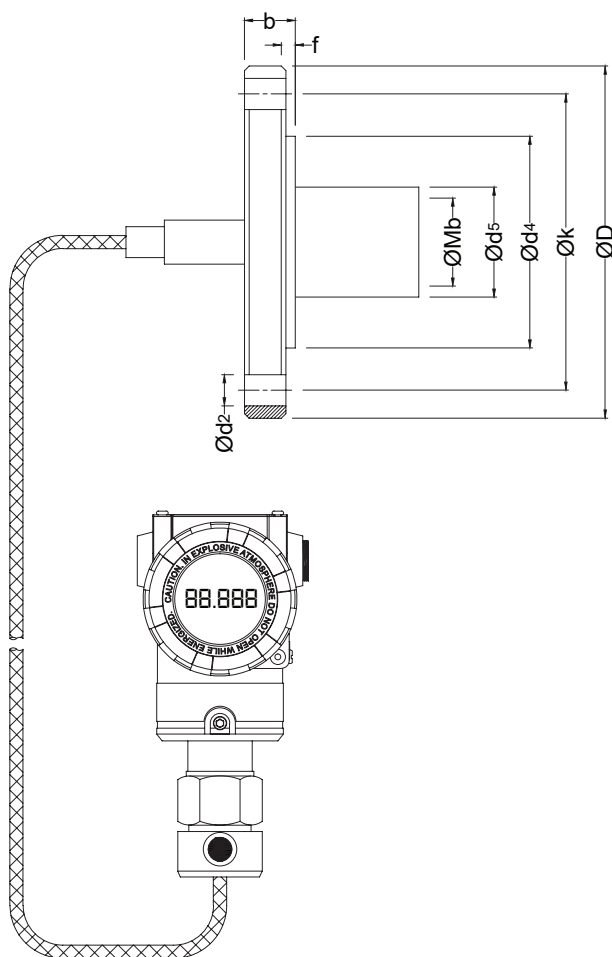
Electrical Connection  
(1/2 - 14NPT)



Tek-Hydro 4500A-G-LFS



## Tek-Hydro 4500A-G-LES



## Dimensions

### Dimensions for Extended Diaphragm Seal

Flange Size: 3" (0.25 ft)

Size	Flange Rating	Mb	D	b	d <sup>2</sup>	k	f	d <sup>4</sup>	X
3" (0.25 ft)	ANSI Class 150	3.5" (0.29 ft)	7.48" (0.62 ft)	0.94" (0.07 ft)	0.74" (0.06 ft)	6" (0.5 ft)	0.05" (0.004 ft)	5" (0.41 ft)	0.15" (0.01 ft)
3" (0.25 ft)	ANSI Class 300		8.26" (0.68 ft)	1.14" (0.09)	0.86" (0.07 ft)	6.63" (0.55 ft)			0.31" (0.02 ft)
2" (0.16 ft)	ANSI Class 150	2.4" (0.2 ft)	5.98" (0.49 ft)	0.74" (0.06 ft)	0.74" (0.06 ft)	4.74" (0.39 ft)	0.05" (0.004 ft)	3.6" (0.3 ft)	0.15" (0.01 ft)
2" (0.16 ft)	ANSI Class 300		6.49" (0.54 ft)	0.86" (0.07 ft)		5" (0.41 ft)			0.31" (0.02 ft)

Size	Flange Rating	Mb	D	b	d <sup>2</sup>	k	f	d <sup>4</sup>	d <sup>5</sup>	X
3" (0.25 ft)	ANSI Class 150	2.99" (0.24 ft)	7.48" (0.62 ft)	0.94" (0.07 ft)	0.74" (0.06 ft)	6" (0.5 ft)	0.05" (0.004 ft)	5" (0.41 ft)	2.99" (0.24 ft)	0.15" (0.01 ft)
3" (0.25 ft)	ANSI Class 300		8.26" (0.68 ft)	1.14" (0.09 ft)	0.86" (0.07 ft)	6.63" (0.55 ft)				0.31" (0.02 ft)
2" (0.16 ft)	ANSI Class 150	1.88" (0.15 ft)	5.98" (0.49 ft)	0.74" (0.06 ft)	0.74" (0.06 ft)	4.74" (0.39 ft)	0.05" (0.004 ft)	3.6" (0.03 ft)	1.88" (0.15 ft)	0.15" (0.01 ft)
3" (0.25 ft)	ANSI Class 300		8.26" (0.68 ft)	1.14" (0.09 ft)		6.63" (0.55 ft)				0.31" (0.02 ft)

## Specifications

### Pressure Sensor Ranges

Code	Min/Max Span	LRV/URV
3	0.217 to 21 psi	14.5 to 21 psi
4	2.17 to 217 psi	-14.5 to 217 psi
5	7.25 to 725 psi	0 to 725 psi
6	36 to 3625 psi	0 to 3625 psi
7	87 to 8700 psi	0 to 8700 psi

### Electrical Specification

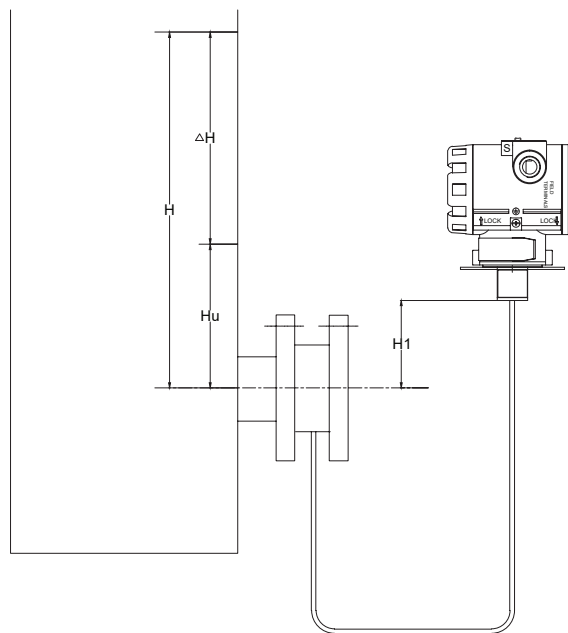
Power Supply	12 to 45 VDC
HART loop resistance	250 to 550 ohm
Output Signal	4 to 20 mA DC / HART
Isolation	500 Vrms (707 VDC)

### Performance Specifications

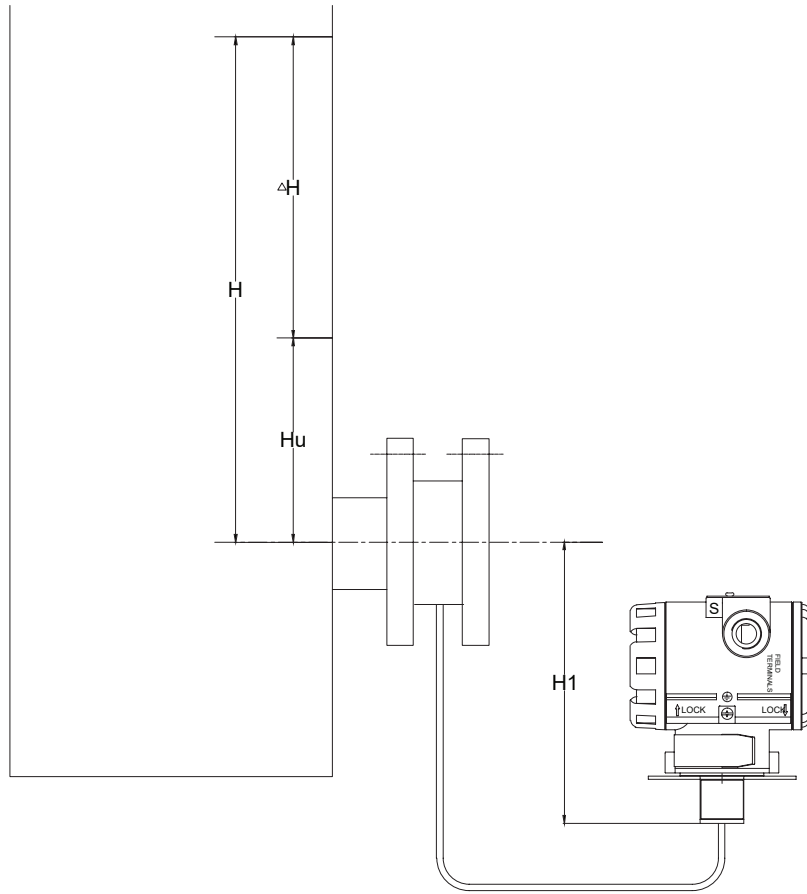
Reference Accuracy	± 0.075% of Span
Ambient Temperature Effect	±[0.025%URL+0.125% Span]/28°C
Stability	±0.1% URL for 12 Months
Operating Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
LCD Meter Operating Temperature	-22 °F to 176 °F (-30 °C to 80 °C)
Humidity Limits	5% to 98% RH
Process Temperature Limit	-40 °F to 248 °F (-40 °C to 120 °C)
Power Supply Effect	±0.005% of Span per Volt

Physical Specifications	
Isolating Diaphragm	316L SST
Drain and Vent Valve	316 SST
Flange and Adapter	316 SST
O-ring	Viton, PTFE
Bolts & Bolting Flange	316 SST
Fill Fluid	Silicon 200
	Neobee
Capillary Length	5 ft
Electrical Connection Housing	½" - 14 NPTF Conduit/Epoxy Coated-Aluminum
	G1/2 Conduit/Epoxy Coated-Aluminum
Enclosure Rating	General Purpose (IP67/ NEMA4X)
Approvals	KOSHA Flameproof Approval: Ex d IIC T6
	KTL Intrinsic Safety Approval: Ex ia IIC
	ATEX (KEMA) Flameproof: Ex d IIC T6 or T5
	ATEX (DEKRA) Intrinsic Safety
	FM/FMC Explosion proof (for USA and Canada)
	Class I/II/III, Division ½, Group A-D/E-G

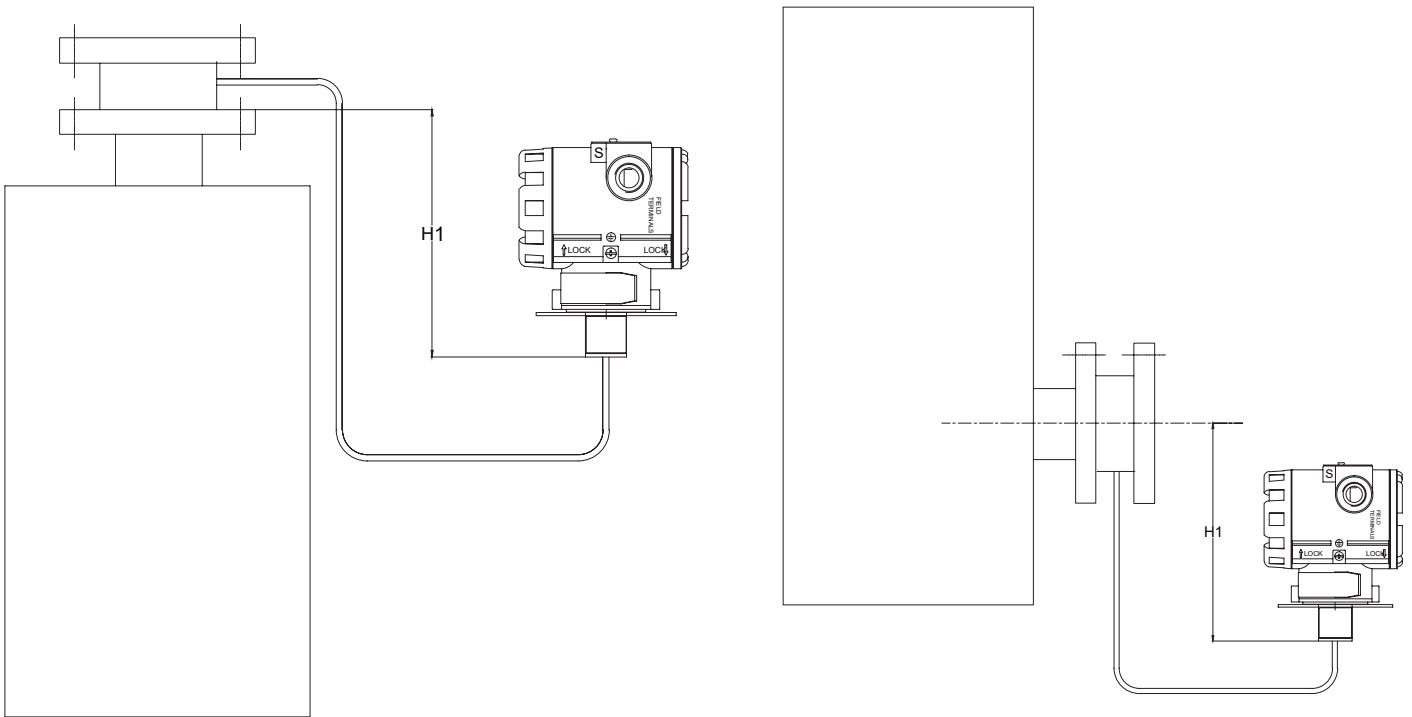
## Installation



Pressure transmitter above the measuring point



Pressure transmitter below the measuring point



Pressure transmitter for absolute pressure always below the measuring point



# Model Chart

EXAMPLE	Tek-Hydro 4500A-G	1	WP	X	1	LED	S2	A1	0	S	2	0	FC	4500A-G-1-WP-X-1-LED-S2-A1-0-S-2-0-FC
Series	Tek-Hydro 4500A-G													Gauge Pressure Level Transmitter
Range		1 2 3 4 5 6												0-5.8 psig (40:1 Turndown, Adj. Range: -14.5 to 5.8 psig) 0-36 psig (40:1 Turndown, Adj. Range: -14.5 to 36 psig) 0-145 psig (40:1 Turndown, Adj. Range: -14.5 to 145 psig) 0-435 psig (40:1 Turndown, Adj. Range: -14.5 to 435 psig) 0-1450 psig (40:1 Turndown, Adj. Range: -14.5 to 1450 psig) 0-5800 psig (8:1 Turndown, Adj. Range: -14.5 to 5800 psig)
Approval Rating			FM ATEX WP											FM Approval ATEX Approved General Purpose NEMA 4X/IP66
Process Connection				X										Diaphragm Seal
Electrical Connection					1									½" Female NPT
Diaphragm Seal Type						LED LES LFD LFS								Extended Diaphragm Seal direct mount Extended Diaphragm Seal capillary type Flush Diaphragm Seal direct mount Flush Diaphragm Seal capillary type
Mounting Flange							S2 S3							2" (50 mm) 316L Stainless Steel 3" (80 mm) 316L Stainless Steel
Mounting Flange Rating								A1 A2 D1 D2 J1 J2						ANSI CLASS 150 ANSI CLASS 300 DIN PN 10/16 DIN PN 25/40 JIS 10K JIS 20K
Extension Length									0 5 10 15					No extension standard option for flush mount 2" (50 mm) 4" (100 mm) 6" (150 mm)
Wetted Parts										H P S T				Hastelloy C-276 Diaphragm PTFE and 316L Stainless Steel Diaphragm 316L Stainless Steel Diaphragm Tantalum Diaphragm
Fill Fluid											2			D.C. Silicon 200 (-40 °F to 400 °F)
Capillary Length												X		Capillary length 0-30' (whole numbers only)
Options														CC Custom Calibration with 5 point Calibration Certificate FC Factory Configuration, No Certificate BA Stainless Steel Bracket (Angel Type) with SS Bolts BF Stainless Steel Bracket (Flat Type) with SS Bolts TAG Custom Laser Etched Name Plate

# Customer Service and Support



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