

pro^{sense}® DPTW Series Differential Pressure Transmitters

Overview



The ProSense DPTW differential pressure transmitter series is precision engineered for accurate differential or gauge pressure measurement. The wet-wet design uses a silicon based variable capacitance sensor with stainless steel media isolation diaphragms and silicone pressure transmission fluid making it compatible with a wide variety of liquids, gases, and steam applied to both pressure sensing ports. The DPTW series is ideal for industrial, commercial, and OEM process measurement applications including differential, positive, or negative pressures; hydrostatic liquid level in pressurized or open tanks; and flow measurement using primary differential pressure flow elements such as an annular pitot tube, orifice plate or venturi tube. The DPTW series is available in pressure measurement ranges from 4 inches water column up to 400 inches water column with static (line) proof pressure of 300 psig and can easily be rescaled to a different linear pressure range and units of measure using display pushbuttons. An integral square root function also allows for the display and output of flow in instantaneous flow rate units of measure such as gallons/minute or display of integrated flow volume in units such as gallons. The integral pressure port manifold has 1/4-inch NPT female process pressure connections and includes a built-in equalizing valve used to open both ports to the line pressure during installation to prevent sensor damage or calibration shift due to overpressure. The DPTW series is powered with nominal 24VDC power and provides a two-wire, 4-20mA output signal proportional to the measured pressure. The very compact design of the DPTW series is up to 8-times smaller than conventional style DP transmitters and features a rugged NEMA 4X (IP65) rated aluminum die cast housing and rotatable 6-digit LCD display with bright LED backlight.

Features

- Wet-wet design ideal for liquid, gas, and steam measurement of differential, positive, or negative pressures, hydrostatic liquid level, and flow
- Integral pressure port manifold with 1/4 inch female process connections and built-in equalizing valve
- Digital filter function to dampen pulsations and provide a more stable output and display
- Key lock function to prevent unauthorized changes to configuration settings
- Bright backlit 6-digit LCD display
- Scaling function allows display to indicate user defined units of measure
- Internal "pushbutton" configurability allows quick range changes
- "Loop check" function allows unit to output 4-20 mA without applying pressure
- Square root extraction function for display and output of linear flow rate or display of integrated flow volume
- Up to 8X smaller than a conventional style DP transmitter
- Easily rotatable display, 90° increments
- Rugged NEMA 4X (IP65) aluminum die cast housing
- 3 year warranty



Applications

- Pressurized and non-pressurized tank levels
- Flow measurement (liquid / gas / steam)
- Pollution monitoring equipment
- Filter monitoring
- Pressure across flue gas duct
- Furnace combustion airflow rate
- Pump speed control
- Valve pressure drop monitoring

DPTW Series Differential Pressure Transmitter								
Part Number	Description	Measuring Range	Output	Process Connection	Operating Voltage	Wt(lb)	Price	Drawing Link
DPTW-4	ProSense differential pressure transmitter	0 to 4in of water column	4-20mA	1/4in female NPT process connection	12-32 VDC	1.0 lb	\$875.00	PDF
DPTW-8		0 to 8in of water column					\$875.00	PDF
DPTW-20		0 to 20in of water column					\$875.00	PDF
DPTW-40		0 to 40in of water column					\$875.00	PDF
DPTW-80		0 to 80in of water column					\$875.00	PDF
DPTW-200		0 to 200in of water column					\$875.00	PDF
DPTW-400		0 to 400in of water column					\$875.00	PDF



DPTW Series Differential Pressure Transmitters

DPTW Series Specifications	
Performance Specifications	
Reference Temperature	73°F (23°C)
Accuracy	± 0.50% of span (URL*) Includes the effects of linearity, hysteresis, and repeatability
Display Accuracy	± 0.5% of span (URL) + 1 digit
Stability	± 0.25% of span (URL)/year
Output Resolution	0.1% of span (URL)
Temperature Effects	Temperature Effects: (-10°C to 60°C) ± 0.03% FS/C°
Memory	Permanently stored in EEPROM nonvolatile memory
Environmental Specifications	
Temperature Limits	Storage: 5°F to 150°F (-15°C to 65°C) Operating: 14°F to 140°F (-10°C to 60°C) Medium: 14°F to 140°F (-10°C to 60°C)** Compensated: 14°F to 140°F (-10°C to 60°C)
Functional Specifications	
Rangeability/Adjustment	Zero -10% to 110% Span Span -10% to 110% Span (Accuracy and output resolution based upon full scale (URL) value)
Unit of Measure	inH ₂ O (IWC) or User defined
Static (Line) Pressure	Pressure Range: 4 inH ₂ O to 400 inH ₂ O Proof: 300 psi Burst: 800 psi
Single Side (Differential)	Pressure Range: ≤ 8 inH ₂ O Proof: 30 psid Burst: 130 psid
	Pressure Range: ≥ 20 inH ₂ O Proof: 100 psid Burst: 130 psid
Static (Line) Pressure Effects	Pressure Range: Effect: ≥ 20 inH ₂ O ± 0.3% Range/100 psi (URL) 8 inH ₂ O ± 0.7% Range/100 psi (URL) 4 inH ₂ O ± 1.5% Range/100 psi (URL)
Response Time	100ms (when Filter Function set to 0)
Filter Function	0, 2, 4, 8, or 16 seconds
Vibration	5g's 150Hz
Shock Effect	10g's 16ms
Electrical Specifications	
Output Signal	4-20 mA (2 Wire)
Load Impedance	545Ω @ 24VDC (refer to Load Limitations graph)
Supply Voltage	12-32 Vdc
Insulation Resistance	50Vdc (>100 MΩ)
EMC Compliance	EMC Directive 2014/30/EU EN 61326-1:2013 EN 61326-2-3:2013 (EMI Class A/EMS Table 2)

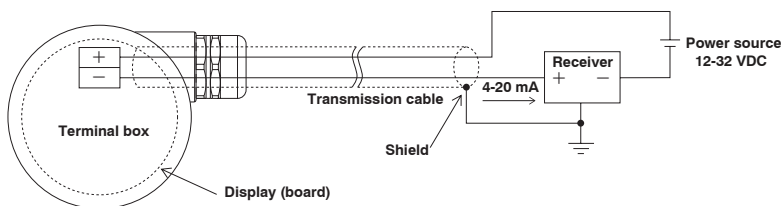
* Upper Range Limit (URL)

** For steam or other higher temperature processes, ensure that the temperature at the DPTW process connections do not exceed the Medium Temperature Limits. For steam use longer sensing lines and/or a siphon (pigtail) and fill with water to lower the medium temperature to acceptable limits.

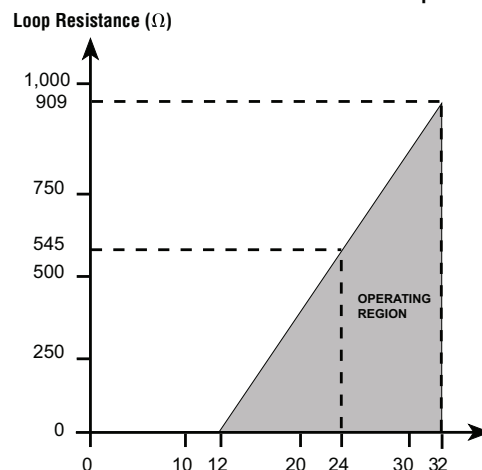
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DPTW Series Specifications	
Physical Specifications	
Environmental Rating	IP65 / NEMA 4X
Mounting	Mounting bracket included
Process Connections	Manifold with 1/4 NPT Female ports and equalizing valve
Display	6-digit LCD with LED backlight, 10mm character height
Display Update	500ms
Electrical Connection	PG13.5 Female Preinstalled Cable Gland (Cable diameters 0.35" to 0.47") Terminal block: 14-22 AWG stranded or solid wire
Wetted Material	
Diaphragm	316 SS, Viton® & Alumina Ceramic
Process Connection	316 SS
Media Compatibility	Fluids and gases compatible with 316 SS, Viton® and Alumina Ceramic
Non-Wetted Material	
Enclosure	Aluminum, epoxy coated

Wiring



Load Limitations 4–20mA Output



LOOP SUPPLY VOLTAGE

$$V_{min} = 12V + [0.022A \cdot (R_L)]$$

(Includes a 10% safety factor)

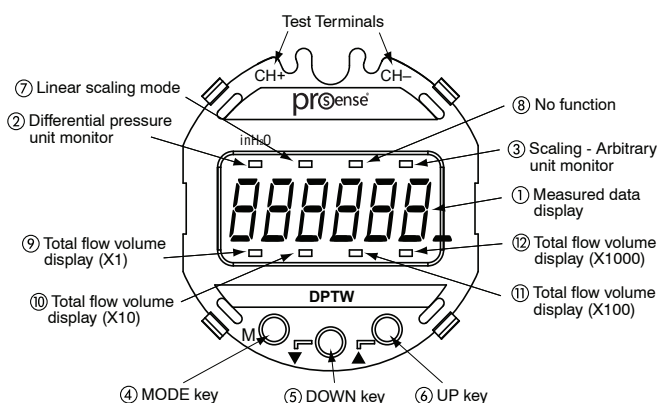
$$R_L = R_S + R_W$$

R_L = Loop Resistance (ohms)

R_S = Sense Resistance (ohms)

R_W = Wire Resistance (ohms)

Display and Keypad

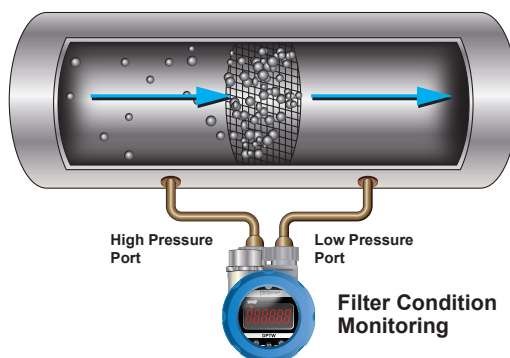
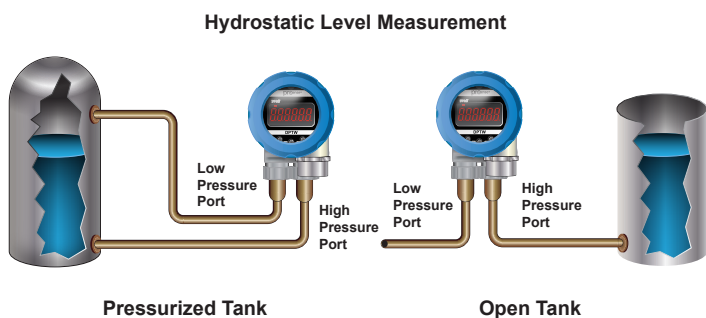
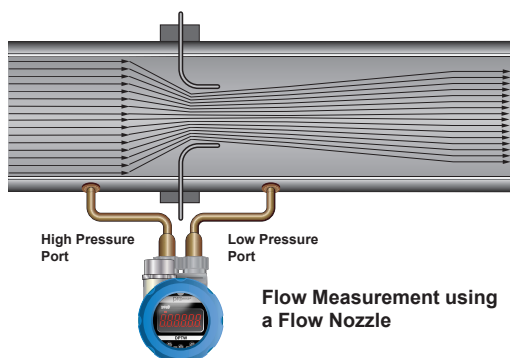
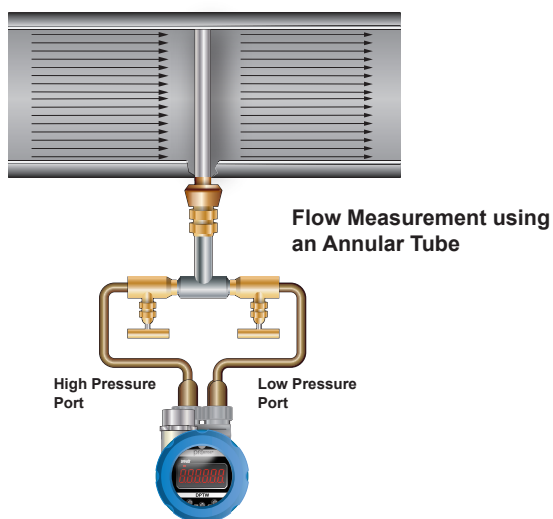
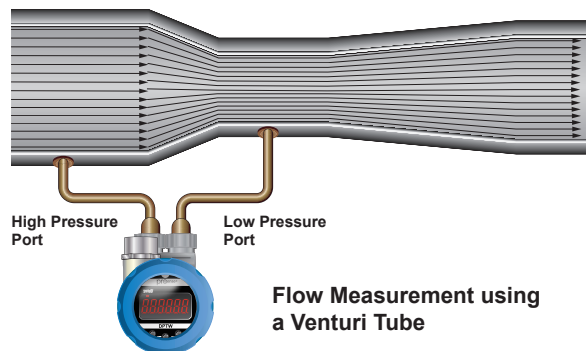
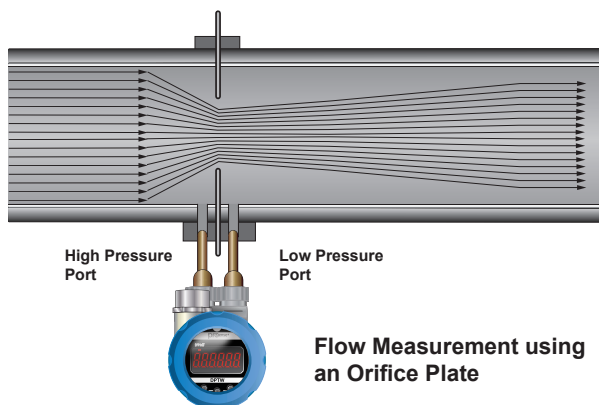


DESIGNATION	FUNCTION
① Measured data display	Differential pressure, linear scaling value are displayed.
② Differential pressure unit monitor	When this unit monitor is ON, the differential pressure (inH ₂ O) is indicated on the measured data display.
③ Scaling; arbitrary unit monitor	When this unit monitor is ON, the scaling value of an arbitrary unit (linear scaling), is indicated on the measured data display.
④ MODE key (M)	This key is used to switch the setting mode and the measurement mode and to change the setting item.
⑤ DOWN key	This key is used to change (decrease) and select the set value.
⑥ UP key	This key is used to change (increase) and select the set value and to shift from the measurement mode to the zero adjustment mode.

DESIGNATION	FUNCTION
⑦ Linear scaling mode	Used to adjust zero/span values to 4-20mA output signal.
⑧ No function	None
⑨ to ⑫ Total flow volume display	Display multiplier, X1, X10, X100, X1000

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Application Examples



Click on the thumbnail or go to <https://www.automationdirect.com/VID-PR-0006> for a short video on the DPTW ProSense Differential Pressure Transmitters

