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

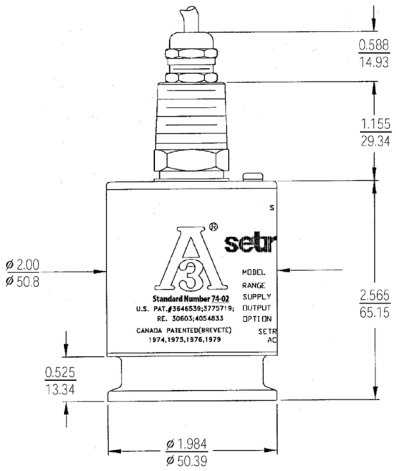
- Robust Non-Liquid Filled Capacitive Sensor
- Negligible Clamping Effect for Easy Installation
- Designed for Clean-In-Place (CIP) and Steril-ize-In-Place (SIP) Installations
- Meets 3A Sanitary Standards
- 0.20% Full Scale Accuracy Improves System Performance
- High Overpressure Protection
- Insensitive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

APPLICATIONS

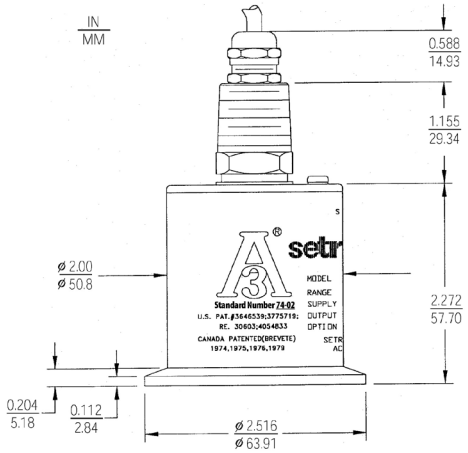
- Food Processing
- Dairy and Beverage Processing
- Pharmaceutical Processing
- Liquid Level Control
- Sanitary Pipelines

WIRING

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



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



Accesory

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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Model 290
Sanitary Pressure Transmitter

SPECIFICATIONS

Performance Data 2" Tri-Clover Sanitary Fitting	
Accuracy RSS[1] (at constant temp)	±0.20% FS
Non-Linearity (BFSL)	±0.17% FS
Hysteresis	0.10% FS
Non-Repeatability	0.025% FS
Thermal Effect[2]	
Compensated Range F°(C°)	+20 to +180 (-7 to +82)
Zero/Span Shift %FS/100°F (%FS/50°C)	2.0 (1.8)
Response Time	10 milliseconds
EMI/RFI Effect	< 1.0% output shift; 10V/M, 10-300 MHz
Clamping Effect, Zero/Span Shift	±0.15% FS
Maximum Vacuum (without affecting specifications)	Half on ranges ≤15 PSI

Physical Description	
Zero/Span Adjustments	Top Access Through Seal Screws
Case	Stainless Steel
Electrical Connection	1/2 NPT" Conduit Fitting & Strain Relief w/ 15' Shielded Cable
Pressure Fitting	2" or 1 1/2" Tri-Clover Sanitary Fitting
Sanitary	Meets 3-A Sanitary Standard (74-02)
Vent	Through Cable
Weight (Approx.)	8 Ounces

Performance Data 1.5" Tri-Clover Sanitary Fitting	
Accuracy RSS[1] (at constant temp)	±0.20% FS
Non-Linearity (BFSL)	±015% FS
Hysteresis	0.12% FS
Non-Repeatability	0.10% FS
Thermal Effect[2]	
Compensated Range F°(C°)	+20 to +180 (-7 to +82)
Zero/Span Shift %FS/100°F (%FS/50°C)	2.0 (1.8)
Response Time	10 milliseconds
EMI/RFI Effect	< 1.0% output shift; 10V/M, 10-300 MHz
Clamping Effect, Zero/Span Shift	±0.25% FS
Maximum Vacuum (without affecting specifications)	Full on ranges ≥ 30 PSI

[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.
[4] Span (Full Scale) output factory set to within ±0.16mA.
[5] Operating temperature limits of the electronics only. Pressure media temperatures may be considerably higher or lower.
[6] shift in output reading at <0.05% FS/g; pressure port axis only.

Electrical Data	
Circuit	2-Wire
Output[3]	4 to 20 mA[4]
Zero/Span, Adjustment	± 0.5 mA
External Load	0 to 800 ohms
Min. Supply Voltage (VDC)	12 + 0.02 x resistance of receiver plus line
Max. Supply Voltage (VDC)	30 + .004 x resistance of receiver plus line

Environmental Data	
Operating Temperature°F (°C)[5]	-40 to +260 (-40 to +125)
Storage Temperature°F (°C)	-65 to +260 (-55 to +125)
Vibration	10g, 50-1000Hz
Acceleration[6]	10g maximum
Shock	50g operating
Thermal Shock°F (°C)	0 to +257 (0 to +125) negligible shift

Accessories
Model 299 Dri-Sense Pressure Transducer
Termination Enclosure P/N: 2991G211

Note: Setra quality standards are based on ANSI-Z540-1.
The calibration of this product is NIST traceable.

ORDERING INFORMATION

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Model	Range				Units		Pressure Type		Fitting		Output		Termination		Accuracy		Options	
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																

** -14.7 to X psi, -1000 to XmBAR

Pressure Ranges 2" Tri-Clover

psig	Range mb	in. H_2O	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

Ramge 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

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.

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