

PPT90 Analog Differential Pressure Transducer

Wet/wet differential · 1 to 500 PSID · line pressure to 2,000 PSI



FEATURES

- Wet/wet differential measurement — liquid, air & gas
- 1 to 500 PSID ranges
- Static line pressure to 2,000 PSI
- $\pm 0.15\%$ FS typical linearity
- ~ 1 ms response time
- 0.5–4.5 V, 0–5 V, 0–10 V or 4–20 mA output
- -40 to 125 °C operating temperature
- SS316L ports and diaphragms
- Design conforms to GB 3836.4

DIFFERENTIAL

WET / WET

SS316L

DESCRIPTION

The PPT90 is a differential pressure transducer for industrial applications that need to measure the difference between two live process pressures — filter clogging, flow across orifices and heat exchangers, and level in pressurized tanks. Both ports accept liquid, air or gas.

An oil-filled MEMS piezoresistive element is isolated on both sides by SS316L diaphragms. A rigid stainless housing isolates the element from mounting stress, and on-board conditioning delivers a fast, calibrated analog output.

APPLICATIONS

- Filter clogging measurement
- Industrial automation
- Oil & gas
- Compressors
- Catalytic converter / exhaust
- Mil/Aero

MAXIMUM ENVIRONMENTAL RATINGS

Operating Temperature	-40 to 125 °C	Overpressure, high side	2× full scale
Compensated Temperature	-20 to 85 °C	Overpressure, low side	1× full scale
Max Static (Line) Pressure	2,000 PSI	Pressure Range	1 to 500 PSID

Operational characteristics

V+ = 5 V (supply option 1), V- = 0 V, T = 25 °C unless noted

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Supply voltage — option 1	V _{DD}	4.75	5.0	5.25	VDC
Supply voltage — option 2	V _S	9	24	32	VDC
Output — options 0 / 1 / 4	—	0.5–4.5 V ratiometric / 0–5 V / 0–10 V			—
Output — option 2	I _{OUT}	4	—	20	mA
Total error band	TEB	–1.0	±0.5	1.0	%FS
Linearity (BFSL)	±%FS	—	0.15	0.2	%FS
Repeatability	±%FS	–0.05	—	0.05	%FS
Full-scale thermal error	—	—	0.75	1.0	%FS
Response time	t _R	0.5	1	2	ms
Compensated temperature	T _C	–20	—	85	°C
Operating temperature	T _{OP}	–40	—	125	°C
Differential pressure range	ΔP	1	—	500	PSID
Max static (line) pressure	—	—	—	2,000	PSI

NOTES

Linearity and thermal error measured from –20 to 85 °C. Overpressure limits by range are listed on page 3.

Electrical connections

WIRE	VOLTAGE OUTPUT	4–20 MA
Red	V+ in	Supply +
White	Output	—
Black	GND	Supply – (loop return)

Cable (flying leads) shown. Plug-connector pin assignment per the PPT90 outline drawing.

Pin configuration

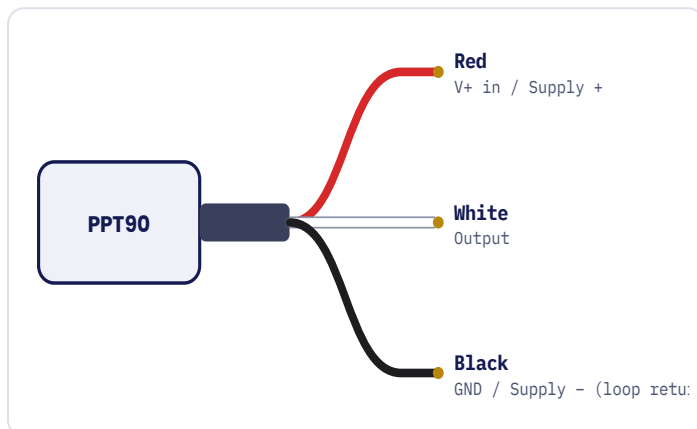


Fig. 1 – Plug and cable electrical connections.

Application information

Package

SS316L pressure ports and diaphragms with a Delrin or SS316L housing. High (+) and low (-) ports are marked on the body.

Pressure ports

G 1/4" female is standard; 1/4" NPT female, 1/8" NPT female and 7/16-20 UNF are available. Custom threads on request.

Line pressure

Both ports may see static line pressure up to 2,000 PSI. Do not exceed the low-side overpressure limit when pressurizing the low port alone.

Construction

An oil-filled differential MEMS element with both sides of the die isolated behind SS316L diaphragms for wet/wet measurement.

Media & wetted parts

Liquid, air and gas on both ports. Wetted surfaces are stainless steel, Viton and/or tantalum.

Hazardous areas

The design conforms to GB 3836.4 for explosion-protected applications; certification by configuration – consult factory.

Measuring ranges

CODE	RANGE (PSID)	OVERPRESSURE, HIGH SIDE	OVERPRESSURE, LOW SIDE	MAX STATIC
05	5	10	5	2,000
10	10	25	10	2,000
15	15	30	15	2,000
30	30	60	30	2,000
50	50	100	50	2,000
100	100	200	100	2,000
150	150	300	150	2,000
300	300	600	300	2,000
450	450	900	450	2,000

All values in PSI. Custom differential ranges from 1 to 500 PSID are available.



500

Max range PSID

2,000 PSI

Max line pressure

~1 ms

Response time

±0.15%

Typical linearity FS

Analog output — differential

The PPT90 output is proportional to the differential pressure $\Delta P = P_{\text{HIGH}} - P_{\text{LOW}}$. Zero output corresponds to equal pressure on both ports.

Option 0 — ratiometric ($V_{\text{DD}} = 5 \text{ V}$)

$$V_{\text{OUT}} = 0.5 \text{ V} + 4.0 \text{ V} \times \Delta P / \Delta P_{\text{FS}}$$

Option 2 — 4–20 mA

$$I_{\text{OUT}} = 4 \text{ mA} + 16 \text{ mA} \times \Delta P / \Delta P_{\text{FS}}$$

ΔP_{FS} is the differential full-scale range from the part number.

Hookup

WIRE / PIN · FUNCTION	CONNECT TO
Red · V+	Supply + (5 V or 9–32 V)
Black · GND	Supply – / loop return
White · OUT	ADC or meter input

Typical output

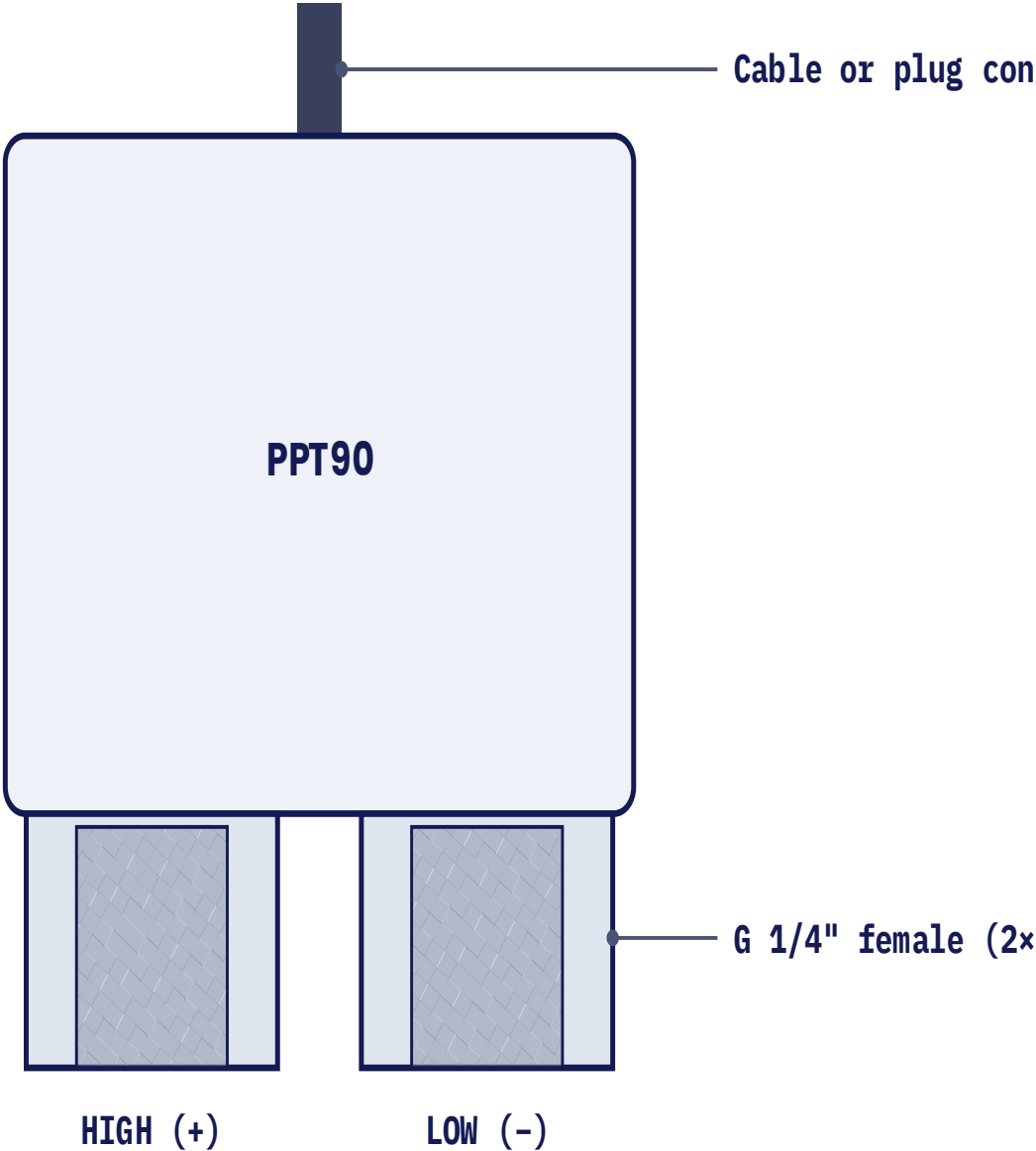
% OF FS	5 PSID	100 PSID	OPT. 0	OPT. 2
0%	0	0	0.50 V	4.0 mA
25%	1.25	25	1.50 V	8.0 mA
50%	2.5	50	2.50 V	12.0 mA
75%	3.75	75	3.50 V	16.0 mA
100%	5	100	4.50 V	20.0 mA

Ideal values; actual output is within the total error band.

DESIGN NOTES

Connect the higher process pressure to the (+) port.
Bleed trapped gas from liquid-filled impulse lines for best accuracy and response.

Mechanical dimensions – inches [mm]



REPRESENTATIVE OUTLINE · DIMENSIONS IN INCHES [MM] · NOT TO SCALE

Fig. 2 – PPT90 outline with high (+) and low (-) ports.

Key dimensions

FEATURE	VALUE
Standard port thread	G 1/4" female
Optional threads	1/4" NPT F · 1/8" NPT F · 7/16-20 UNF
Electrical exit	Cable or plug connector

Construction

Ports / diaphragms	SS316L
Housing	Delrin or SS316L
Wetted	SS · Viton · tantalum

Ordering information — part-number configuration



OUTPUT	THREAD	CONNECTION	RANGE (PSID)
0 0.5–4.5 V ratio.	0 No thread	1 Cable (flying leads)	0.1...500 e.g. 05, 10, 15, 30, 50, 100, 150, 300, 450
1 0–5 V	1 1/4" NPT female	2 Plug connector	
2 4–20 mA	2 1/8" NPT female		
4 0–10 V	3 7/16-20 UNF		

G 1/4" female and other threads, connectors and ranges are available as custom options.

EXAMPLES

PPT90-1-21-05D → 0–5 V · 1/8" NPT female · cable · 0–5 PSID

PPT90-2-12-100D → 4–20 mA · 1/4" NPT female · plug connector · 0–100 PSID

Configure your PPT90

Custom ranges, threads and connections are available for OEM volumes. Talk to an engineer to spec your part.

REQUEST A QUOTE

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