

Pressure Transmitter (PPT - 604) Differential Pressure Transmitter (PDPT - 801)



PANAM ENGINEERS LTD.

An ISO 9001:2008 Company

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HART
FIELD COMMUNICATIONS PROTOCOL

ATEX Ex **CE**

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Introduction

PANAM Pressure Transmitter (PPT-604) & Differential Pressure Transmitter (PDPT-801) can accurately measure the pressure of gases, vapors and liquids used in refineries, petrochemicals, oil & gas, power, chemical industries, food processing and pharmaceutical industries. Based on a mechanical and rugged silicon sensor, this transmitters are suitable for long term stable measurements.

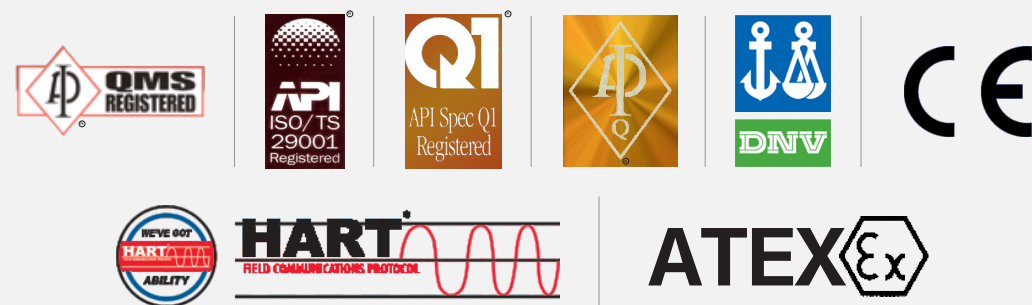
Pressure Transmitter (PPT-604)

- Capacitance Sensor with Diaphragm
- Maximum range turndown 100:1
- Non-Intrusive magnetic Controls
- Backlight LCD display for dark environment
- Separate electronics and connection components
- Housing can be rotated through 360°

Differential Pressure Transmitter (PDPT-801)

- Optional flush mounted
- Silicon sensor with diaphragm
- Separate electronics and connection compartments
- Easily accessible operation elements on the outside of the instrument
- Housing can be rotated through 360°
- From -1 bar ...400 bar

- API ISO 9001:2008 Certified
- API ISO TS 29001 Certified
- API Spec Q1 Certified
- API 6A Certified
- API 6D Certified
- API 600 Certified
- API 602 Certified
- MFG. Facility Approved by ABS Ind.
- ASTM F1387-99
- Leak Test Approved by TUV
- CE Marking
- HART (Field Communications Protocol)
- ATEX



Ordering Code

Differential Pressure Transmitter (PDPT-801)

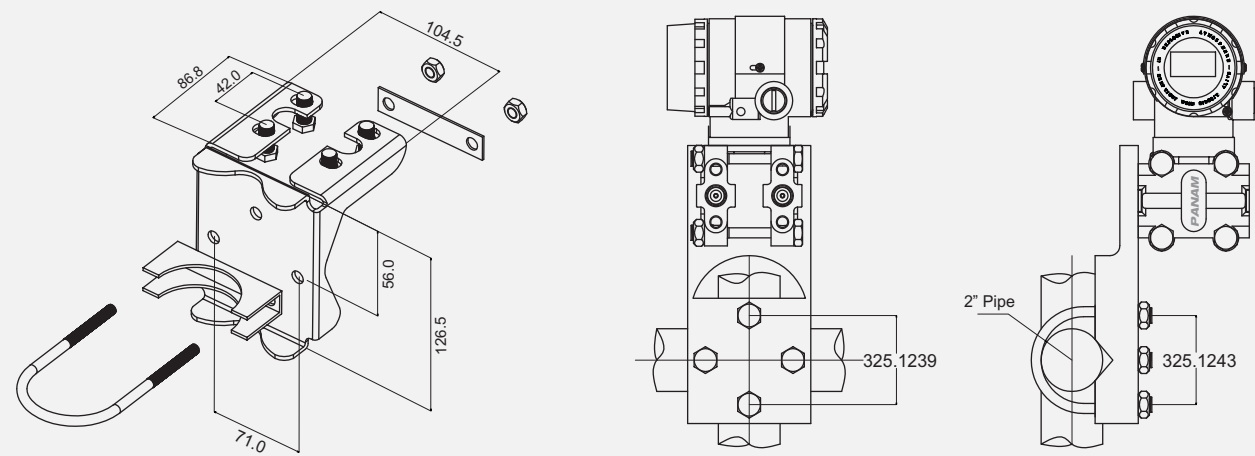
For example: DPTH1DP31D11EL1

Codes		Description
MODEL	DPT	Differential Pressure Transmitter
Comm. type	* H -----	HART Protocol
Fill Fluid	* 1 -----	Silicon oil
	2 -----	Inert
Range	* DP 3	-1.160 to 1.160 psi
	DP 4	-5.801 to 5.801 psi
	DP 5	-29.007 to 29.007 psi
	DP 6	-100 to 100 psi
	DP 7	-300 to 300 psi
	DP 8	-1000 to 1000 psi
Wetted Parts Material	* 1 -----	SS 316
	2 -----	Others
LCD Indicator	* D -----	With display
Display		Current
		% Range
		Pv
Electrical Connection	* 1 -----	M20*1.5F, Two electrical connections
	2 -----	½ - 14 NPTF, Two electrical connections
Process Connection	* 1 -----	Without process connector (1/4 NPTF on the cover flanges)
	2 -----	½ NPTF
Enclosure	I -----	Intrinsic safe
	* E -----	Ex proof
Mounting brackets	F -----	Flat type (for horizontal piping)
	* L -----	L type (for vertical piping)
	N -----	None
Label	* 1 -----	Standard
	2 -----	Customer

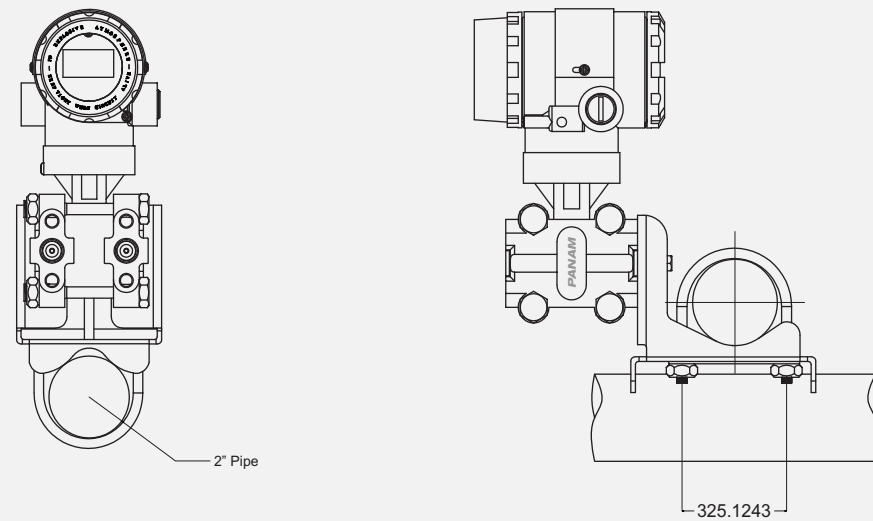
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Clamp Details

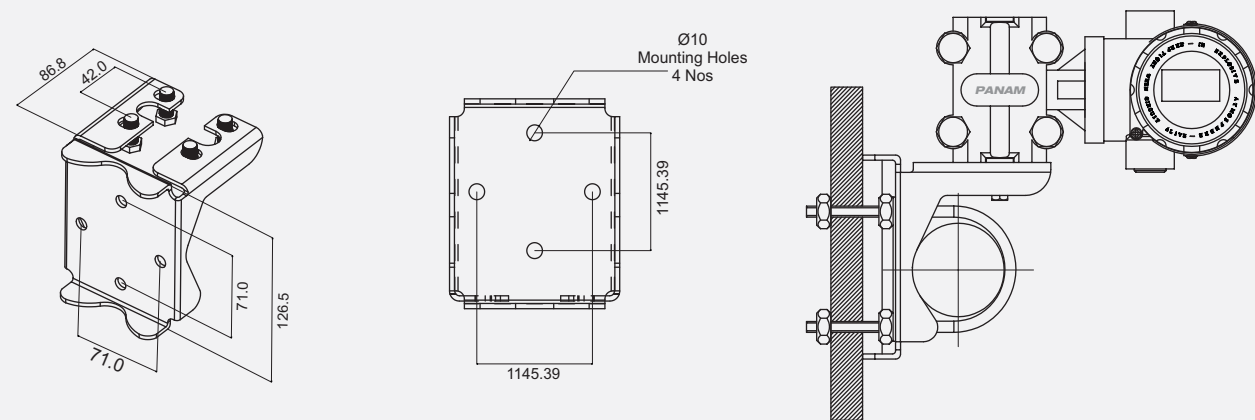
Differential Pressure Transmitter (PDPT-801)



Pipe Mounting



Panel Mounting



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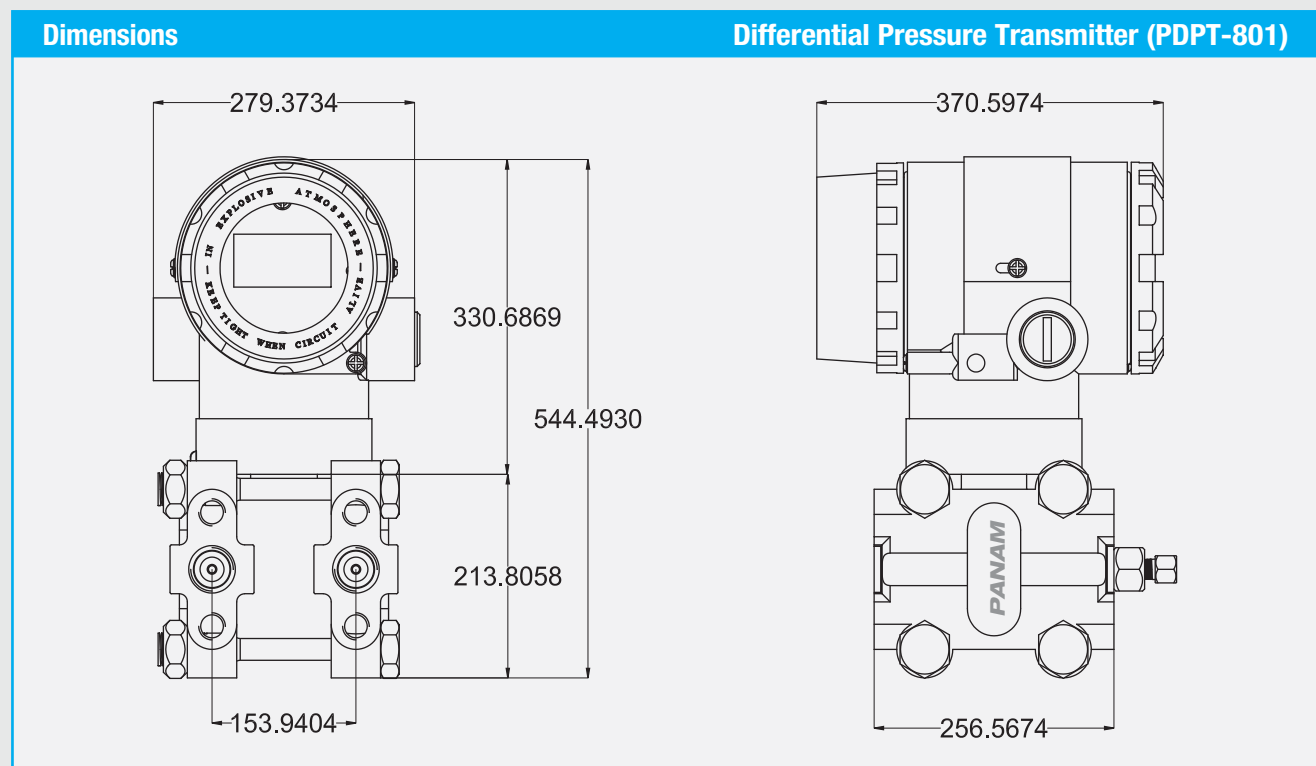
Pressure Transmitter (PPT - 604)

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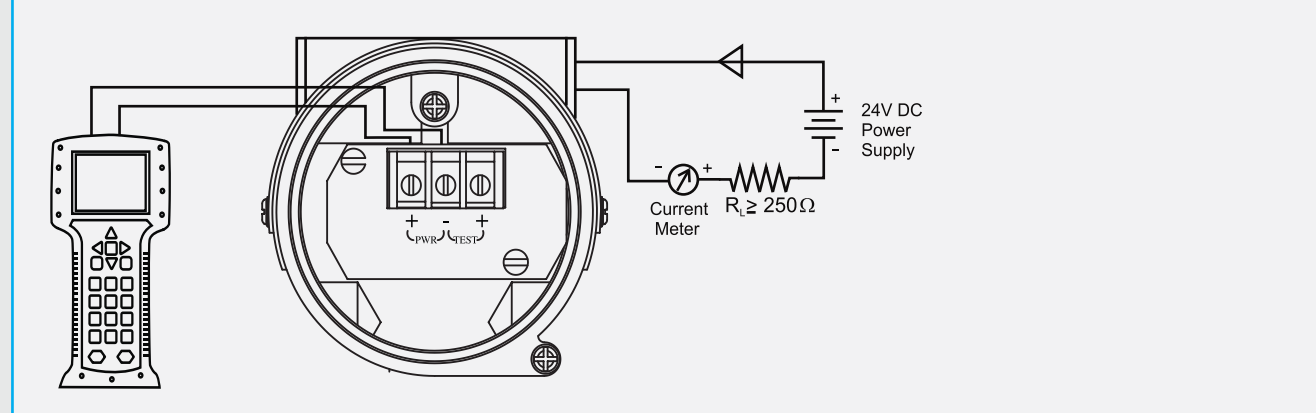
Differential Pressure Transmitter (PDPT - 801)

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Output signal		Pressure Transmitter (PPT-604)
2-wire-system		4...20mA with super imposed signal for HART protocol, digital communication
Supply Voltage		12.5 45 VDC
Signal Range		3.8mA 20.8mA
Signal on Alarm		3.8mA / 20.8mA / other on request
Electrical Protection		
Insulation Resistance		> 250 MΩ
Short Circuit Protection		Permanent
Reverse Polarity Protection		Yes
Over Voltage Protection		50.0 V
Performance		
Accuracy		± 0.075% or better of FSD @ turn down ratio of 40:1 for abs Pr. range ± 0.1% FSD
Power Supply Effect		Negligible
Vibration Effect		± 0.2% of span / g@200Hz
Installation Position Effect		Zero shift which can be calibrated out, no span effect
Thermal Effect		± 0.05% of FS / 10°C
Compensated temp. range of sensor		-20 80°C
Permissible load		< 50 (V-12) Ω
Stability		0.1% of FSD / year
Switch on delay		5s
Damping		0.30 sec
Response time		200 ms
Adjustability		Two push buttons
Communication resistance		Typ. 250 Ω
Application Conditions		
Humidity		5 95%
Ambient & Operation		-40° to -85° C (without display), -20° to -70° C (with display),
Storage		-40° to -85° C
Ingress Protection		IP 67
Electromagnetic compatibility (EMC)		Interference immunity and interference emission compliance with IEC 61000.4-3:1995



Electrical Connections

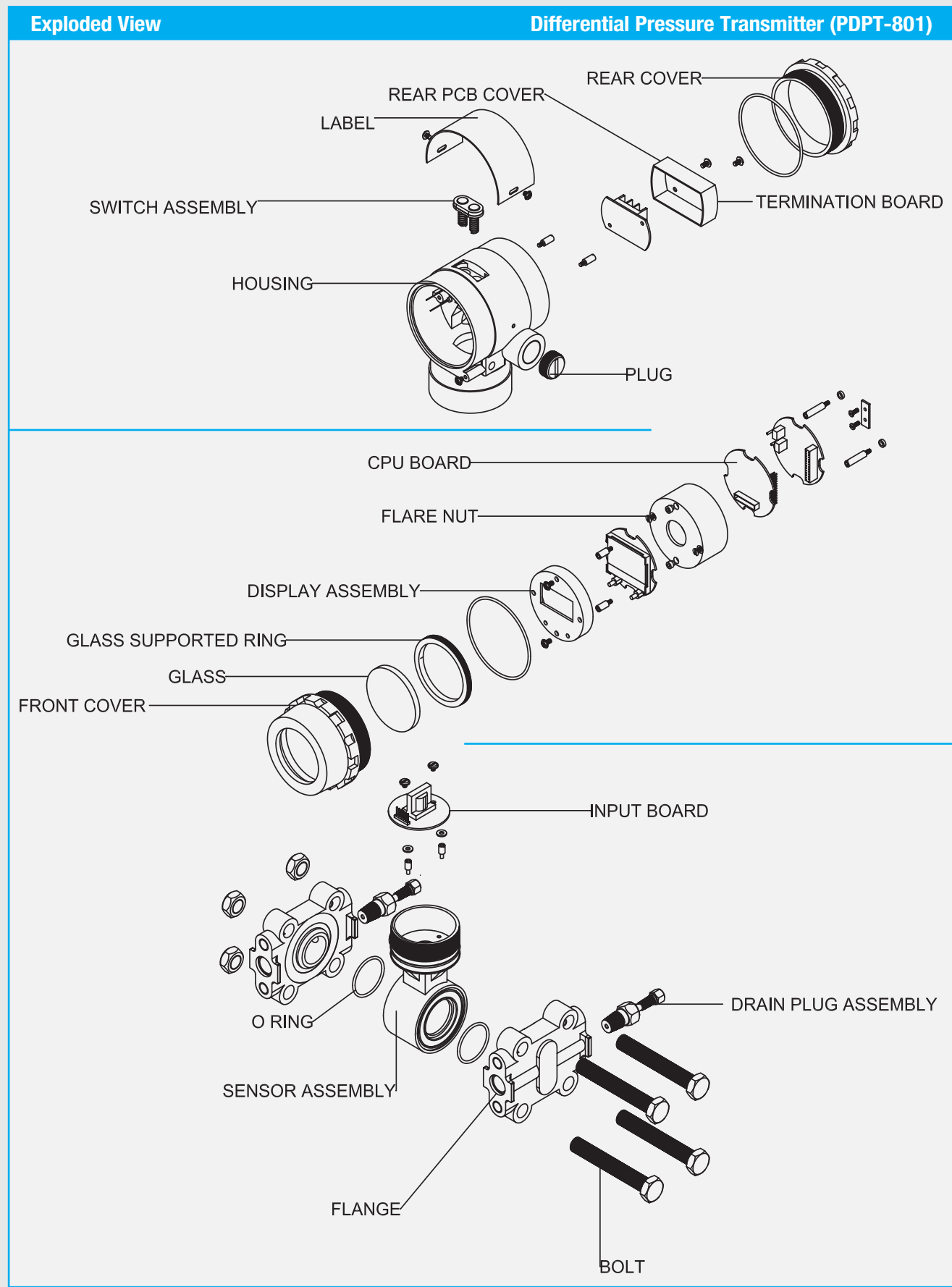


Operation

The PDPT-801 can be operated in the following ways:

- 1) Using the two keys on top of the transmitter - without opening cover
- 2) Using two buttons on LCD display
- 3) Using hand held 'HART' communicator

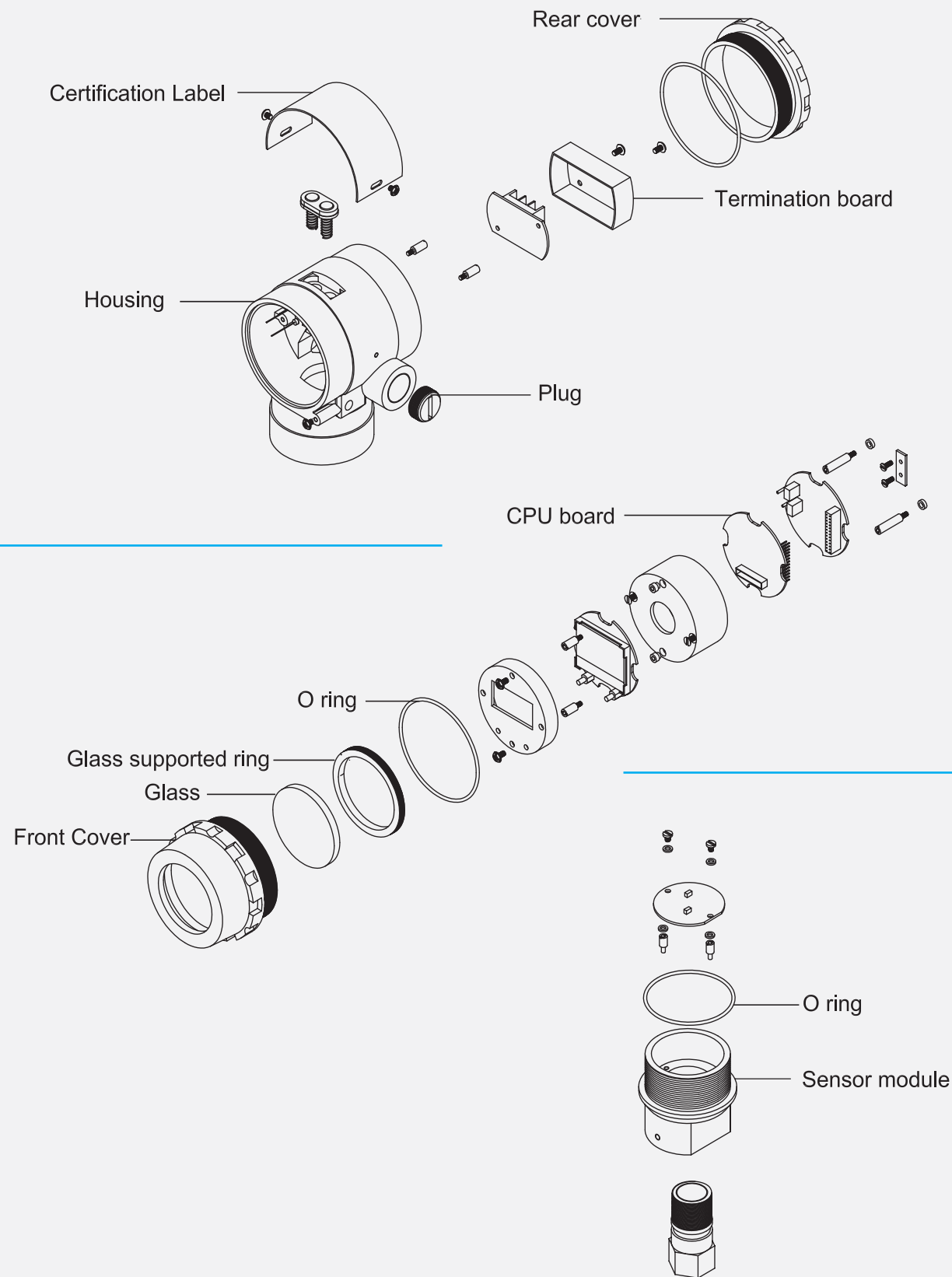
Operation of push buttons
The PDPT-801 can be programmed via two buttons. Following parameters can be adjusted. scaling, decimal point, damping, display model, fix out put current, and reset.



Physical Specification		Pressure Transmitter (PPT-604)	
Housing	SS 316 / Pr. die cast Al.		
Sensor	Piezo sensor - SS 316 / Capacitance		
Flange Material	SS 316		
Diaphragm Material	SS 316		
Seals	Viton / Others : on request		
Wetted parts	SS 316		
Process connection	1/2" NPT & other on request		
Sight glass	Laminated safety glass		
Cable entry	M20 standard & 1/2" NPT on request		
Others			
Display Type	Visible range: 32.5 x 22.5mm Main display: 5-digit 7-segment Digit height: 8mm Additional display: 8-digit 7-segment Digit height: 5mm Bar graph: 50 bar meter with 2% resolution		
Display Range	-1.9.9.9.9 to 9.9.9.9		
Installation position	Any		
Weight	Standard model approx. 1.3 kg		
Range (Absolute)			
Code	Lower Range Value	Upper Range Value	Minium Span
PA 3	0 Bar	0.078 Bar	0.00195
PA 4	0 Bar	0.382 Bar	0.00955
PA 5	0 Bar	0.981 Bar	0.024525
PA 6	0 Bar	6.895 Bar	0.172375
Range (Gauge)			
Code	Lower Range Value	Upper Range Value	Minium Span
P 3	-1.01 Bar	0.078 Bar	0.00195
P 4	-1.01 Bar	0.382 Bar	0.00955
P 5	-1.01 Bar	0.981 Bar	0.024525
P 6	-1.01 Bar	6.895 Bar	0.172375
P 7	-1.01 Bar	20.684 Bar	0.5171
P 8	-1.01 Bar	68.948 Bar	1.7237
P 9	-1.01 Bar	206.843 Bar	5.171075

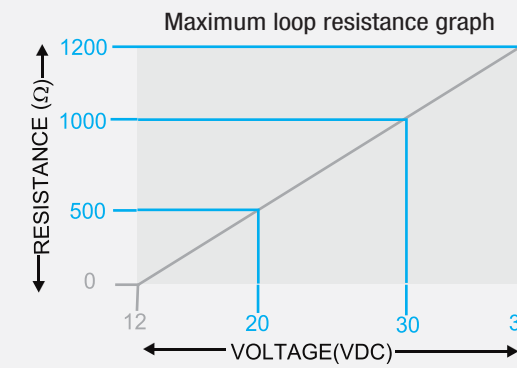
Exploded View

Pressure Transmitter (PPT-604)



Output Load Limitations

Differential Pressure Transmitter (PDPT-801)



Loop resistance = 50 x (Power voltage - 12)

The HART Communication Requires a minimal loop resistance of 250Ω for communication

Physical Specification

Diaphragm	SS 316 / SS 316L, others on request
Flange	SS 316
Drain / Vent Valve	SS 316
Media wetted O-ring	Viton, others on request
Electronic housing	SS 316 / die-cast aluminum
Flange screws, identification plate	Carbon steel with zinc coating
Mounting brackets (option)	Carbon steel with zinc coating or with painting
Sight glass	Laminated safety glass
Filling Fluid	Silicon oil / others on request

Others

Display Type	Visible range: 32.5 x 22.5mm Main display: 5-digit Digit height: 8mm Additional display: 8-digit 7 segment Digit height: 5mm Bar graph: 50 bar meter with 2% resolution
Display Range	-1.9.9.9.9 to 9.9.9.9.9
Weight	Standard model approx. 3.4 Kg

Range

Code	Lower Range Value	Upper Range Value	Minium Span
DP 3	-1.160 psi (-0.080 bar)	1.160 psi (0.080 bar)	0.029 psi (0.002 bar)
DP 4	-5.801 psi (-0.400 bar)	5.801 psi (0.400 bar)	0.145 psi (0.010 bar)
DP 5	-29.007 psi (-2.0 bar)	29.007 psi (2.0 bar)	0.725 psi (0.050 bar)
DP 6	-100 psi (-6.895 bar)	100 psi (6.895 bar)	5 psi (0.344 bar)
DP 7	-300 psi (-20.648 bar)	300 psi (20.648 bar)	15 psi (1.034 bar)
DP 8	-1000 psi (-68.948 bar)	1000 psi (68.948 bar)	50 psi (3.447 bar)

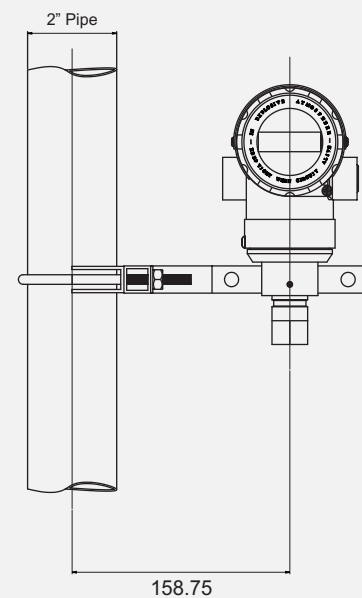
Process Flange Orientation

Pressure Transmitter (PPT-604)

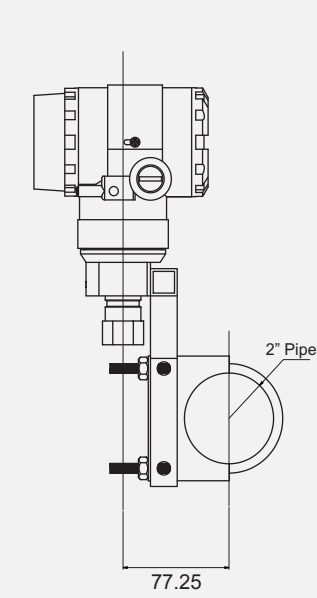
- 1) Mount the process flanges with sufficient clearance for process connections
- 2) For safety reasons, place the drain / vent valves so the process fluid is directed away from possible human contact when the vents are used
- 3) In addition, Consider the accessibility for a testing or calibration input
- 4) Most transmitters are calibrated in the horizontal position
- 5) Mounting the transmitter in any other position will shift the zero point to the equivalent amount of the liquid head pressure caused by the varied mounting position

Mounting Bracket

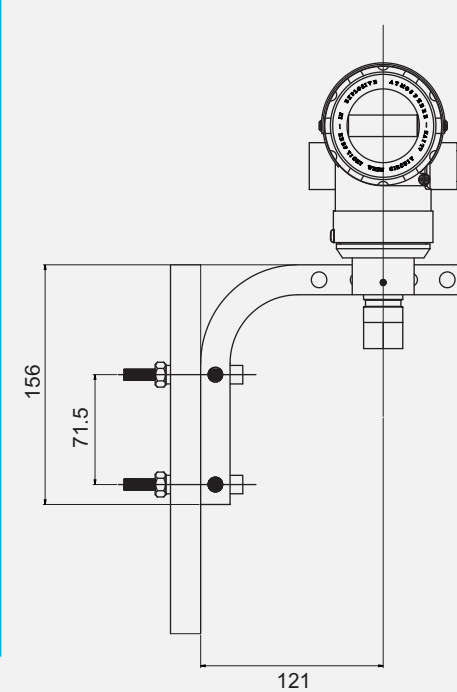
Pipe Mounting



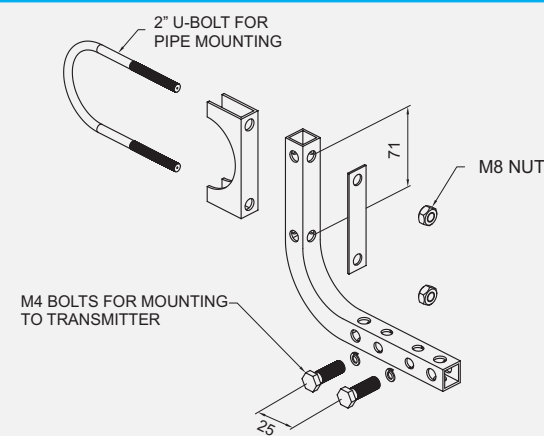
Pipe Mounting



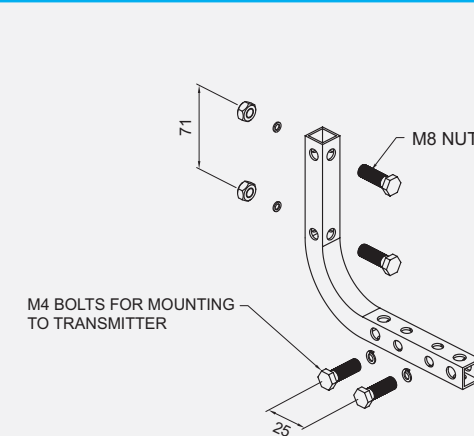
Panel Mounting



Pipe Mounting



Panel / Wall Mounting



Ordering Code

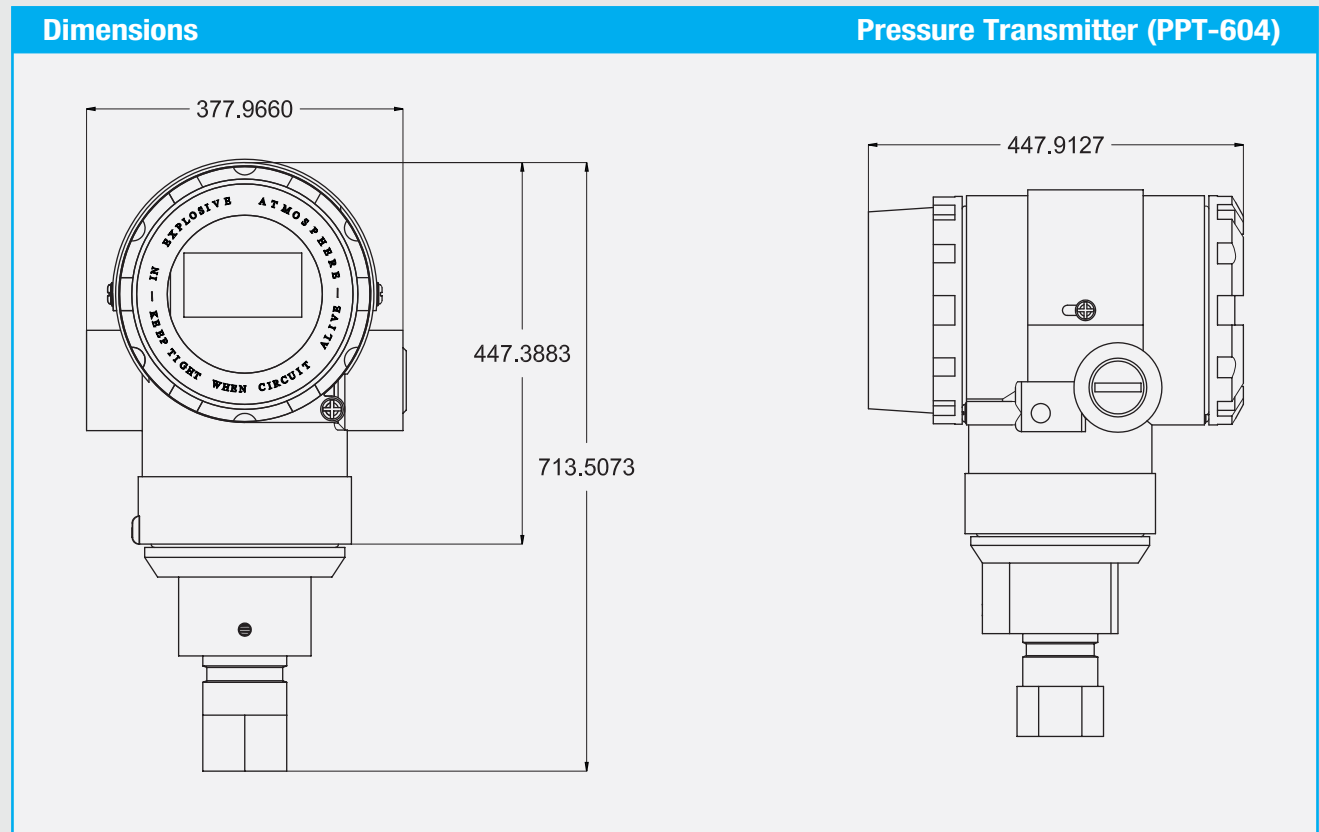
Pressure Transmitter (PPT-604)

For example: PPTGHKG1D1QE1

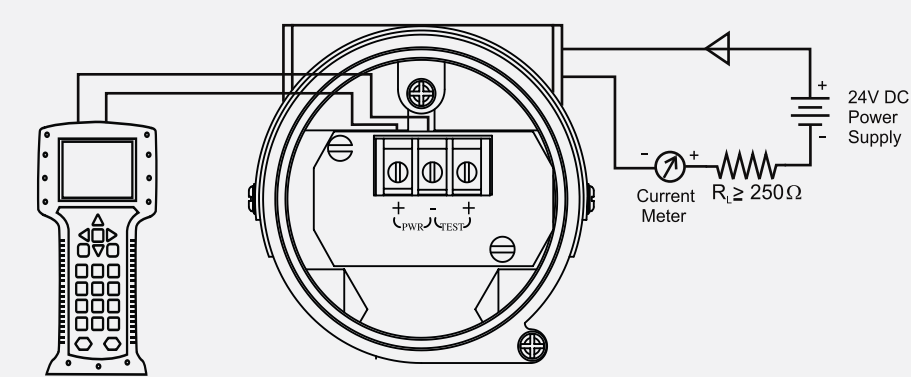
Codes		Description
MODEL	PPT	Pressure Transmitter
Measurement	* G -----	Gauge pr.
	* A -----	Absolute pr.
Comm. type	* H -----	HART Protocol
Sensor	* K -----	Silicon piezo sensor
	* C -----	Capacitance sensor
Range	* G -----	Refer table range gauge
	* A -----	Refer table range absolute
Wetted Parts Material	* 1 -----	SS 316
	* 2 -----	Others
LCD Indicator	* D -----	With display
Display		Current
		% Range
		Pv
Electrical Connection	* 1 -----	1-M20
	* 2 -----	2 1/2 NPT
Process Connection	* Q -----	1/2 NPTF
	* C -----	Others
Enclosure	* I -----	Intrinsic safe
	* E -----	Ex proof
Label	* 1 -----	Standard
	* 2 -----	Customer

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Output Signal		Differential Pressure Transmitter (PDPT-801)
2-wire-system		4...20mA with super imposed signal for HART protocol, digital communication
Supply Voltage		12.0 36 VDC
Signal Range		3.8mA 20.8mA
Signal on Alarm		3.8mA / 20.8mA / other on request
Electrical Protection		
Insulation Resistance		> 250 MΩ
Short Circuit Protection		Permanent
Reverse Polarity Protection		Yes
Over Voltage Protection		50.0 V
Intrinsic Safety		Exd IIC-T4
Humidity		5 98%
Ambient and Operation		-40 to -80°C (without display), -20 to 70°C (with display)
Storage		-40 to -80°C
Ingress Protection		IP 67
Electromagnetic Compatibility (EMC)		Interference immunity and interference emission according to GB / T1762.2-1998, compliance with 1EC 61000-4-3:1995
Performance		
Accuracy	DP 3	0.1% accuracy for range turndown 5:1 (0.1 +0.01 XURL / SPAN)
	DP 4 DP 7	0.075% accuracy for range turndown 10:1 (0.075 +0.0075 1XURL / SPAN)
	DP 8 DP 9	0.2% accuracy for range turndown 10:1 (0.2 +0.01 XURL / SPAN)
Static Pressure Effect		Zero Error : 0.1% / 7Mpa Span Error : 0.2% / 7Mpa
Power Supply Effect		Negligible
Vibration Effect		< 0.01% of URL / g@200Hz
Installation Position Effect		Zero shift which can be calibrated out, no span effect
Thermal Effect		± 0.45% / 55°C
Static Pressure		30 bar 130 bar
Stability		0.1% of URL / year
Switch on delay		5s
Cycle time / update time		0.25s
Damping		100 sec, step : 0.1s
Response time		200 ms (without considering of electronic damping)
Self stability configuration		0 to 2%
Filter configured		0 to 160μA



Electrical Connection



Operation

The PPT-604 can be operated in the following ways:

- 1) Using the two keys on top of the transmitter - without opening cover
- 2) Using two buttons on LCD display
- 3) Using hand held 'HART' communicator

Operation of push buttons

The PPT-604 can be programmed via two buttons. Following parameters can be adjusted. scaling, decimal point, damping, display model, fix out put current, and reset.