

Model 290

Sanitary Pressure Transmitter



DESCRIPTION

The 290 design meets 3-A sanitary design standards and is fully sealed to withstand external high pressure washdown and CIP/SIP cycles. As a totally self-contained electronic package, the 290's capacitance sensing element, coupled with a signal conditioned IC-based circuit, assures excellent accuracy and long term stability.

The 290 pressure transmitter is intended for low to high pressure measurements of gases or liquids in sanitary applications. The 290 pressure transmitter, packaged in a rugged welded stainless steel housing, is exceptionally insensitive to vibration, shock and environmental extremes. Its small size, light weight, and tri-clover sanitary pressure fitting allows direct mounting in most CIP and SIP installations.

Unlike fluid-filled sensors, the 290 utilizes a rugged, non-filled capacitive sensor which enables low hysteresis and excellent performance during thermal transients.

FEATURES

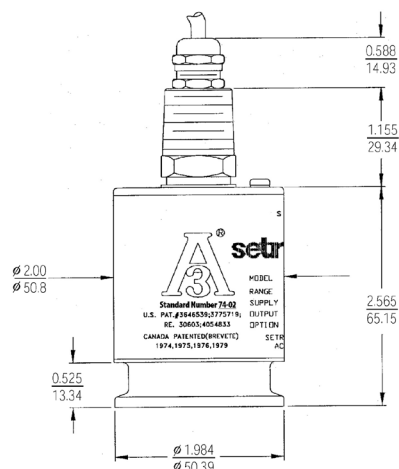
- Robust Non-Liquid Filled Capacitive Sensor
- Negligible Clamping Effect for Easy Installation
- Designed for Clean-In-Place (CIP) and Sterilize-In-Place (SIP) Installations
- Meets 3A Sanitary Standards
- 0.20% Full Scale Accuracy Improves System Performance
- High Overpressure Protection
- Insensitive to Thermal Shock
- Industrial Design and 316 Stainless Steel Permits Use in Harsh Environments
- Higher Accuracy Option Available
- Meets CE Conformance Standards

APPLICATIONS

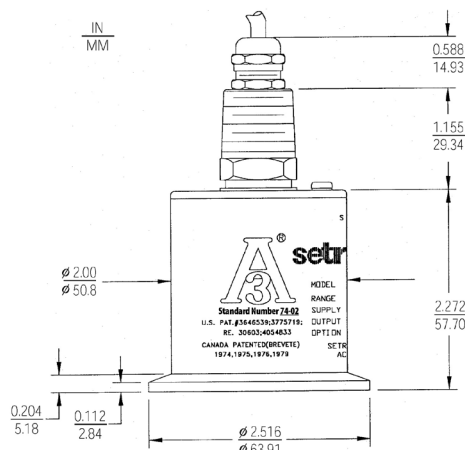
- Food Processing
- Dairy and Beverage Processing
- Pharmaceutical Processing
- Liquid Level Control
- Sanitary Pipelines

WIRING

1 1/2" Tri-Clover Sanitary Fitting
Diaphragm Material: 316SS



2" Tri-Clover Sanitary Fitting
Diaphragm Material: 316LSS



Accessory

Model 299 Dri-Sense
Termination Enclosure



Features:


- Visible Desiccant Status Indicator
- Easily Replaceable Desiccating Covers
- Replaceable Terminal Interface Circuit Board
- Surge Suppression
- NEMA 4X Industrial Housing

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GAUGE PRESSURE

SPECIFICATIONS

Performance Data 2" Tri-Clover Sanitary Fitting		Performance Data 1.5" Tri-Clover Sanitary Fitting		Electrical Data	
Accuracy RSS ¹ (at constant temp)	±0.20% FS	Accuracy RSS ¹ (at constant temp)	±0.20% FS	Circuit	2-Wire
Non-Linearity (BFSL)	±0.17% FS	Non-Linearity (BFSL)	±0.15% FS	Output ³	4 to 20 mA ⁴
Hysteresis	0.10% FS	Hysteresis	0.12% FS	Zero/Span, Adjustment	± 0.5 mA
Non-Repeatability	0.025% FS	Non-Repeatability	0.10% FS	External Load	0 to 800 ohms
Thermal Effect ²		Thermal Effect ²		Min. Supply Voltage (VDC)	12 + 0.02 x resistance of receiver plus line
Compensated Range F(°C)	+20 to +180 (-7 to +82)	Compensated Range F(°C)	+20 to +180 (-7 to +82)	Max. Supply Voltage (VDC)	30 + .004 x resistance of receiver plus line
Zero/Span Shift %FS/100°F (%FS/50°C)	2.0 (1.8)	Zero/Span Shift %FS/100°F (%FS/50°C)	2.0 (1.8)	Environmental Data	
Response Time	10 milliseconds	Response Time	10 milliseconds	Operating Temperature ⁵ F(°C) ⁵	-40 to +260 (-40 to +125)
EMI/RFI Effect	< 1.0% output shift; 10V/M, 10-300 MHz	EMI/RFI Effect	< 1.0% output shift; 10V/M, 10-300 MHz	Storage Temperature ⁶ F(°C)	-65 to +260 (-55 to +125)
Clamping Effect, Zero/Span Shift	±0.15% FS	Clamping Effect, Zero/Span Shift	±0.25% FS	Vibration	10g, 50-1000Hz
Maximum Vacuum (without affecting specifications)	Half on ranges ≤15 PSI	Maximum Vacuum (without affecting specifications)	Full on ranges ≥ 30 PSI	Acceleration ⁶	10g maximum
Physical Description		¹ RSS of Non-Linearity, Non-Repeatability and Hysteresis. ² Units calibrated at nominal 70°F. Maximum thermal error is computed from this datum. Variations in the power supply voltage cause less than 0.005 mA change in the transmitter's current output, per volt change in the power supply. Reverse excitation will not damage circuit. ³ Calibrated at factory with a 24 VDC loop supply voltage and a 250 ohm load. ⁴ Zero output factory set to within ±0.08mA. ⁵ Span (Full Scale) output factory set to within ±0.16mA. ⁶ Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower. ⁷ shift in output reading at <0.05% FS/g; pressure port axis only.		Shock	50g operating
Zero/Span Adjustments	Top Access Through Seal Screws			Thermal Shock ⁶ F(°C)	0 to +257 (0 to +125) negligible shift
Case	Stainless Steel			Accessories Model 299 Dri-Sense Pressure Transducer Termination Enclosure P/N: 2991G211	
Electrical Connection	1/2 NPT" Conduit Fitting & Strain Relief w/ 15' Shielded Cable				
Pressure Fitting	2" or 1 1/2" Tri-Clover Sanitary Fitting			Note: Setra quality standards are based on ANSI-Z540-1. The calibration of this product is NIST traceable.	
Sanitary	Meets 3-A Sanitary Standard (74-02)				
Vent	Through Cable				
Weight (Approx.)	8 Ounces				

ORDERING INFORMATION

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Model	Range		Units	Pressure Type		Fitting	Output	Termination	Accuracy	Options ²	
2901 = 290	2" Tri-Clover (PSI)	1 1/2" Tri-Clover (PSI)	P PSI	G Gauge	T6	1 1/2" Tri-Clover	11 4-20 mA	15 15' Cable	3 ± 0.2% FS	N	None
	001 0-1	030 0-30	M mBAR	C** Compound	T8	2" Tri-Clover		25 25' Cable	T ± 0.1% FS	L	Etched SS Tags
	002 0-2	045* 0-45						30 30' Cable		R	20 Ra Sensor Finish
	005 0-5	060 0-60									
	010 0-10	100 0-100									
	015 0-15	150 0-150									
	030 0-30	300 0-300									
	060 0-60	500 0-500									
	100 0-100	10C 0-1000									
	150 0-150										

Pressure Ranges 2" Tri-Clover				
psig	Range mb	in. H ₂ O	Proof psig	Burst psig
1	100	27.7	50	100
2	160	55.4	75	150
5	400	138.4	150	200
10	600	276.8	150	200
15	1000	415.2	150	200
30		830.4	150	300
60		1660.8	180	400
100		2768	200	400
150		4152	225	400
-14.7 to 15		-407 to 415	150	300

Pressure Ranges 1 1/2" Tri-Clover		
Range psig	Proof psig	Burst psig
30	1000	1200
60	1000	1200
100	1000	1200
150	1000	1200
300	1000	1200
500	1000	1500
1000	1250	2400
-14.7 to 15	1000	1200
-14.7 to 45	1000	1200

² Both boxes must be filled in alphabetical order:
- If No options: N + N
- If 1 option: Option Code + N
- If 2 options: Option Code + Option Code

Proof Pressure: The maximum pressure that may be applied without changing performance beyond specifications (<±0.5% FS zero shift).
Burst Pressure: The maximum pressure that may be applied to the positive pressure port without rupturing the sensing element.