

Model 540/542

High Performance Pressure Transducers



DESCRIPTION

Setra's Model 540/542 Series pressure transducers are designed for harsh applications that require long-term service and high performance.

Utilizing thin film technology, the Models 540/542 offer choice of 0.1% full scale or 0.08% full scale accuracy, millivolt output, a wide compensated temperature range from -65°F up to +250°F, and gauge, sealed gauge, and absolute pressure measurement for pressure ranges 15 psi up to 10,000 psi (1 bar up to 690 bar). Differential pressure measurement is available in ranges from 15 psid up to 300 psid.

All wetted parts are constructed of 17-4 PH SS or Inconel® for ranges 15 psi up to 6000 psi (1 bar and 400 bar). (Pressure transducers ordered in 600 or 690 bar and 10,000 psi ranges are only available with Inconel wetted parts.) Specify Model 540 when ordering a pressure transducer with stainless steel wetter parts, and Model 542 with Inconel®.

Model 540/542 are offered with choice of 10-6-Pin Bayonet Connector, Weatherproof Cable, and Molded Submersible Cable (submersible up to 656ft.) for electrical termination.

Depending upon the electrical connection selected, when coupled with the Model 540/542 enclosure, which is fabricated in 321 SS, this unit is rated for IP40, IP65, IP66 or IP68 operation.

Requiring virtually no maintenance, the stability of this unit assures the user of high reliability, with less than 0.06% drift per year.

Principle of Operation:

Thin Film Strain Gauge Pressure Sensors

Using the well proven Wheatstone Bridge principle, molecular layers are sputtered onto a 17-4 PH stainless steel sensing element, providing excellent resistor definition and uniformity. Sputtered thin film technology allows the design of simple, highly accurate and compact strain gauges. This method virtually eliminates drift, while offering enhanced sensitivity.

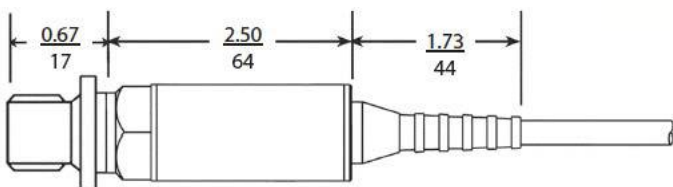
FEATURES

- Superior Stability Avoid Down Time
- ±0.1% FS High Accuracy
- Choice of Submersible, High Temperature, and Weather Proof Enclosures
- IP40, IP65, IP66, and IP68 Rated
- 25 year MBTF Rating
- Wide Compensated Temperature Range: -65°F up to +250°F
- Meets CE Conformance Standards

APPLICATIONS

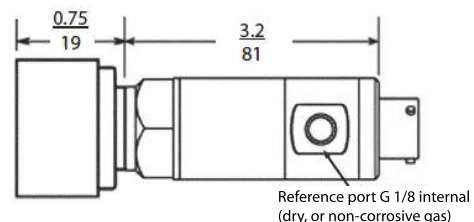
- Off-Highway
- Natural Gas Equipment
- Test & Measurement
- Aerospace
- Power Plants
- Heating, Ventilating & Air-Conditioning

OUTLINE DRAWING



Gauge and Absolute Style Unit Shown
w/ Weatherproof Cable and G 1/4 Male
Pressure Fitting

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Differential Style Unit Shown
w/ 10-6 Bayonet Connector and
G 1/4 Female Pressure Fitting

Model 540/542

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SPECIFICATIONS

Performance Data		Environmental Data		Electrical Data (Millivolts)	
Accuracy RSS ¹ (at constant temp)	±0.1% FS ±0.08% FS	Operating ⁴ and Storage Temperature °F/°C		Circuit	4-Wire (+Exc, -Out, +Out, -Exc)
Thermal Effect ²		for 10-6 Bayonet	-65 to -275 (-54 to +135)	Excitation	10 VDC Regulated (15 VDC Max.)
Compensated Range F ³ (C°)	-5 to +180 (-20 to +80)	for Cable Unit	-65 to +250 (-54 to +120)	Output ⁵	
Accuracy ±0.1% FS Zero/Span Shift %FS/100°F (100°C) Zero/Span Shift %FS/100°F (100°C)	0.6 (1.2) 0.3 (0.6)	for Submersible Unit	-4 to +122 (-20 to +50)	Bar Ranges	30 mV ±1% Span (Certificate Supplied) 2.5 Bar (30 PSI), Model 542
Accuracy ±0.08% FS ³ Zero/Span Shift %FS/100°F (100°C) Zero/Span Shift %FS/100°F (100°C)	0.3 (0.6) 0.15 (0.3)	Vibration	35g Peak Sinusoidal, 5 to 2000 Hz	PSI Ranges	25 to 33 mV Span
Long-Term Stability	0.06% FS/1 year	Shock	Withstands Free Fall to IEC 68-2-32 Proc 1	Bridge Resistance	2200 to 5250 Ohms
Common Line Pressure	Max. 60 Bar Absolute (850 psi) Differential Units Only	Physical Description		Accessories	
Proof Pressure	2 x FS (1.5 x FS for Inconel Parts)	Case	321 Stainless Steel (Hastelloy for Model 542 when Seawater Option is Selected)	Part No.	Description
Burst Pressure	>35 x FS <= 150 PSI (10 BAR) >15 x FS <= 1500 PSI (100 BAR) >8 x FS <= 10,000 PSI (690 BAR)	Ratings	IP40 w/ 10-6 Bayonet and Gauge Unit IP65 w/ 10-6 Bayonet and Absolute Unit IP66 w/ Weatherproof Cable IP68 w/ Molded Submersible Cable	GA2	6 Pin Bendix -94°F to 383°F (-70°C to 195°C)
Pressure Media		Wetted Parts	17-4 PH (17-4 PH and 15-7 Mo SS for <=1.6 Bar [30 Psi] Range.) Inconel® (Order Model 542)	GA8	6 Pin Bendix -65°F to 257°F (-54°C to 125°C)
Liquids or gases compatible with 17-4 PH Stainless Steel or Inconel®. Differential Units: Dry non-corrosive gas on reference port		Electrical Connection	10-6 Bayonet Connector Weatherproof Cable (IP68)	GA11	6 Pin Bendix to 257°F (125°C)
		Pressure Fitting	See Ordering Information Below	GA16	4 Pin Bendix (PSI Units Only)
		Weight	5.30z (150g)	GA17	Mounting Clamp (Polypropylene)
				GA20	Mounting Clamp (Polymide, 25 mm)
				GA29	G 1/4 Bonded Seal Washer to 212°F (100°C)
				GA30	G 1/4 Bonded Seal Washer to 392°F (200°C)
				GA31	G 1/8 Bonded Seal Washer to 392°F (200°C)

¹RSS of Non-Linearity, Non-Repeatability and Hysteresis.

²Units calibrated at nominal 70°F. Maximum thermal error computed from this datum.

³Differential Units are only available in ±0.08 FS accuracy. Order code U or 2 (see order chart below).

⁴Operating/Storage temperature limits of the connector only.

⁵Zero output is factory set to 0 mV ±1 mV for 0.1% Accuracy

Zero output is factory set to 0 mV ±0.6 mV for 0.08% Accuracy

ORDERING INFORMATION

Model	Range	Pressure	Pressure Fitting	Output	Elec. Termination	Accuracy	Options
5401 = 540 w/SS Wetted Parts	015P 15 PSI 001B 1 BAR	G Gauge	G2 G 1/4 Male	BN 30mV ±1% w/ Certificate	B3 10-6 Bayonet Connec- tor ⁴ MIL C-26482 ⁵	1 0.1% FS (0.6%/F [1.2%/C] Thermal Shift)	S Seawater Version ⁷
5421 = 542 w/Inconel® Wetted Parts	030P 30 PSI 1R6B 1.6 BAR	S Sealed Gauge	J7 7/16 -20 UNF Male SAE #4 (11926-2)	BS 25 to 33 mV for PSI Ranges ³	N4 Weatherproof Cable, IP66	1 0.1% FS (0.3%/F [0.6%/C] Thermal Shift)	E Extra Lightning Protection ⁸
	060P 60 PSI 2R5B 2.5 BAR	A Absolute	G4 G1/2 Male		UA Molded Submersible Cable, IP68 (up to 200 Meters[656 ft.])	U 0.08% FS ⁶ (0.3%/F [0.6% C] Thermal Shift)	
	100P 100 PSI 004B 4 BAR	D Differential ²	2M 1/4-18 NPT Male			2 0.08% FS ⁶ (0.15%/F [0.3%/C] Thermal Shift)	
	150P 150 PSI 006B 6 BAR		2F 1/4-18 NPT Female				
	300P 300 PSI 010B 10 BAR		4M 1/2-14 NPT Male				
	500P 500 PSI 016B 16 BAR		W1 Plastic Nose Cone				
	10CP 1000 PSI 025B 25 BAR		W2 Stainless Steel Sink Weight Nose Cone				
	15CP 1500 PSI 040B 40 BAR		W3 Plastic Nose Cone w/ Restrictor				
	30CP 3000 PSI 060B 60 BAR						
	60CP 6000 PSI 100B 100 BAR						
	90CP 9000 PSI 160B 160 BAR						
	10KP 10,000 PSI ¹						
	250B 250 BAR						
	400B 400 BAR						
	600B 600 BAR ¹						
	690B 690 BAR						
			Differential Units				
			B1 G1/4 Female SS Pressure Fitting w/G1/8 Female SS Ref. Port (Model 540)				
			B2 G1/4 Female SS Pressure Fitting w/G1/8 Female SS Ref. Port (Model 542)				

¹10,000 Psi, 600, and 690 Bar ranges are available with Inconel® wetted parts only.

²Up to 300 psid

³25 mV ±1% (2.5 Bar [30 PSI] Range for Model 542)

⁴Differential units only available with Electrical code B3

⁵Mating accessory available

⁶Differential units only available with Accuracy code U or 2

⁷Available on Model 542 only, w/ Hastalloy case

⁸Requires cable for electrical termination