

Gems Capacitance Transducers —Functional Simplicity with Structural Sophistication

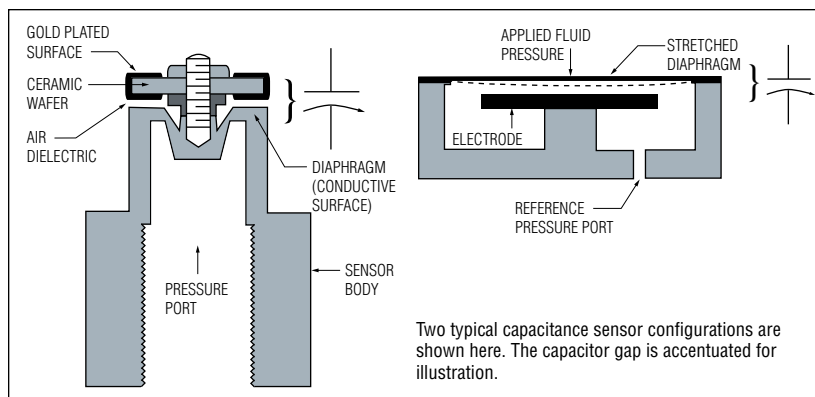
- ▶ High Accuracies
- ▶ Minimal Mechanical Motion
- ▶ Broad Range Capabilities
- ▶ Long Term Stability
- ▶ High Level Output
- ▶ Broad Media Compatibility
- ▶ High Electromagnetic Compatibility
- ▶ Resistant to Harsh Environments

Gems' capacitive pressure transducers are expertly designed adaptations of a simple, durable and fundamentally stable device... the electrical capacitor.

Principle of Operation

In a typical Gems configuration, a compact housing contains two closely-spaced, parallel, electrically isolated metallic surfaces, one of which is essentially a diaphragm capable of slight flexibility under applied pressure. The diaphragm is constructed of a low-hysteresis material such as 17-4 PH stainless steel or a proprietary compound of fused glass and ceramic. These firmly secured surfaces (or plates) are mounted so that a slight mechanical flexing of the assembly, caused by a minute change in applied pressure, alters the gap between them. This creates, in effect, a variable capacitor.

The resulting change in capacitance is detected by a sensitive linear comparator circuit (employing proprietary, custom-designed ASICs), which amplifies and outputs a proportional, high-level signal.



The inherent simplicity and ruggedness of this physical configuration, the fact that all wettable parts are of stainless steel or low-hysteresis ceramic, and a careful marriage of the mechanical assembly to the electronic circuitry, all combine to create a transducer that exhibits uniformly superior performance.

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PRESSURE TRANSDUCERS

809 Series – Industrial OEM Pressure Transducer

- ▶ Sensing Ranges from Vacuum to 10,000 psi (-1 to 690 bar)
- ▶ Rugged Stainless Steel & Valox® Housings
- ▶ Ideal for High Shock & Vibration Applications

The 809 Series pressure transducers are designed specifically for industrial applications with demanding price and performance requirements. They offer exceptional reliability in typical industrial grade environments. 809 Series transducers operate on low-cost, unregulated DC power, and over a wide temperature band with both liquids and gases. Designed for harsh environments, they are suitable for use in high shock and vibration applications. Stainless steel and Valox® housings are small and lightweight for easy integration into compact systems. The standard feature set of the 809 Series delivers exceptional performance in extreme environmental conditions at a price that OEMs will appreciate.

Common Specifications

Input	
Pressure Range	-14.7 to 10,000 psi (-1 to 690 bar)
Proof Pressure	See ordering chart
Burst Pressure	See ordering chart
Fatigue Life	>1 million cycles
Performance	
Supply Voltage (Vs)	9-30 VDC (5 VDC on 0.5-4.5 VDC units)
Long Term Drift	0.5% FS/year
Accuracy	±0.25% FS
Thermal Error Zero	±0.02% FS/°F (±0.036% FS/°C)
Thermal Error Span	±0.015% FS/°F (±0.030% FS/°C)
Compensated Temperatures	-4°F to +176°F (-20°C to +80°C)
Operating Temperatures	-40°F to +185°F (-40°C to +85°C)
Storage Temperatures	-40°F to +185°F (-40°C to +85°C)
Zero Tolerance	1% of span
Span Tolerance	1% of span
Response Time	5 ms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See Dimensions chart, next page
Enclosure	Weather-Resistant (Stainless Steel and Valox®)
Vibration	20g (MIL STD 202, Method 204, Condition C)
Shock	200g (MIL STD 202, Method 213B, Condition C)
Weight	2.3 oz

Individual Specifications

Voltage Output Units	
Output	3 Wire, see ordering chart
Current Consumption	8 mA
Min. Load Resistance	5000 ohms
Current Output Units	
Output	4-20 mA (2 wire)
Max. Loop Resistance	(Vs-9) x 50 ohms



1/2" Conduit



Cable



3-Pin Packard Connector



Hirschmann Connector

Applications

- Hydraulic Systems
- Compressor Control
- HVAC/R Equipment
- Industrial Engines
- Process and Containerized Refrigeration Systems
- Industrial OEM Equipment

How They Operate

809 Series transducers utilize a proven center mount electrode configuration combined with a durable 17-4 PH stainless steel pressure sensing element to form a variable capacitor. As pressure (or vacuum) increases or decreases, the capacitance changes. Self-contained high-level output IC-circuitry converts the change in capacitance to a fully conditioned linear voltage or current output signal.

Dimensions

Electrical Termination Style	Cable Anchor	1/2" Conduit	Hirschmann Connector	3-Pin Packard Connector
Terminal Specifications	Standard: 2 ft. multiconductor cable. Longer lengths options. See ordering chart.	1/2" conduit connection with 3-screw terminal block.	Mating connector is Hirschmann G4WIF. May be ordered separately from Gems— Option 590.	Mating connector is comprised of Packard P/Ns 12065287 & 12103881. May be ordered separately from Gems— Option 581/582.
Ordering Code	XX (cable length in feet)	A1 - Conduit	H2	P1 (3-Pin)

How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT

8091 - 001P - G - 2M - 11 - 02 - XXX

Series **8091** - 809 Series

Pressure Range Code

Pressures – psi

Code	Range	Proof	Burst	Code	Range	Proof	Burst
Z01	0 to -14.7	10	15	150P	0 to 150	300	1000
001P	0 to 1	2	250	200P*	0 to 200	400	2000
002P	0 to 2	4	250	250P*	0 to 250	500	2000
005P*	0 to 5	10	250	500P*	0 to 500	1000	3000
010P*	0 to 10	20	500	600P	0 to 600	1200	3000
015P	0 to 15	30	500	10CP*	0 to 1000	2000	5000
025P*	0 to 25	50	500	20CP	0 to 2000	3000	6500
030P	0 to 30	50	500	30CP	0 to 3000	4500	7500
050P*	0 to 50	100	750	50CP	0 to 5000	7500	10000
100P*	0 to 100	200	1000	10KP	0 to 10000	12500	20000

Options

- 590** - Hirschmann Mating Connector (for H2 Termination)
- 581** - Packard Mating Connector, 3 ft. (for P1 Termination)
- 582** - Packard Mating Connector, 6 ft. (for P1 Termination)

Electrical Termination

- XX** - Cable length in feet (e.g., 02 = 2 ft.)*
- P1** - Packard (3-Pin)
- H2** - Hirschmann ("Mini")
- A1** - 7/8" Hole for 1/2" Conduit*

Output

- 11** - 4-20 mA*
- 24** - 0.5-5.5 Vdc*
- 28** - 1-6 Vdc
- 45** - 0.5-4.5 VDC (5 VDC supply voltage)

Pressure Port

- 2M** - 1/4" NPT Male*
- J7** - 7/16" SAE Male (J1926-2)
- 1M** - 1/8" NPT Male

Datum

- G** - Gauge
- C** - Compound (030PC = -14.7 to 30 psi)
- S** - Sealed (available in 200 psi ranges and above)
- V** - Vacuum (**Z01** range code only)

* Standard configuration. Minimum 25 pieces apply for all other configurations.

PRESSURE TRANSDUCERS

809H Series – 316L SS OEM Pressure Transducer

- ▶ Sensing Ranges from 0 to 1,000 psi (0 to 69 bar)
- ▶ Rugged Stainless Steel & Valox® Housings
- ▶ Ideal for High Shock & Vibration Applications
- ▶ Non-Oil-Filled Design
- ▶ Ideal for Alternative Energy Market

The 809H Series pressure transducers are designed specifically for industrial applications with demanding price and performance requirements. They offer exceptional reliability in typical industrial grade environments. 809H Series transducers operate on low-cost, unregulated DC power, and over a wide temperature band with both liquids and gases. Designed for harsh environments, they are suitable for use in high shock and vibration applications. Stainless steel and Valox® housings are small and lightweight for easy integration into compact systems. The standard feature set of the 809H Series delivers exceptional performance in extreme environmental conditions at a price that OEMs will appreciate.

Common Specifications

Input	
Pressure Range	0 to 1,000 psi (0 to 69 bar)
Proof Pressure	See ordering chart
Burst Pressure	See ordering chart
Fatigue Life	>1 million cycles
Performance	
Supply Voltage (Vs)	9-30 VDC (5 VDC on 0.5-4.5 VDC units)
Long Term Drift	0.5% FS/year
Accuracy	±0.25% FS
Thermal Error Zero	±0.02% FS/°F (±0.036% FS/°C)
Thermal Error Span	±0.015% FS/°F (±0.030% FS/°C)
Compensated Temperatures	-4°F to +176°F (-20°C to +80°C)
Operating Temperatures	-40°F to +185°F (-40°C to +85°C)
Storage Temperatures	-40°F to +185°F (-40°C to +85°C)
Zero Tolerance	1% of span
Span Tolerance	1% of span
Response Time	5 ms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	316L Stainless Steel
Electrical Connection	See Dimensions chart, next page
Enclosure	Weather-Resistant (Stainless Steel and Valox®)
Vibration	20g (MIL STD 202, Method 204, Condition C)
Shock	200g (MIL STD 202, Method 213B, Condition C)
Weight	3.1 oz (88 grams), approx.

Individual Specifications

Voltage Output Units	
Output	3 Wire, see ordering chart
Current Consumption	8 mA
Min. Load Resistance	5000 ohms
Current Output Units	
Output	4-20 mA (2 wire)
Max. Loop Resistance	(Vs-9) x 50 ohms



1/2" Conduit



Cable



3-Pin Packard Connector



Hirschmann Connector

Applications

- Hydraulic Systems
- Compressor Control
- HVAC/R Equipment
- Industrial Engines
- Process and Containerized Refrigeration Systems
- Industrial OEM Equipment

How They Operate

809 Series transducers utilize a proven center mount electrode configuration combined with a durable 316L stainless steel pressure sensing element to form a variable capacitor. As pressure (or vacuum) increases or decreases, the capacitance changes. Self-contained high-level output IC-circuitry converts the change in capacitance to a fully conditioned linear voltage or current output signal.

Dimensions

Electrical Termination Style	Cable Anchor	1/2" Conduit	Hirschmann Connector	3-Pin Packard Connector
Terminal Specifications	Standard: 2 ft. multiconductor cable. Longer lengths options. See ordering chart.	1/2" conduit connection with 3-screw terminal block.	Mating connector is Hirschmann G4WIF. May be ordered separately from Gems— Option 590.	Mating connector is comprised of Packard P/Ns 12065287 & 12103881. May be ordered separately from Gems— Option 581/582.
Ordering Code	XX (cable length in feet)	A1 - Conduit	H2	P1 (3-Pin)

How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT

809H - 025P - G - 2M - 11 - 02 - XXX

Series **809H** - 809H Series

Pressure Range Code

Pressures – psi

Code	Range	Proof	Burst	Code	Range	Proof	Burst
025P*	0 to 25	40	300	250P*	0 to 250	350	1500
050P*	0 to 50	75	500	500P*	0 to 500	700	2000
100P*	0 to 100	150	750	10CP*	0 to 1000	1300	3000

Note: Compound ranges are available upon request

Datum

- G** - Gauge
- S** - Sealed (available in 250 psi ranges and above)

Options

- 590** - Hirschmann Mating Connector (for H2 Termination)
- 581** - Packard Mating Connector, 3 ft. (for P1 Termination)
- 582** - Packard Mating Connector, 6 ft. (for P1 Termination)

Electrical Termination

- XX** - Cable length in feet (e.g., 02 = 2 ft.)*
- P1** - Packard (3-Pin)
- H2** - Hirschmann ("Mini")
- A1** - 7/8" Hole for 1/2" Conduit*

Output

- 11** - 4-20 mA*
- 23** - 0.2 to 5.2 VDC
- 24** - 0.5-5.5 VDC*

Pressure Port

- 2M** - 1/4" NPT Male*
- J7** - 7/16" SAE Male (J1926-2)
- 1M** - 1/8" NPT Male

* Standard configuration. Minimum 25 pieces apply for all other configurations.

830 Series – Wet/Wet Differential Pressure Transducer



- ▶ Liquid Media on Both Ports
- ▶ Bleed Screws for Accurate Results
- ▶ Optional Manifold for Easy Installation

The 830 Series is designed for wet-to-wet differential pressure measurements of liquids or gases. They feature fast-response capacitance sensors that respond approximately 20x faster than conventional fluid-filled transducers! Sensors are coupled to signal conditioned electronic circuitry for highly accurate, linear analog output proportional to pressure. Both unidirectional and bidirectional models are available for line pressures up to 350 psi (24 bar). These units feature bleed ports that allow for total elimination of air in the line and pressure cavities.

Common Specifications

Input	
Pressure Range	0 to 100 psid (0 to 6.9 bar)
Proof Pressure	see ordering chart
Burst Pressure	see ordering chart
Common Line Pressure	350 psi (24 bar)
Fatigue Life	>1 Million Cycles
Performance	
Supply Voltage (Vs)	9-30 VDC (13-30 VDC for 10 VDC output)
Long Term Drift	0.5% FS/year
Accuracy	0.25% FS
Thermal Error Zero	0.02% FS/°F (0.036% FS/°C)
Thermal Error Span	0.02% FS/°F (0.036% FS/°C)
Compensated Temperatures	30°F to 150°F (-1°C to +65°C)
Operating Temperatures	0°F to 175°F (-18°C to +80°C)
Storage Temperatures	-65°F to +250°F (-54°C to +121°C)
Zero Tolerance	0.5% FS
Span Tolerance	0.5% FS
Mechanical Configuration	
Pressure Port	see ordering chart
Wetted Parts	17-4 PH Stainless Steel, 300 Series SS, Viton and Silicone
Electrical Connection	7/8" Knock Out for 1/2" Conduit, Screw Terminal Strip
Enclosure	Stainless Steel, Aluminum
Vibration	5g Peak Sinusoidal, 5 to 500 Hz
Acceleration	10g
Shock	50g
Approvals	CE
Weight	15 oz

Individual Specifications

Voltage Output Units	
Output	0-5 VDC or 0-10 VDC (3 wire)
Min. Load Resistance	5000K ohms
Current Output Units	
Output	4-20 mA (2 wire)
Max. Loop Resistance	(Vs-9) x 50 ohms



3-Valve Manifold Assembly



Gems optional 3-valve manifold assembly eases installation and maintenance.

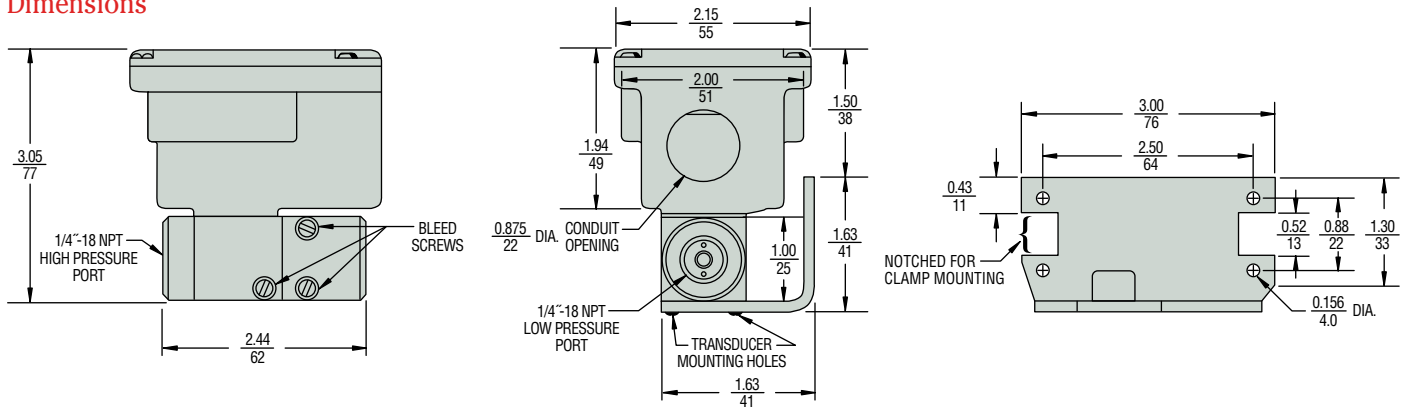
Applications

- Energy Management Systems
- Process Control Systems
- Liquid & Gas Flow Measurement
- Filter Monitoring
- Liquid Level Measurement

How They Operate

A unique isolation system transmits the motion of the differential pressure sensing diaphragm from the high line pressure environment to the dry enclosure where it moves one of a pair of capacitance plates proportionally to the diaphragm movement. Electronic circuitry linearizes output vs. pressure and compensates for thermal effects of the sensor.

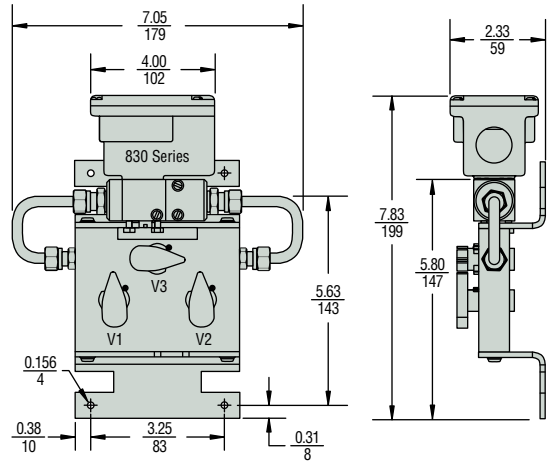
Dimensions



3-Valve Manifold

Gems optional 3-valve manifold assembly eases installation and maintenance. Machined of brass, it eliminates internal pipe connections and the associated chance of internal leaks. When manifold and 830 Series transducer are ordered together, they are assembled at the factory and shipped ready for mounting. Specify the **3V** Pressure Port code when ordering.

Wetted Parts	360 Brass, Copper 122, Acetal plug valves, and Nitrile O-rings
Valve Type	90-degree on/off
Process Connections	1/4" NPTF
Dimensions	7.05" x 6.25" x 2.16" D (179 mm x 159 mm x 55mm)
Weight	2.5 lbs



How to Order

Use the **bold** characters from the chart below to construct a product code

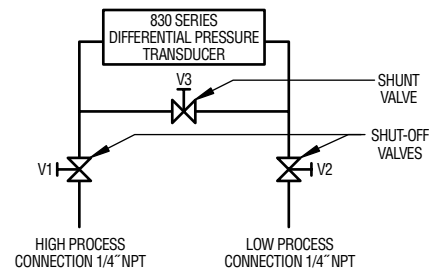
SELECT

8301 025PD 2F 11 B X

- Series **8301** - 830 Series
- Pressure Range Code **025PD**

Unidirectional psid Ranges	Proof Pressure – psi			Bidirectional psid Ranges	Proof Pressure – psi		
	High Side	Low Side	Burst		High Side	Low Side	Burst
001PD - 0-1	20	2.5	200	0R5PB - ±0.5	20	1.25	200
002PD - 0-2	40	5.0	200	001PB - ±1	40	2.50	200
005PD - 0-5	100	12.5	600	2R5PB - ±2.5	100	6.25	600
010PD - 0-10	100	25.0	1000	005PB - ±5	100	12.50	1000
025PD - 0-25	350	62.5	1000	010PB - ±10	200	25.00	1000
030PD - 0-30	350	62.5	1000	025PB - ±25	350	62.50	1000
050PD - 0-50	350	125.0	1000	050PB - ±50	350	125.00	1000
100PD - 0-100	350	250.0	1000				
- Pressure Port **2F** - 1/4" NPTF
3V - 3-Valve Manifold Assembly Installed
- Output **11** - 4-20 mA
2D - 0-5 Vdc
2E - 0-10 Vdc
- Bleed Screw Seals **B** - Viton/Silicon Standard
A - Buna-N Optional
- Optional **C** - Calibration Certificate

Valve Schematic



PRESSURE TRANSDUCERS

856 Series – Industrial Pressure Transducers

- ▶ 0-2 to 0-10,000 psi (0 to 700 bar) Pressure Ranges
- ▶ Voltage or Current Output
- ▶ NEMA 4/IP65 with Zero and Span Adjustments

The 856 Series is specifically designed for NEMA4/IP65 service and features a die-cast aluminum enclosure. Their robust capacitive design is resistant to environmental effects, such as shock, vibration, temperature and EMI/RFI. A 17-4 PH stainless steel sensing element does not require isolation from corrosive media. A 1/2" threaded conduit is provided for electrical termination and a removable cover provides easy access to the internal wiring terminal strip.

Common Specifications

Input	
Pressure Range	0 to 10,000 psig (0 to 700 bar)
Proof Pressure	See ordering chart
Burst Pressure	See ordering chart
Fatigue Life	>1 million cycles
Performance	
Supply Voltage (Vs)	9-30 VDC
Long Term Drift	0.5% FS/year
Accuracy	
<25 psi	±0.25% FS
≥25 psi	±0.13% FS
Thermal Error Zero	
<25 psi	±0.02% FS/°F (±0.036% FS/°C)
≥25 psi	±0.01% FS/°F (±0.018% FS/°C)
Thermal Error Span	
	±0.015% FS/°F (±0.027% FS/°C)
Compensated Temperatures	
	-4°F to +176°F (-20°C to +80°C)
Operating Temperatures	
	-40°F to +260°F (-40°C to +125°C)
Storage Temperatures	
	-40°F to +260°F (-40°C to +125°C)
Zero Tolerance	0.5% of span (adjustable)
Span Tolerance	1% of span (adjustable)
Mechanical Configuration	
Pressure Port	see ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	Two 1/2" Internal Threaded Ports, Screw Terminal Strip
Enclosure	Die-Cast Aluminum, NEMA 4/IP65
Vibration	20g (MIL STD 202, Method 204, Condition C)
Shock	200g (MIL STD 202, Method 213B, Condition C)
Approvals	CE
Weight	13.4 oz

Individual Specifications

Voltage Output Units	
Output	0.1-5.1 VDC (3 wire)
Current Consumption	6 mA
Min. Load Resistance	5000 ohms
Current Output Units	
Output	4-20 mA (2 wire)
Max. Loop Resistance	(Vs-9) x 50 ohms



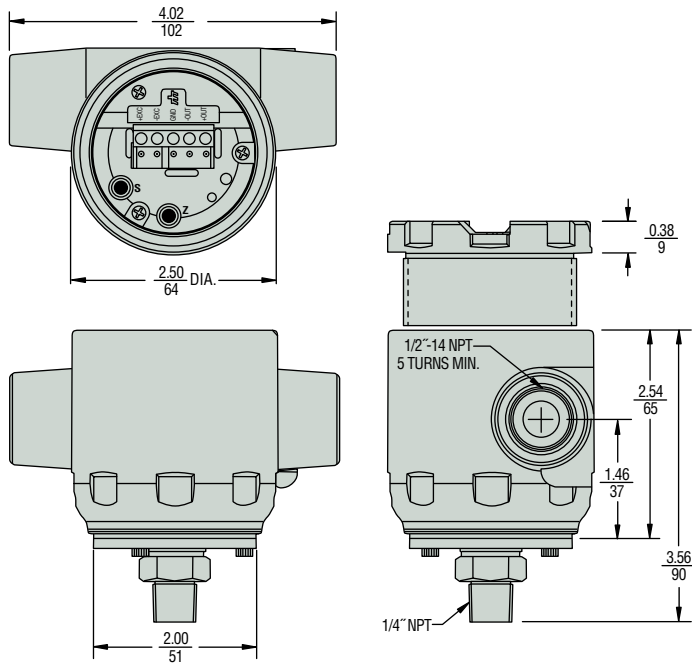
Applications

- Process Control
- Chemical Processing
- Agricultural Irrigation
- Natural Gas Pipeline
- Grain Processing
- Industrial Pressure Monitoring

How They Operate

Gems' patented variable capacitance sensor features an insulated electrode plate fastened to the center of the sensor diaphragm, which forms a variable capacitor. As pressure increases or decreases, the capacitance changes. This change in capacitance is detected and converted to a linear analog signal by Gems' custom ASIC-based circuit, producing an output signal proportional to applied pressure.

Dimensions



How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT

1. Series **8561** - 856 Series

2. Pressure Range Code

Pressures – psi			
Code	Range	Proof	Burst
002P	0 - 2	4	250
005P	0 - 5	10	250
010P	0 - 10	20	500
015P	0 - 15	30	500
025P	0 - 25	100	500
050P	0 - 50	150	750
100P	0 - 100	300	1000
150P	0 - 150	300	1000
200P	0 - 200	450	2000
250P	0 - 250	500	2000
500P	0 - 500	1000	3000
600P	0 - 600	1200	3000
10CP	0 - 1000	2000	5000
30CP	0 - 3000	4500	7500
50CP	0 - 5000	7500	10000
10KP	0 - 10000	12000	12500

Pressures – bar			
Code	Range	Proof	Burst
1R6B	0 - 1.6	6	40
004B	0 - 4	10	50
006B	0 - 6	18	60
010B	0 - 10	30	80
016B	0 - 16	32	130
025B	0 - 25	50	170
040B	0 - 40	80	240
060B	0 - 60	120	300
100B	0 - 100	200	400
160B	0 - 160	320	500
250B	0 - 250	380	550
400B	0 - 400	600	800
700B	0 - 700	800	1350

8561 - 025P - G - 4M - 11 - C

- 6. Optional
C - Calibration Certificate
- 5. Output
11 - 4-20 mA
22 - 0.1-5.1 Vdc (≥25 psi ranges)
- 4. Pressure Port
2M - 1/4" NPT (M)
4M - 1/2" NPT (M) (≥25 psi ranges)
2F - 1/4" NPTF (≥25 psi ranges)
1M - 1/8" NPTM (<25 psi ranges)
- 3. Pressure Datum
G - Gauge (standard)

865 Series – Very Low Differential Pressure Transducers

- ▶ For Air or Non-Conductive Gas
- ▶ 0.25 to 100 Inches in W.C.(differential)/
±0.1 to ±50 Inches in W.C. (bidirectional)
- ▶ High Proof Pressure

The 865 Series are very low-pressure transducers for ranges as low 0.25" W.C. and feature ±1% full scale static accuracy. Primarily used in Building Energy Management, these transducers are capable of measuring pressures and flows with the accuracy necessary for proper building pressurization and air flow control. 865 Series transducers utilize an all-stainless steel micro-tig welded sensor that allows up to 10 psi overpressure (in either direction) with no damage to the unit. All sensor components have thermally matched coefficients, which promote improved temperature performance and excellent long-term stability.

Common Specifications

Input	
Pressure Range	0.25" to 100" WC
Proof Pressure	10 psi (700 mbar)
Fatigue Life	10 psi, max. (700 mbar)
Performance	
Supply Voltage (Vs)	9-30 VDC
Accuracy	±1.0% FS (Standard); .4% & .25% versions available
Thermal Error Zero	±0.033% FS/°F (±0.06% FS/°C)
Thermal Error Span	±0.033% FS/°F (±0.06% FS/°C)
Compensated Temperatures	0°F to +150°F (-18°C to +65°C)
Operating Temperatures	0°F to +150°F (-18°C to +65°C)
Storage Temperatures	-40°F to +185°F (-40°C to +85°C)
Zero Tolerance	1% (.5% for high accuracy option)
Span Tolerance	1% (.5% for high accuracy option)
Mechanical Configuration	
Pressure Port	1/4" Fitting
Wetted Parts	Stainless Steel and Glass-Filled Polyester
Electrical Connection	Screw Terminal Strip
Enclosure	Fire Retardant Glass-Filled Polyester; Option A1 Conduit Enclosure Available
Approvals	CE
Weight	3 oz

Individual Specifications

Voltage Output Units	
Output	0-5 VDC (see ordering chart)
Min. Load Resistance	5000 kohms
Current Output Units	
Output	4-20 mA (2 wire)
Max. Loop Resistance	(Vs-9) x 50 ohms



Applications

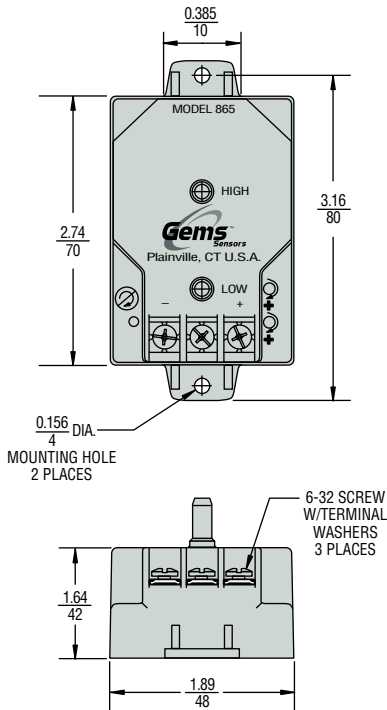
- HVAC
- Energy Management Systems
- Variable Air Volume and Fan Control (VAV)
- Environmental Pollution Control
- Static Duct and Clean Room Pressures
- Oven Pressurization and Furnace Draft Controls

How They Operate

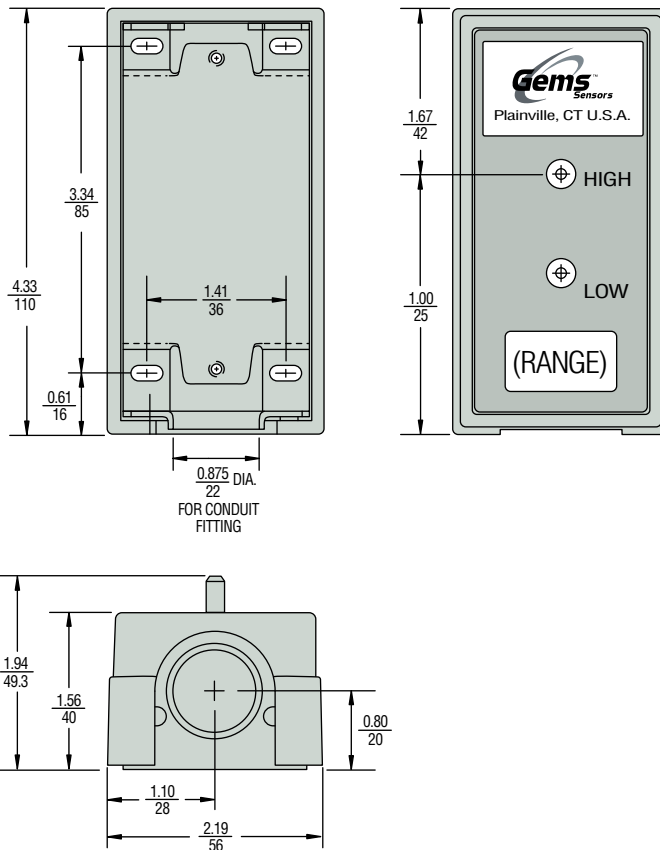
A tensioned stainless steel diaphragm and insulated stainless steel electrode, positioned close to the diaphragm, form a variable capacitor. Positive pressure moves the diaphragm toward the electrode, increasing the capacitance. A decrease in pressure moves the diaphragm away from the electrode, decreasing the capacitance. The change in capacitance is detected and converted to a linear DC electrical signal by Gems' unique electronic circuitry.

Dimensions

Standard 865 Series



Optional Conduit Enclosure – Code A1



How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT

Series **8651** - 865 Series

Pressure Range Code

Unidirectional		Bidirectional	
Code	Range (Inches W.C.)	Code	Range (Inches W.C.)
R25WD	0 to 0.25	OR1WB	±0.1
OR5WD	0 to 0.5	R25WB	±0.25
001WD	0 to 1.0	OR5WB	±0.5
2R5WD	0 to 2.5	001WB	±1.0
005WD	0 to 5.0	2R5WB	±2.5
010WD	0 to 10.0	005WB	±5.0
025WD	0 to 25.0	010WB	±10.0
050WD	0 to 50.0	025WB	±25.0
100WD	0 to 100.0	050WB	±50.0

Output **11** - 4-20 mA (9-30 VDC excitation)
2B - 0-5 VDC (9-30 VDC excitation)

8651 - OR5WD - 2B - T1 - C

Accuracy
C - ±1% FS (Standard)
 Options:
E - ±0.4% FS – Calibration Certificate supplied
F - ±0.25% FS – Calibration Certificate supplied
G - ±1% FS – Calibration Certificate supplied

Electrical Connection
T1 - Terminal Strip
A1 - Supplied with Optional 7/8" Knock-Out Hole for 1/2" Conduit Enclosure

876 Series – Barometric Pressure Transducers

- ▶ Instant Warm-Up
- ▶ Barometric Pressure: 600 to 1100 or 800 to 1100 hPa/mb
- ▶ Low Power Consumption (for Battery or Solar Power)

The 876 Series features an extremely accurate and stable ceramic sensor to deliver a great value in environmental pressure measurement. Gems' glass-fused ceramic capacitive sensing capsule offers inherent thermal stability and low hysteresis in a proven, simple design. A custom ASIC used in the 876 Series achieves long-term stability and high accuracy, and its low power requirements (as low as 5 VDC) allow the sensor to operate in remote battery or solar powered applications. An integrated mounting bracket and 1/8" tube pressure connection ease installation.

Common Specifications

Input	
Pressure Range	See ordering chart
Proof Pressure	20 psia (30 psia for 20 psia range)
Fatigue Life	>1 million cycles
Performance	
Long Term Drift	0.25% FS/6 months
Accuracy	±0.25% FS
Thermal Error Zero	1% FS
Thermal Error Span	1% FS
Compensated Temperatures	30°F to +130°F (0°C to +55°C)
Operating Temperatures	0°F to +175°F (-18°C to +79°C)
Storage Temperatures	-65°F to +250°F (-55°C to +121°C)
Zero Tolerance	±25 mV
Span Tolerance	±50 mV
Mechanical Configuration	
Pressure Port	1/8" Tube Fitting
Wetted Parts	Stainless Steel, Alumina Ceramics, Gold, Elastomer
Electrical Connection	2 ft. Multiconductor Cable
Enclosure	Stainless Steel with Mounting Bracket
Vibration	2g from 5 Hz to 400 Hz
Acceleration	10g
Shock	50g (operating, 1/2 sine 10mg)
Approvals	CE
Weight	3.5 oz.

Individual Specifications

Supply Voltage (Vs)	Excitation	Output (3-wire)
9.0-14.5 VDC	12 VDC	0.1-5.1 VDC
21.6-26.0 VDC	24 VDC	0.1-5.1 VDC
4.9-7.1 VDC	5 VDC	0.5-4.5 VDC



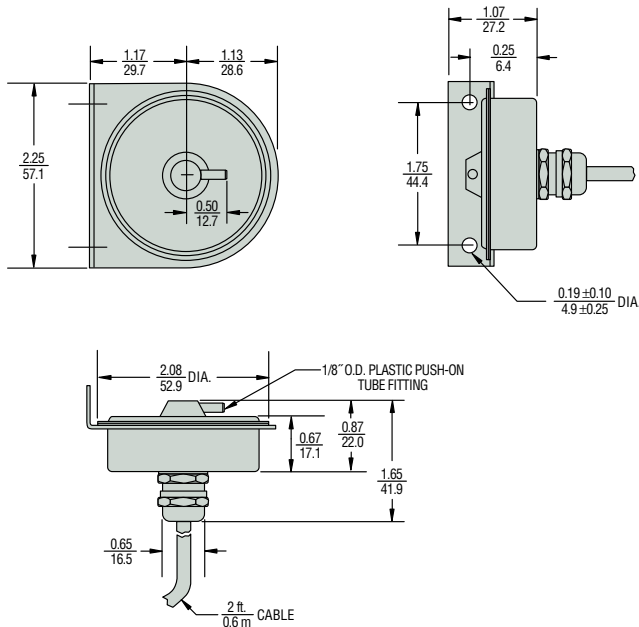
Applications

- Environmental Monitoring Systems
- Weather Measurement Systems
- Weather and Environmental Data Logging
- Barometric Pressure Compensation for Internal Combustion Engine Performance
- Cleanroom Barometric Pressure Compensation
- Automotive Emissions Test Equipment

How They Operate

A glass-fused ceramic sensing capsule detects changes in barometric pressure. As pressure increases or decreases, the capacitance changes. This change in capacitance is detected and converted to a linear analog signal by Gems' custom ASIC-based circuit, producing an output signal proportional to applied pressure.

Dimensions



How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT **876** - **6-11mb** - **12 V** - * - * - * - *

1. Series **876** - 876 Series

2. Pressure Range Code
 Barometric:
6-11mb - 600 to 1100 mb
8-11mb - 800 to 1100 mb
0-20P - 0 to 20 psia

3. Excitation/Output

Code	Excitation	Output
12 V	12 VDC	0.1-5.1 VDC
24 V	24 VDC	0.1-5.1 VDC
5 V	5 VDC	0.5-4.5 VDC

4. Options (*Add as suffix to base part code as needed)
715 - 0.1% FS accuracy.
839 - 1/8" NPT pressure port.
 Cable Length:
803-810 - For cable length of 3 to 10 feet (2 ft. is standard).
 Please specify cable length by code (e.g., 810 for 10 ft. cable).
 Consult factory for cable longer than 10 ft.
 Calibration Certification:
901 - 11-point calibration certificate.

PRESSURE TRANSDUCERS

890 Series – 3A Sanitary Pressure Transducer

- ▶ For Clean-In-Place (CIP) and Sterilize-In-Place (SIP)
- ▶ 0.20% Full Scale Accuracy
- ▶ No Liquid Fill Diaphragms

The 890 Series meets 3A sanitary design standards and is fully sealed to withstand external high pressure washdowns. These units are packaged in rugged welded stainless steel housings and are exceptionally insensitive to vibration, shock and environmental extremes. A small size and tri-clover sanitary pressure fitting allow direct mounting in most CIP and SIP installations. Other features include IC-based circuitry, a 1/2" NPT conduit fitting and shielded cable with vent tube. Sealed screws provide access to zero and span adjustments.

Specifications

Input	
Pressure Range	Vacuum to 1000 psig
Proof Pressure	see ordering chart
Burst Pressure	see ordering chart
Fatigue Life	>1 million cycles
Performance	
Output	4-20 mA (2 Wire)
Supply Voltage (Vs)	18-38 VDC
Accuracy	0.20% FS
Thermal Error Zero	0.02% FS/°F (0.036%FS/°C)
Thermal Error Span	0.02% FS/°F (0.036%FS/°C)
Compensated Temperatures	20°F to 180°F (-7°C to +80°C)
Operating Temperatures	-40°F to +260°F (-40°C to +125°C)
Storage Temperatures	-65°F to +260°F (-54°C to +127°C)
Zero Tolerance	1% FS (±0.5 mA adjustable)
Span Tolerance	1% FS (±0.5 mA adjustable)
Maximum Loop Resistance	(Vs-18) x 50
Response Time	10 ms
Mounting Effects	0.15% FS (.25% FS for 1.5" Tri-Clover)
Mechanical Configuration	
Pressure Port	1.5" or 2" Tri-Clover Sanitary Fitting
Wetted Parts	316 Stainless Steel
Electrical Connection	1/2" NPT Conduit Fitting and Strain Relief with 15 ft. Cable
Enclosure	Stainless Steel
Vibration	10g Peak Sinusoidal, 50 to 1000 Hz
Acceleration	10g
Shock	50g
Approvals	Meets 3-A Sanitary Standards
Weight	8 oz



CE

Applications

- Food Processing
- Dairy & Beverage Processing
- Pharmaceutical Processing
- Sanitary Pipelines

How They Operate

A stainless steel diaphragm and an insulated electrode form a variable capacitor. Pressure on the diaphragm alters the sensor's capacitance, which is then detected and converted to a highly accurate linear 4-20 mA signal by electronic circuitry featuring GemS' patented charge-balance principle. Low hysteresis, very stable operation and negligible clamping effect are inherent.

5000 Series Low Pressure Transducer

- ▶ Submersible and General Purpose Models
- ▶ Stainless Steel Case Construction
- ▶ High Proof Pressures

The 5000 Series features a sturdy ceramic diaphragm that detects minute pressure variations, while withstanding large pressure spikes. The tough ceramic sensor is housed in a duplex stainless steel case to ensure performance in the most demanding applications, such as sea water.

Specifications

Input	
Pressure Range	0 to 415" wc (0 to 15psi)
Proof Pressure	30psi (\leq 80"wc) 60psi (\leq 150"wc); 100psi (>150"wc)
Burst Pressure	45psi (\leq 28"wc) 60psi (>28"wc to 80"wc) 90psi (\leq 150"wc); 145psi (>150"wc)
Fatigue Life	10 million FS cycles
Performance	
Long Term Stability	0.25% span/annum
Accuracy	0.2% span max
Thermal Error	2% span max
Compensated Temperatures	-4°F to +140°F (-20°C to +60°C)
Operating Temperatures	
Process media	-40°F to +212°F (-40°C to +100°C)
Electrical code G & L	-15°F to +185°F (-25°C to +85°C)
Electrical code M & 3	-5°F to +120°F (-20°C to +50°C)
Zero Tolerance	1% span
Span Tolerance	1% span
Mounting Effects	0.25% span max
Response Time	5ms
Supply Voltage Sensitivity	0.01% span/volt
Mechanical Configuration	
Inconel Pressure Ports	(See Ordering Guide)
Wetted Parts	318 Duplex SS, Ceramic, Nitrile (Viton® Optional)
Electrical Connection	(See Ordering Guide)
Enclosure	Code M IP68 Submersible Code G IP65
Vibration	35g peak 5-2000 Hz, MIL STD 810, Method 514.2, Procedure I
Acceleration	100g, MIL STD 810C, Method 513.2, Procedure II
Approvals	CE, Lloyds Register, optional intrinsically safe EXII 1G; E Exia II BT4 (-20°C < T amb < 75°C)
Weight	330gms (excluding cable) (12oz)

Individual Specifications

Voltage Output units	
Output	(See Ordering Guide) (3-wire)
Supply Voltage (Vs)	9 to 35 VDC (8-35 VDC, 1-6 VDC Output)
Current Output Unit	
Output	4-20 mA (2 wire)
Supply Voltage (Vs)	9 to 35 VDC (ExII 1G 9-28 Vdc)
Max. Loop Resistance	(Vs-9)* 50 ohms

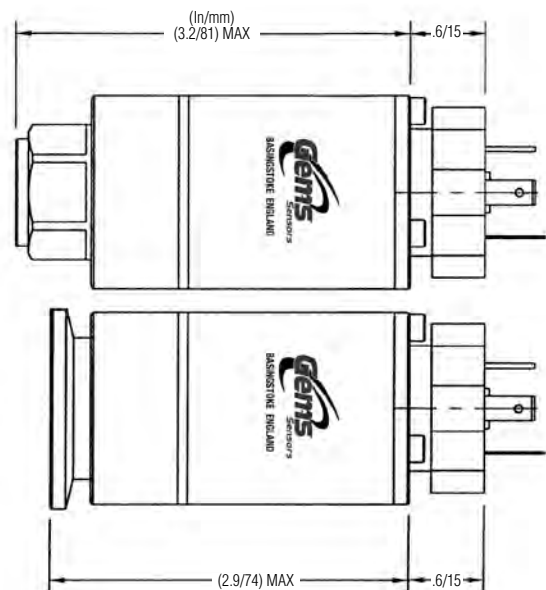
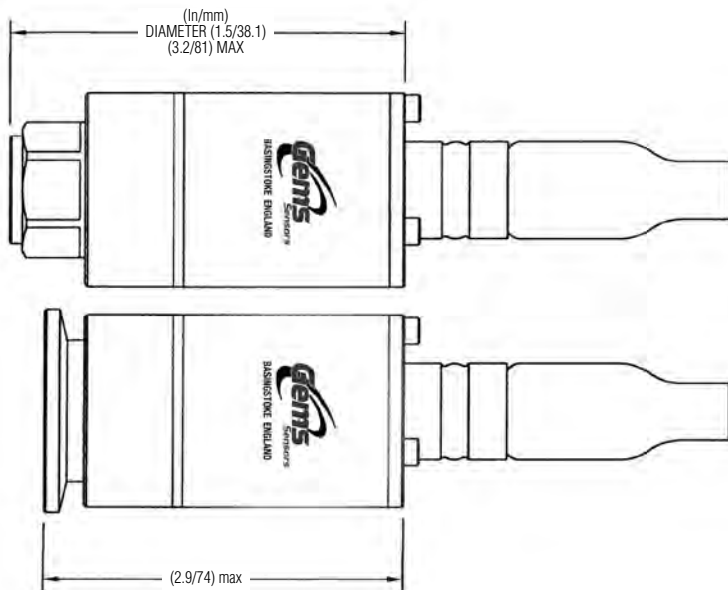


How to Order

Use the **bold** characters from the chart below to construct a product code.

SELECT

<p>1. 5000 series</p> <p>2. Output: B 4–20 mA C 1–6 VDC F 0.1–5.1 VDC H 1–5 VDC J 0.5–5.5 VDC R 0–5 VDC</p> <p>3. Pressure Datum: G gauge</p> <p>4. Pressure range code* M70 10 to 28" wc, 25 to 70 mbar, 0.36 - 1 psi N20 29 to 80" wc, 71 to 200 mbar, 1 - 3 psi N35 81 to 150" wc, 201 to 350 mbar, 3 - 5 psi A10 151 to 415" wc, 351 to 1000 mbar, 5 - 15 psi</p> <p>* specify range required at time of order eg. 5000BGM700FM3001a@15"wc</p>	<p>5000 B G N20 OF M 3 001 A @XXX</p>	<p>10. Specify Calibration (i.e @70" wc)</p> <p>9. Static/Thermal Error Band A 0.25%/2%</p> <p>8. Cable Length 000 = No Cable 001 = 1 meter 999 = 999 meters</p> <p>7. Approvals 3 CE Marked B Zenier G Galvanic Intrinsically Safe</p> <p>6. Electrical Connection G Fixed Plug to DIN 43650, Mating Connector Supplied L M12 x 1 (5 pin) M Immersible Cable Assembly, IP68 3 1/2-14 NPT Conduit</p> <p>5. Pressure Connection OK G1/4 Internal AK G 1/4 external MK M14x1.5 external BK 1/4 - 18 NPT external KK 7/16 - 20unf - 3A external OF Open Face, KF25 Flange</p> <p>Submersible Nose Cones { 19 Plastic Nose Cone 29 Stainless Steel Nose Cone</p>
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FLANGE FACE DIAMETER (1.57/40)

PRESSURE TRANSDUCERS

899 Series – Pressure Transducer Termination Enclosure

- ▶ Visible Desiccant Status Indicator
- ▶ Easily Replaceable Desiccating Covers
- ▶ Surge Suppression

Gems rugged NEMA 4X rated 899 Series pressure transducer termination enclosure is designed for field termination of pressure transducers.

Desiccant material contained within the cover, captures and condenses moisture through surface adsorption, providing an effective barrier against the ingress of humidity into the pressure transducer's sensor. When replacement is necessary, the user is alerted through the clearly visible desiccant status window, which changes from blue (dry) to pink (saturated).

With a life expectancy of approximately 6 months, the desiccant can be regenerated by removing the cover and baking it in a 200°F (93°C) oven for 3 to 4 hours or until it returns to its dry status (blue). To ensure uninterrupted system operation, replacement desiccating covers are available.

The case is constructed of sturdy plastic glass-filled polycarbonate (UL94AB-0), and is designed with easy access to terminal connections. NEMA 4X (IP65) rated for indoor and outdoor installations, the 899 Series includes integral surge protection to protect the circuit board from a voltage surge up to 2000 volts.

An optional low cost, replaceable, terminal interface circuit board is offered to change the unit from a voltage to current, or current to voltage output unit. For pipe mounting installations, a pipe mounting kit is also available.

Specifications

Electrical (Current) Input/Excitation	4 to 20 mA / 5 to 33 VDC
Electrical (Voltage) Input/Excitation	DC Volts / 0 to 6 VDC DC Volts / 5 to 33 VDC
Electrical Termination	PG9 Strain Relief
Surge Suppression	Up to 2000 Volts

How to Order

Order as 899 Series Pressure Transducer Termination Enclosure. Specify Electrical Termination, Input / Excitation and any Options. Use **bold** characters to construct a product code.

- SELECT** **899 - G2 - 45 - ***
1. Series _____
899 - 899 Series
 2. Electrical Termination _____
G2 - PG9 Strain Relief
 3. Input / Excitation _____
11 - 4 to 20mA / 5 to 33 VDC
45 - DC Volts / 0 to 6 VDC
24 - DC Volts / 5 to 33 VDC
 4. Options (*Add as suffix to base part code as needed) _____
M1 - Pipe Mount Kit

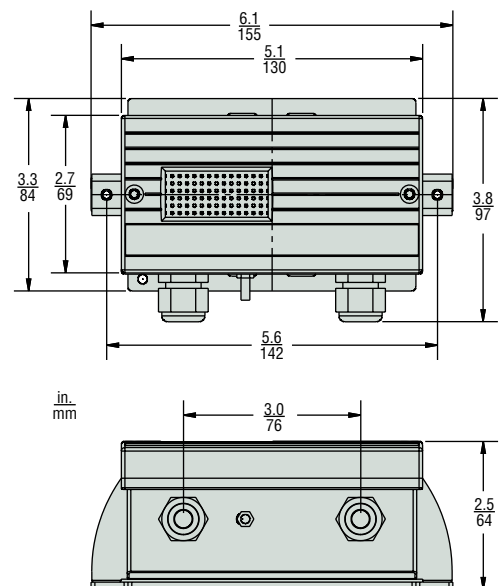


Applications

- Field Termination of Pressure Transducers
- Submersible
- Sanitary
- Underground
- Chillers

Dimensions

Front and Side View



Mounting Bracket

