

Gems Transducers Deliver Top Performance and Value Under Pressure!

- ▶ Excellent Repeatability, Reliability
- ▶ Sensing Ranges from Vacuum to 10,000 psi (-1 to 689 bar)
- ▶ Broad Range of Sensing Technologies:
 - Chemical Vapor Deposition
 - Sputtered Thin Film
 - Capacitance
 - MMS

When your applications require exceptional pressure sensing performance and long-life reliability, look to Gems to deliver. From vacuum to 10,000 psig (-1 to 689 bar), we've got you covered with industry's largest selection and best choice of technologies. Our capacitance type sensors are ideal for high volume use; sputtered thin film types are the most precise pressure sensors you can buy, and our other types satisfy all requirements in between.

Typical Applications

- **Off Highway Vehicles** — Load Weighing Systems and Load Moment Indicating
- **Natural Gas Equipment** — Compressors and Dispensing Equipment
- **Semiconductor Processing** — Wafer Manufacturing
- **Power Plants** — Piping Steam Pressures
- **Refrigeration** — Compressors and Lube Oil Pressure Equipment
- **Robotics** — Factory Automated Equipment
- **Test & Measurement** — Dynamometers, Medical Instrumentation, Wind Tunnels
- **Barometrics** — Altimeter Certification, Weather Stations
- **HVAC** — Compressors, Filter Monitoring, Energy Management
- **Transportation** — Breaking, Compressors, Lifts, Air Conditioning

Psibar® CVD Type

Chemical Vapor Deposition manufacturing methods bond a polysilicon layer to a stainless steel diaphragm at the molecular level to produce a sensor with superior long term drift performance. Common batch processing semiconductor manufacturing methods are used to create a polysilicon strain gauge bridge with terrific performance at a very reasonable price. CVD construction offers excellent price/performance and is the most popular sensor for OEM applications.

Sputtered Thin Film Type

Sputtered film deposition creates transducers with maximum combined linearity, hysteresis and repeatability. Accuracy is as high as 0.08% full scale with long term drift as low as 0.06% full scale per year. Phenomenal performance for critical instruments — Gems sputtered thin film transducers are the jewels of the pressure sensing industry.

Capacitance Type

Gems manufactures capacitance type pressure sensors for a wide range of high volume OEM and specialty applications. Detecting the capacitance change between two surfaces allows Gems transducers to sense extremely low pressure and vacuum levels. Robust construction allows these units to be used in a wide variety of applications. Coupled with an ASIC, these units provide good price/performance in a host of packaging styles.

MMS Type

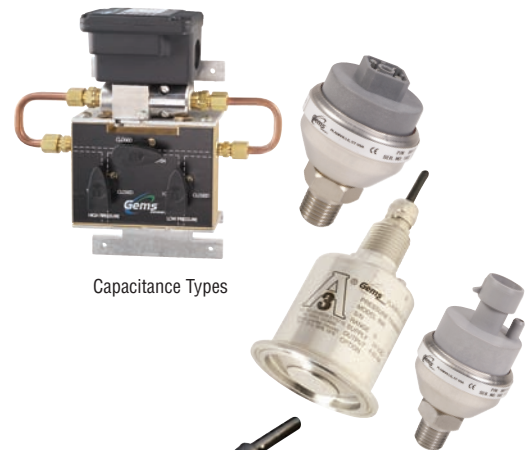
These transducers employ a micromachined silicon (MMS) diaphragm to detect pressure changes. The silicon diaphragm is protected from the media by an oil-filled 316SS isolation diaphragm; they react in tandem to process fluid pressure. MMS sensors utilize common semiconductor manufacturing techniques that allow for high proof pressure, good linearity, great thermal shock performance and stability in a thin sensor package.



Psibar® CVD Types



Sputtered Thin Film Types



Capacitance Types



MMS Type

PRESSURE TRANSDUCERS

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Selection Guide

Purpose	Pressure Range	Accuracy (Full Scale, Typ.)	Long Term Drift (Full Scale/Year)	Thermal Error per °F relative to Room Temperature (Full Scale Typ.)	Operating Temperatures*	Output Options											Sensor Technology Type	Gems Series Number
						Ratiometric	Millivolt	Voltage Output	Current Output	Gauge	Absolute	Vacuum	Diff. Pressure	Submersible	Sanitary	Semiconductor		
General/ OEM	Vacuum to 6000 psig (-1 to 414 bar)	0.25% (0.15% optional)	0.20%	0.015%	-40°F to +260°F (-40°C to +125°C)	•	•	•	•	•	•	•	•				Strain Gauge (CVD)	2200/2600
		0.50%	0.20%	0.020%				•	•	•	•						Strain Gauge (CVD)	1200/1600
	Vacuum to 10,000 psig (-1 to 690 bar)	0.25%	0.50%	±0.035%	-40°F to +185°F (-40°C to +85°C)			•	•	•	•						Capacitance	809
	2 to 10,000 psig (0 to 690 bar)	<25psi: 0.25% >25psi: 0.13%	0.50%	<25psi: 0.035% >25psi: 0.025%	-40°F to +260°F (-40°C to +125°C)			•	•	•							Capacitance	856
	10 in. WC to 150 in. WC (25 to 350 mbar)	0.20%	0.25%	0.028%	-40°F to +212°F (-40°C to +100°C)			•	•	•				•			Capacitance	5000
High Accuracy	500 to 10,000 psig (0 to 690 bar)	0.15%	0.06%	0.010%	-67°F to +248°F (-55°C to +120°C)			•	•	•							Strain Gauge (Sputtered)	3000
	2 to 6,000 psi (0.5 to 400 bar)	0.15%	0.15%	0.010%	-22°F to +212°F (-30°C to +100°C)				•	•	•				•		Strain Gauge (CVD)	6700
	2 to 10,000 psig (0.2 to 690 bar)	0.10%	0.10%	0.008%	-22°F to +212°F (-30°C to +100°C)				•	•	•				•		Strain Gauge (Sputtered)	4700
	15 to 10,000 psig (1 to 690 bar)	0.08%	0.06%	0.006%	-65°F to +275°F (-54°C to +135°C)	•		•		•	•	•			•		Strain Gauge (Sputtered)	4000
	0 to 30,000 psig (0 to 2,200 bar)	0.25%	0.2%	0.83%	-40°F to +257°F (-40°C to +125°C)	•		•	•	•							Strain Gauge (Sputtered)	3100/3200
High Temperature & Accuracy	15 to 6,000 psig (1 to 400 bar)	0.10%	0.06%	0.006%	-65°F to +450°F (-54°C to +230°C)		•			•	•						Strain Gauge (Sputtered)	4000 High Temp
Specialty	10 to 1,000 Torr (10 to 1,000 mbar)	0.50%	0.5%	0.025%	-4°F to +176°F (-20°C to +80°C)			•			•					•	Capacitance	820
	600 to 1,100 hPa/mb 800 to 1,100 hPa/mb 0 to 20 psia	0.25%	0.25%/6 mos.	0.033%	0°F to +175°F (-18°C to +80°C)				•		•				•		Capacitance	876
	0.25 to 100 in. WC (Unidirectional) 0.1 to 50 in. WC (Bidirectional)	1.00%	0.50%	0.066%	0°F to +150°F (-18°C to +65°C)			•	•	•					•		Capacitance	865
	1 to 100 psid (0.0 to 7 bar)	0.25%	0.50%	0.040%	0°F to +175°F (-18°C to +80°C)			•	•	•					•		Capacitance	830
	Vacuum to 1,000 (-1 to 69 bar)	0.20%	0.50%	0.040%	-40°F to +260°F (-40°C to +125°C)				•	•		•			•		Capacitance	890
	5 to 260 psig (0.35 to 18 bar)	0.25%	0.20%	0.012%	-40°F to +180°F (-40°C to +80°C)	•	•	•	•						•		Strain Gauge (MMS)	2400
	500 to 10,000 psig (0 to 690 bar)	0.10%	0.05%	0.20%	-40°F to +185°F (-40°C to +85°C)											•	Strain Gauge (Sputtered)	9000

* Specific temperature capability depends on electrical connection selected. See specifications on respective product pages

PRESSURE TRANSDUCERS

2200 Series / 2600 Series – General Purpose Industrial Pressure Transducers

- ▶ Gauge, Absolute, Vacuum and Compound Pressure Models Available
- ▶ Submersible, General Purpose and Wash Down Enclosures
- ▶ High Stability Achieved by CVD Sensing Element
- ▶ Millivolt, Voltage and Current Output Models

The 2200 series features stability and accuracy in a variety of enclosure options. The 2600 series extends the packaging options via an all welded stainless steel back end for demanding submersible and industrial applications. The 2200 and the 2600 feature proven CVD sensing technology, an ASIC (amplified units), and modular packaging to provide a sensor line that can easily accommodate specials while not sacrificing high performance.

Specifications

Input	
Pressure Range	Vacuum to 6000 psi (400 bar)
Proof Pressure	2 x Full Scale (FS) (1.5 x Fs for 400 bar, ≥ 5000 psi)
Burst Pressure	>35 x FS <= 100 psi (6 bar); >20 x FS >= 1000 psi (60 bar); >5 x FS <= 6000 psi (400 bar)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.25 % FS typical (optional 0.15% FS)
Thermal Error	1.5% FS typical (optional 1% FS)
Compensated Temperatures	-5°F to +180°F (-20°C to +80°C)
Operating Temperatures	-40°F to +260°F (-40°C to +125°C) for elec. codes A, B, C, 1 -5°F to +180°F (-20°C to +80°C) for elec. codes 2, D, G, 3 -5°F to +125°F (-20°C to +50°C) for elec. codes F, M, P Amplified units >100°C maximum 24 VDC supply
Zero Tolerance	1% of span
Span Tolerance	1% of span
Response Time	0.5 ms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See ordering chart
Enclosure	316 ss, 17-4 PH ss IP65 NEMA 4 for elec. codes A, B, C, D, G, 1, 2, 3 IP67 for elec. code "F" IP68 for elec. codes M, (max depth 200 meters H ₂ O) IP30 for elec. code "3" with flying leads
Vibration	70g, peak to peak sinusoidal, 5 to 2000 Hz (Random Vibration: 20 to 2000 Hz @ ≈20g Peak per MIL-STD.-810E Method 514.4)
Acceleration	100g steady acceleration in any direction 0.032% FS/g for 15 psi (1 bar) range decreasing logarithmically to 0.0007% FS/g for 6000 psi (400 bar) range.
Shock	20g, 11 ms, per MIL-STD.-810E Method 516.4 Procedure I
Approvals	CE, UR (22ET, 26ET Intrinsically Safe)
Weight	Approx. 100 grams (additional cable; 75 g/m)

Series 2200



Series 2600



Individual Specifications

Millivolt Output units	
Output	100 mV (10 mv/v)
Supply Voltage (Vs)	10 VDC (15 VDC max.) Regulated
Bridge resistance	2600-6000 ohms
Voltage Output units	
Output	see ordering chart
Supply Voltage (Vs)	1.5 VDC above span to 35 VDC @ 6 mA
Supply Voltage Sensitivity	0.01% FS/Volt
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	approx 6 mA at 7.5V output
Current Output units	
Output	4-20 mA (2 wire)
Supply Voltage (Vs)	24 VDC, (7-35 VDC)
Supply Voltage Sensitivity	0.01% FS/Volt
Max. Loop Resistance	(Vs-7) x 50 ohms

Electromagnetic Capability

Meets the requirement for CE marking of EN50081-2 for emissions and EN50082-2 for susceptibility.

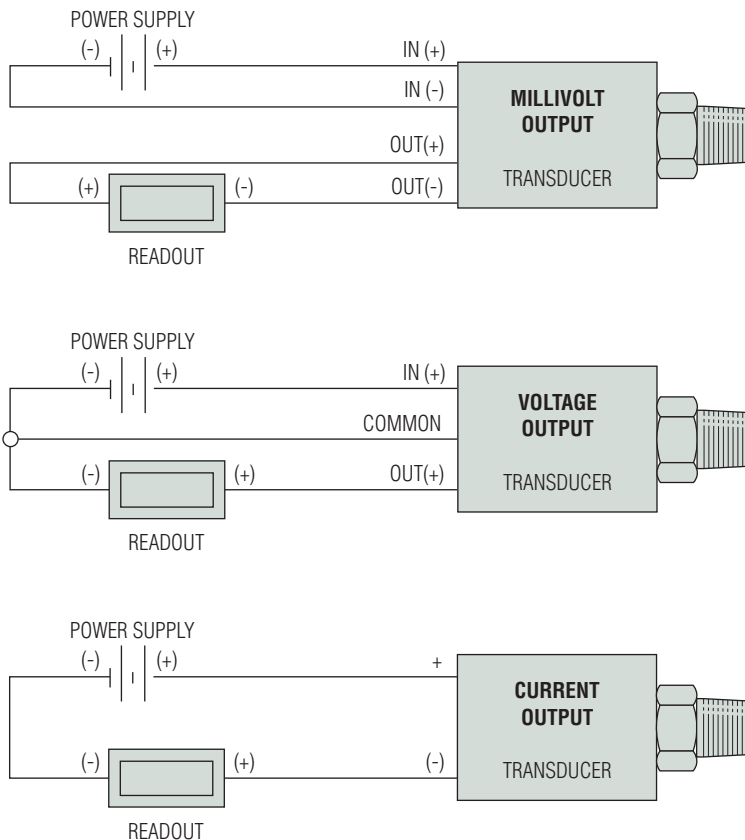
Test Data:

- EN61000-4-2 Electrostatic Discharge. 8kV air discharge, 4kV contact discharge. Unit survived.
- ENV50140 Radiated RF Susceptibility. 10V/m, 80MHz-1GHz, 1kHz mod. Maximum recorded output error was $<\pm 1\%$
- ENV50204 Radiated RF Susceptibility to Mobile Telephones. 10V/m, 900MHz. Maximum recorded output error was $<\pm 1\%$.
- EN61000-4-4 Fast Burst Transient. 2kV, 5/50ns, 5kHz for 1 minute. Unit survived.
- ENV50141 Conducted RF Susceptibility. 10Vms, 1kHz mod, 150kHz - 80MHz. Maximum recorded output error was $<\pm 1\%$

Connection Code		mV units				Voltage units				Current units (4-20mA)		
		IN+	OUT+	OUT-	IN-	IN+	COM	OUT+	EARTH	(+)	(-)	EARTH
A, B, G	"DIN" PIN	1	2	3	E	1	2	3	4	1	2	4
C	"10-6 Bayonet" PIN	A	B	C	D	A	C	B	E	A	B	E
D	"cable"	R	Y	BL	G	R	BK	W	DRAIN	R	BK	DRAIN
F	"IP 67 cable"	R	W	G	BK	R	BK	W	DRAIN	R	BK	DRAIN
M	"Immersible"	R	Y	BL	W	R	W	Y	DRAIN	R	BL	DRAIN
1	"8-4 Bayonet" PIN	A	B	C	D	A	C	B	D	A	B	D
2	"cable"	R	W	G	BK	R	BK	W	DRAIN	R	BK	DRAIN
3	"conduit & cable"	R	W	G	BK	R	BK	W	DRAIN	R	BK	DRAIN


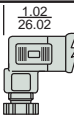
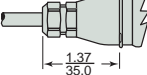
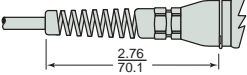
Cable Legend:

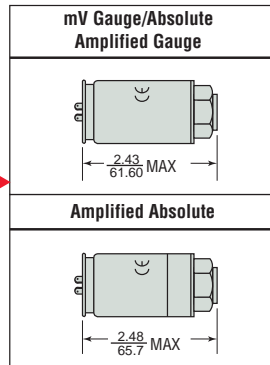
R = Red
 BL = Blue
 BK = Black
 W = White
 Y = Yellow













Dimensions

2200 Series


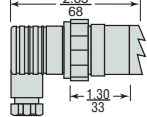

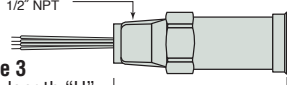
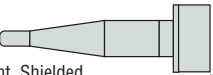
Mini 4 Pin - No Connector
Code B 
Mini 4 Pin - With Connector
Code A  1.02 26.02
IP67 Cable (Waterproof)
Code F  1.37 35.0
24 AWG Shielded PVC
IP65 or NEMA4 Cable
Code D or 2  2.76 70.1
24 AWG Shielded PVC

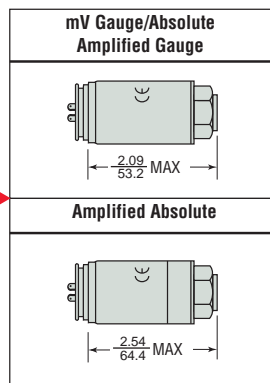


Maximum diameter 1.07" (27.3 mm)


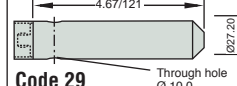
1/8-27 NPT
Code 08  0.59 15
1/4 - 18 NPT
Code 02 with snubber  0.79 20
Code OJ with snubber 
1/4-18 NPT Internal
Code 0E  0.95 24
1/2-14 NPT
Code 0H  1.02 26.0
7/16-20 UNF-2A
Code 04  0.75 19
9/16-18 UNF-2A
Code 1P  0.67 17
G 1/8 Internal
Code 09 
G 1/4 External
Code 01  0.67 17
R 1/4
Code 0A  0.79 20

2600 Series

10-6 or 8-4 Mil-C Connector
10-6 Code C  0.87 22
8-4 Code 1
Large DIN 43650 Plug
Code G  2.65 68 1.30 33
Conduit Connector with Cable
Code 3 1/2" NPT  43 1.70
24 AWG Shielded PVC
Conduit Connector with Flying Leads
Code 3 1/2" NPT with length "U"  1.70/43
Moulded, Immersible Cable
Code M  0.90 23
24 AWG, Vent, Shielded, Polyurethane



Maximum diameter 1.07" (27.3 mm)

Nose Cone - Black Acetal
Code 19  0.75 19
Nose Cone Sink Weight
Code 29  4.67/121 Through hole Ø 10.0

inch
mm

How to Order

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

2200 B G A60 01 A 3 U A

Series
2200 **2600** **22 ET⁴** **26 ET⁴**

Output
A - 100 mV **C** - 1-6V **J** - 0.5-5.5V **G** - 0.2-10.2V
B - 4-20mA **D** - 1-11V **R** - 0-5V **F** - 0.1-5.1V
 H - 1-5V **S** - 0-10V

Pressure Datum
A* - Absolute **G** - Gauge
*Max absolute range is 25 bar. (≤ 300 psi)

Pressure Range³ – psi

F07 - 0-7.5	G60 - 0-600	Vac = -15 psi
F15 - 0-15	H10 - 0-1,000	1F5 - Vac-0
F30 - 0-30	H15 - 0-1,500	3F0 - Vac-15
F60 - 0-60	H20 - 0-2,000	6F0 - Vac-45
G10 - 0-100	H30 - 0-3,000	1G0 - Vac-85
G15 - 0-150	H40 - 0-4,000	1G5 - Vac-135
G20 - 0-200	H50 - 0-5,000	2G0 - Vac-185
G30 - 0-300	H60 - 0-6,000	3G0 - Vac-285
G50 - 0-500		

Pressure Range - bar

A10 - 0-1	B25 - 0-25	Vac = -1 bar
A16 - 0-1.6	B40 - 0-40	1A0 - Vac-0
A25 - 0-2.5	B60 - 0-60	1A6 - Vac-0.6
A40 - 0-4	C10 - 0-100	2A5 - Vac-1.5
A60 - 0-6	C16 - 0-160	4A0 - Vac-3
B10 - 0-10	C25 - 0-250	6A0 - Vac-5
B16 - 0-16	C40 - 0-400	1B0 - Vac-9
		1B6 - Vac-15
		2B5 - Vac-24
		4B0 - Vac-39

Pressure Port

08 - 1/8-27 NPT External	09 - G1/8 Internal
02 - 1/4-18 NPT External	01 - G1/4 External
0J - 1/4 NPT External w/snubber	0A - R1/4 External
0E - 1/4 NPT Internal	Submersible (2600 only)
0H - 1/2-14 NPT External	19 - Plastic Nose Cone
04 - 7/16-20 External (SAE #4, J514)	29 - Sink Weight Nose Cone
1P - 9/16-18 External (SAE #6, J1926-2)	
1J - 7/16-20 External (SAE #4, J1926-2)	

Performance Code
A - .25%/1.5%
B - .15%/1.0%

Cable Length¹
U - No Cable Fitted^{1 2}
D - 1 Metre (3 feet)
E - 3 Metres (9 feet)
F - 5 Metres (16 feet)
G - 10 Metres (32 feet)

Apparatus Protection
2 - mV Only Transient Protection CE Mark, UR
3 - Amplified Only RFI Protected CE Mark, UR
E - Amplified only IS mark (Div. 1 only)⁴
T - Amplified only IS mark (Div. 1 and 2)^{4 5}

Electrical Connection (See Notes)
2200 Series
A - 4 PIN DIN (Micro) Mating Connector Supplied
B - 4 PIN DIN (Micro) Mating Connector Not Supplied
2 - Cable Nema 4 USA
D - Cable European Color Code
F - Cable Gland Metal IP67

2600 Series
C - Fixed Plug Size 10-6 Mating Plug Not Supplied
G - Fixed Plug To DIN 43650 Mating Plug Supplied
M - Moulded Cable Immersible
1 - Fixed Plug Size 8-4 Mating Plug Not Supplied
3 - Conduit Connector 1/2NPT Ext. 1M Cable²

Notes:

- When electrical connection is cable please select a cable length from Table 1 below. When electrical connection is DIN or plug style "U" must be specified.
- Where electrical connection -3 and cable length -U occur in part number, the unit will be supplied with flying leads (4-1/2" IP30). Additional Pressure Ranges are available. Please consult factory.
- Intrinsically safe transducers are available with amplified outputs only. (ETL, entity approved for Class I, Division 1, Groups C & D, hazardous areas; Class I, Divisions 1 and 2, Groups C & D for Electrical Connection Codes -A, -B, -G or -3 only.
- Apparatus Protection Code -T is available for Electrical Connection Codes -A, -B, -G or -3 only.



Table 1 - Cable Length

(2600 Series) (2200 Series select "U" through "G")

Code	Length (M)	Code	Length (M)
U	No Cable Fitted	M	40
D	1	N	50
E	3	P	75
F	5	Q	100
G	10	R	125
H	15	S	150
J	20	4	170
K	25	5	200
L	30	6	225

1200 Series / 1600 Series – OEM Transducers Featuring Exceptional Proof Pressure and Stability Specifications

- ▶ Gauge, Vacuum, and Compound Pressure Models
- ▶ General Purpose and Wash down Enclosures
- ▶ High Proof Pressure Achieved by Thicker Diaphragm Construction
- ▶ Voltage and Current Output Models

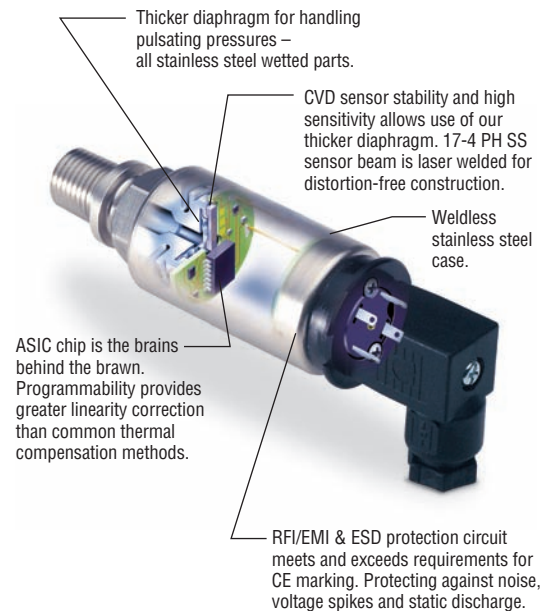
The 1200 Series features stability and toughness via its CVD and ASIC design coupled with a thicker diaphragm. The thicker diaphragm enables these sensors to survive most pressure spikes caused by pump ripple, solenoid valves, etc. The 1600 Series extends the packaging options by providing an all welded stainless steel back end for demanding industrial applications. A modular design allows special ordering of fittings, electrical cables, etc. for OEM applications. The ASIC and CVD technology enables Gems to offer almost any output over any pressure range.

Specifications

Input	
Pressure Range	Vacuum to 6000 psi (400 bar)
Proof Pressure	4 x Full Scale (FS) (<1% FS Zero Shift)
Burst Pressure	>35 x FS <= 60 psi (4 bar); >20 x FS <= 600 psi (40 bar); >5 x FS <= 6000 psi (400 bar)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Supply Voltage Sensitivity	0.01% FS/Volt
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.5% FS typical
Thermal Error	2.0% FS typical
Compensated Temperatures	-5°F to +180°F (-20°C to +80°C)
Operating Temperatures	-40°F to +260°F (-40°C to +125°C) for elec. codes A, B, C, 1 -5°F to +180°F (-20°C to +80°C) for elec. codes 2, D, G, 3 -5°F to +125°F (-20°C to +50°C) for elec. code F temperatures >100°C supply is limited to 24 VDC
Zero Tolerance	1% of span
Span Tolerance	1% of span
Response Time	0.5 ms
Mechanical Configuration	
Pressure Port	see ordering chart
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	see ordering chart
Enclosure	316 SS, 17-4 PH ss IP65 NEMA 4 for elec. codes A,B,C,D,G,1,2,3 IP67 for elec. codes F IP30 for elec. code "3" with flying leads
Vibration	70g, peak to peak sinusoidal, 5 to 2000 Hz (Random Vibration: 20 to 200 Hz @ ≈20g Peak per MIL-STD.-810E Method 514.4)
Acceleration	100g steady acceleration in any direction 0.032% FS/g for 15 psi (1 bar) range decreasing logarithmically to 0.0007% FS/g for 6000 psi (400 bar) range.
Shock	20g, 11 ms, per MIL-STD.-810E Method 516.4 Procedure I
Approvals	CE, UR (12 ET, 16 ET Intrinsically safe)
Weight	approx. 100 grams (additional; cable 75 g/m)



Along with the superiority of the CVD strain gauge, Psibar® transducers incorporate components to leverage the sensing element's strength. The output is a product with a unique balance of performance and value unmatched in today's pressure sensing market.



Individual Specifications

Voltage Output units	
Output	See ordering chart
Supply Voltage (Vs)	1.5 VDC above span to 35 VDC
Min. Load Resistance	(FS output / 2) Kohms
Current Output units	
Output	4-20 mA (2 wire)
Supply Voltage (Vs)	24 VDC, (7-35 VDC)
Max. Loop Resistance	(Vs-7) x 50 ohms

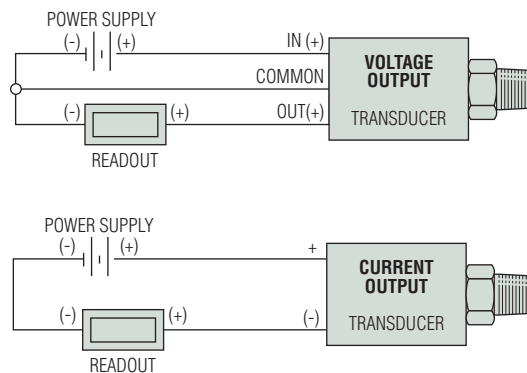
Electrical Connection Cable		Voltage Units				Current Units (4-20 mA)		
		IN+	COM	OUT+	EARTH	(+)	(-)	EARTH
A, B, G "DIN"	PIN	1	2	3	4	1	2	4
C "10-6 Bayonet"	PIN	A	C	B	E	A	B	E
D "cable"		R	BK	W	DRAIN	R	BK	DRAIN
F "IP 67 cable"		R	BK	W	DRAIN	R	BK	DRAIN
1 "8-4 Bayonet"	PIN	A	C	B	D	A	B	D
2 "cable"		R	BK	W	DRAIN	R	BK	DRAIN
3 "conduit & cable"		R	BK	W	DRAIN	R	BK	DRAIN

Electromagnetic Capability

Meets the requirement for CE marking of EN50081-2 for emissions and EN50082-2 for susceptibility.

Test Data:

- EN61000-4-2 Electrostatic Discharge. 8kV air discharge, 4kV contact discharge. Unit survived.
- ENV50140 Radiated RF Susceptibility. 10V/m, 80MHz-1GHz, 1kHz mod. Maximum recorded output error was $\leq \pm 1\%$
- ENV50204 Radiated RF Susceptibility to Mobile Telephones. 10V/m, 900MHz. Maximum recorded output error was $\leq \pm 1\%$.
- EN61000-4-4 Fast Burst Transient. 2kV, 5/50ns, 5kHz for 1 minute. Unit survived.
- ENV50141 Conducted RF Susceptibility. 10Vms, 1kHz mod, 150kHz - 80MHz. Maximum recorded output error was $\leq \pm 1\%$



Cable Legend:

- R = Red
- BL = Blue
- BK = Black
- W = White
- Y = Yellow

Table 1 - Cable Length

Code	Length (M)	Code	Length (M)
U	No Cable Fitted	M	40
D	1	N	50
E	3	P	75
F	5	Q	100
G	10	R	125
H	15	S	150
J	20	4	170
K	25	5	200
L	30	6	225

Monitor Liquid Level with Gems Psibar® Pressure Transducers

- ▶ Continuously Monitor Liquid Levels
- ▶ Stainless Steel Wetted Parts are Compatible With Most Fluids
- ▶ Mount Through Top or Side of Tanks

Gems Psibar® pressure transducers provide a great, cost-effective method for measuring liquid levels. From measuring inventories in process storage tanks to monitoring hot water feed tanks, our design flexibility promotes easy installation, with mounting either through the tank top or from the side.

Getting Started...

Tank content is determined from the pressure exerted on the sensor, so you need to know the depth **and** the specific gravity of the liquid being measured. When these two factors are known, the following equation can be used to determine the pressure range needed to specify an applicable pressure transducer:

$$\text{Pressure in PSI} = \text{Liquid Level (in feet)} \times (\text{Specific Gravity} \times 0.433)$$

Example:

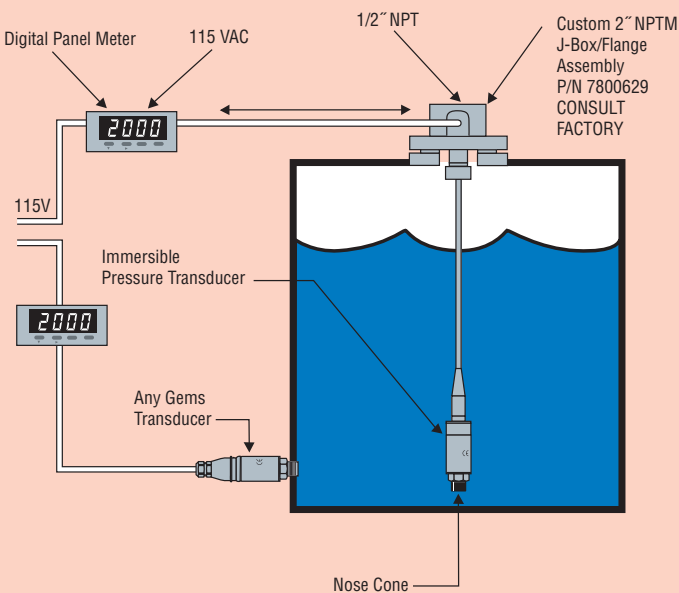
Tank Level:

$$\text{Pressure in PSI} = \text{Liquid Level (in feet)} \times (\text{Specific Gravity} \times 0.433)$$

$$\text{Pressure in PSI} = 30 \times (1.0 \times 0.433)$$

$$\text{Pressure in PSI} = 12.99 \text{ PSI}$$

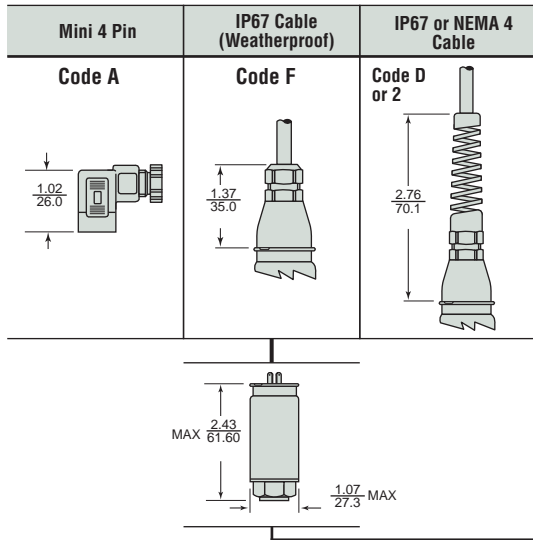
Using a Psibar Series 1200, 1600, 2200 or 2600 transducer, specify Pressure Range code **F15** (0-15 PSI).



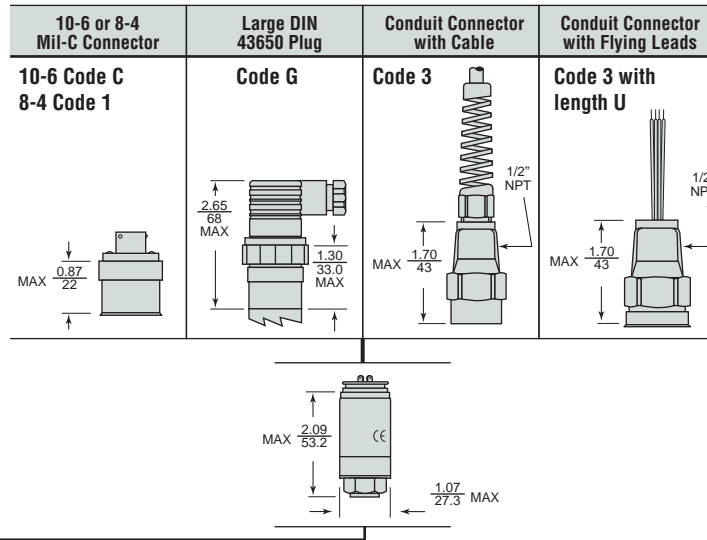


Dimensions

1200 Series



1600 Series



1/8 NPT	1/4-18 NPT	1/4-18 NPT Internal	1/2-14 NPT	7/16 - 20 UNF-2A (SAE J514)	9/16-18 UNF-2A	G 1/8	G1/4 External	R 1/4
MAX 0.59 15	MAX 0.79 20	0.95 24	MAX 1.02 26.0	MAX 0.75 19	MAX 0.67 17		MAX 0.67 17	0.79 20
Code 08	Code 02 (0J with snubber)	Code 0E	Code 0H	Code 04	Code IP	Code 09	Code 01	Code 0A

How to Order

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

Series: **1600** B G A60 01 D 3 D A

Output: B - 4-20mA, C - 1-6V, D - 1-11V, H - 1-5V; J - 0.5-5.5V, R - 0-5V, S - 0-10V

Datum: G - Gauge

Pressure Range³ - psi: F15 - 0-15, F30 - 0-30, F60 - 0-60, G10 - 0-100, G15 - 0-150, G20 - 0-200, G30 - 0-300, G50 - 0-500; G60 - 0-600, H10 - 0-1.000, H15 - 0-1.500, H20 - 0-2.000, H30 - 0-3.000, H40 - 0-4.000, H50 - 0-5.000, H60 - 0-6.000; Vac = -15 psi, 1F5 - Vac-0, 3F0 - Vac-15, 6F0 - Vac-45, 1G0 - Vac-135, 1G5 - Vac-135, 2G0 - Vac-185, 3G0 - Vac-285

Pressure Range³ - bar: A10 - 0-1, A16 - 0-1.6, A25 - 0-2.5, A40 - 0-4, A60 - 0-6, B10 - 0-10, B16 - 0-16; B25 - 0-25, B40 - 0-40, B60 - 0-60, C10 - 0-100, C16 - 0-160, C25 - 0-250, C40 - 0-400; Vac = -1 bar, 1A0 - Vac-0, 1A6 - Vac-0.6, 2A5 - Vac-1.5, 4A0 - Vac-3, 6A0 - Vac-5, 1B0 - Vac-9, 1B6 - Vac-15, 2B5 - Vac-24, 4B0 - Vac-39

Electrical Connection: 1200 Series (A, B, F, 2), 1600 Series (C, 1, G, 3)

Apparatus Protection: 3, E, T

Performance Code: A

Cable Length¹: U, D

Pressure Port: 08, 02, 0J, 0E, 0H, 04, 1P, 1J

European Threads: 09, 01, 0A

- Notes:
- When electrical connection is cable please select a cable length from Table 1 (opposite page). When electrical connection is DIN or plug style "U" must be specified.
 - Electrical Connections "F" and "2" are 24AWG, Shielded, PVC Cable.
 - Additional Pressure Ranges are available. Please consult factory.
 - Intrinsically safe transducers are available with amplified outputs only. (ETL, entity approved for Class I, Division 1, Groups C & D, hazardous areas; Class I, Divisions 1 and 2, Groups C & D for Electrical Connection Codes -A, -B, -G or -3 only.)
 - Apparatus Protection Code -T is available for Electrical Connection Codes -A, -B, -G or -3 only.

3300 Series

Compact Low Pressure OEM Pressure Transmitters

- ▶ 0 - 250 psi pressure ranges (0 to 16 bar)
- ▶ Choice of outputs, electrical connections and pressure ports
- ▶ Operating temperature up to 257°F (125°C)

For OEMs that need consistent high levels of performance, reliability and stability the 3300 Series units offer a small package size with all stainless steel wetted parts at an unbeatable price performance ratio. A wide choice of electrical outputs as well as both electrical and pressure connections means the unit is suitable for most applications without modification. The compact construction of the 3300 series makes it ideal for installation where space is at a premium.

Specifications

Performance	
Long Term Drift	0.2% FS/YR (non-cumulative)
Accuracy	0.25% FS
Thermal Error	±1% max./176°F (80°C)
Compensated Temperatures	-4°F to +212°F (-20°C to +100°C)
Operating Temperatures	-40°F to +257°F (-40°C to +125°C)
Zero Tolerance	±0.5% of span, max.
Span Tolerance	±1% of span, max.
Fatigue Life	Designed for more than 100 M cycles
Mechanical Configuration	
Pressure Port	See under "How to Order," last page
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See under "How to Order," last page
Enclosure	IP67 (IP65 for electrical codes B and K)
Vibration	BSEN 60068-2-6 (FC) BSEN 60068-2-64 (FH)
Shock	BSEN 60068-2-2n (Ea)
Approvals	CE, PED, RoHS
Weight	1.23 to 1.9 ounce (35 to 53 grams). Configuration dependant

Individual Specifications

Voltage Output Units	
Output	0 V min. to 10 V max. See under "How to Order," last page
Supply Voltage (Vs)	3 Volts above full scale to 30 Vdc (24 Vdc, max. above 230°F (110°C) applications). Source and Sinks 8mA
Current Output Units	
Output	4-20 mA
Supply Voltage (Vs)	10-30 Vdc (24 Vdc, max. above 230°F (110°C) applications)
Ratiometric Output Units	
Output	0.5 to 4.5 Vdc
Supply Voltage (Vs)	5 Vdc ±10%
Max Load Resistance	(Supply Voltage - 7.5) x 50 ohms



EMC Specifications

Emissions Tests: EN61326-1:2006 and EN61326-2-3:2006

Test Standard	Test
EN55011:2007	Conducted Emissions
EN55011:2007	Radiated Emissions

Immunity Tests: EN61326-1:2006 and EN61326-2-3:2006

Test Standard	Test
EN61000-4-2:1995 + A1 + A2	Electrostatic Discharge
EN61000-4-3:2006	Radiated Immunity
EN61000-4-4:2004	Fast Burst Transients
EN61000-4-6:2006	Conducted RF Immunity

Pressure Capability

PSI

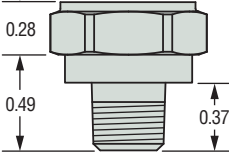
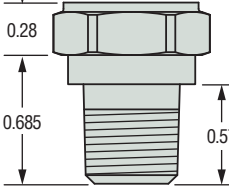
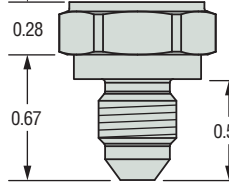
Pressure Range (PSI)	Burst Pressure (x Full Scale)	Proof Pressure
0-15	150	3x Proof Pressure
0-30	200	
0-50	125	
0-100	85	
0-150	50	
0-200	30	
0-250	30	

Bar

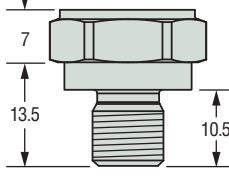
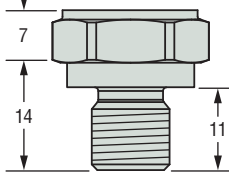
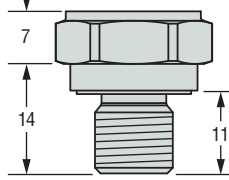
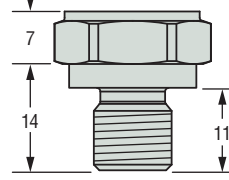
Pressure Range (Bar)	Burst Pressure (x Full Scale)	Proof Pressure
0-1	15	3x Proof Pressure
0-1.6	100	
0-2.5	200	
0-4	125	
0-6	85	
0-10	50	
0-16	30	

Pressure Ports

SAE

	1/8"-27 NPT	1/4"-18 NPT	7/16"-20 UNF with 37° Flare
Dimensions in Inches			
Fitting Code	08	02	04
Torque	2-3 TFFT*	2-3 TFFT*	15-16 NM

Metric

	G1/8"-27 External	G1/4" External	G1/4" A Integral Face Seal	M12 x 1.5 - 6g
Dimensions in MM				
Fitting Code	0S	01	05	0L
Torque	22-25 NM	30-35 NM	30-35 NM	28-30 NM

*NPT Threads 2-3 turns from finger tight. Wrench tighten 2-3 turns.

General Notes:

1. The diameter of all cans is 19 mm (0.748")
2. Hex is 22 mm (0.866") Across Flats (A/F) for deep socket mounting

Electrical Connector

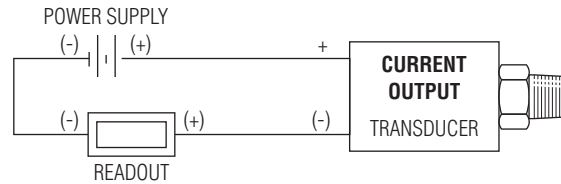
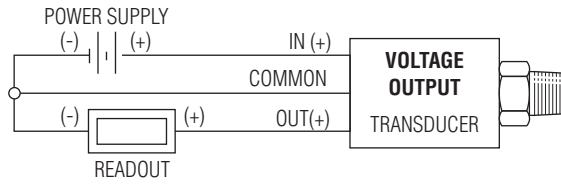
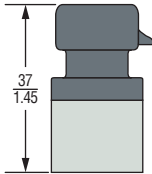
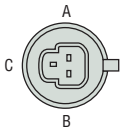
DIN 9.4 mm			M12 x 1P			Deutsch DT04-4P			Amp Superseal 1.5	
Code B		Code K		Code E		Code 8		Code 6		
Pin #	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Note
1	V_{out} (pressure)	No Connect	V_{supply}	Supply	V_{supply}	Supply	Ground	Return	V_{out} (pressure)	Amp Superseal connectors may be used with 0.5-4.5V Ratiometric Output only.
2	V_{supply}	Supply	Ground	Return	V_{out} (pressure)	No Connect	V_{supply}	Supply	Ground	
3	No Connect	No Connect	V_{out} (pressure)	No Connect	Ground	Return	No Connect	No Connect	V_{supply}	
4	Ground	Return	No Connect	No Connect	No Connect	No Connect	V_{out} (pressure)	No Connect	—	

Mating Connectors

Part Number	Description	For Use on Elect. Code #
557230	MINI DIN Connector, Strain Relief (with drive screw & gasket)	B and K
557703-01M0	M12 Cord Set – 1 Meter (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-03M0	M12 Cord Set – 3 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-04M0	M12 Cord Set – 4 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-05M0	M12 Cord Set – 5 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
	Recommended Mating Parts (AMP p/n: Housing 282087-1; Contacts 3X 183025-1; Seal 281934-1; Boot 880811-2)	6
557701	AMP Superseal Mate Kit	6
210729	AMP 3.5' Cable Cord Set – Clear Pos 1, Black Pos 2, Red Pos 3	6
210730	AMP 12" Flying Leads Cord Set – White Pos 1, Black, Red Pos 3	6
	Recommended Mating Parts (Deutsch p/n: Housing Plug DT064S-P012; Wedge W4S-P012; Sockets 4X 0462-201-1631)	8
224153	Deutsch Cord Set 3' Long (18 AWG PVC Cable – Black 1, Red 2, Green 3, White 4)	8
	Recommended Mating Parts (Delphi Packard MetriPack p/n: Body 12065286; Seal 12052893. Consult Delphi for Contacts)	9
218760	Packard Mate Kit	9
223974	Packard Cord Set 3' Long (24 AWG PVC Cable – White 1, Black 2, Red 3)	9
223975	Packard Cord Set 6' Long (24 AWG PVC Cable – White 1, Black 2, Red 3)	9
227987	Packard Cord Set 14.75' Long (22 AWG PVC Cable - White 1, Black 2, Red 3)	9
220492	Packard Mate - 12" Flying Leads – 3 Conductor PVC 18 AWG	9
222976	Packard Mate - 18" Flying Leads – 3 Conductor PVC 18 AWG	9
220797	Packard Mate - 24" Flying Leads – 3 Conductor PVC 18 AWG	9

Wiring Diagram

Packard MetriPack



Code 9

Pin ID	Voltage Mode	Note
C	V_{out} (pressure)	MetriPack connectors may be used with 0.5-4.5V Ratiometric Output only.
A	Ground	
B	V_{supply}	
—	—	

How to Order

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

Series	3300	X	XXXX	X	XX	X	0	00	
Output	B - 4-20 mA	C - 1-6 V	H - 1-5 V						Electrical Connection
	N - 0.5-4.5 V	P - 1-10 V	R - 0-5 V						B - Industrial DIN 9.4 mm
	S - 0-10 V	T - 0.5-4.5 V Ratiometric							E - M12 x 1
Pressure Range	01B0 - 1 bar	015P - 15 psi							K - Industrial DIN 9.4 mm (alternate pin out)
	01B6 - 1.6 bar	030P - 30 psi							6 - Amp - Superseal 1.5 Series ²
	02B5 - 2.5 bar	050P - 50 psi							8 - Deutsch DT04-4P
	04B0 - 4 bar	100P - 100 psi							9 - Packard MetriPack ²
	06B0 - 6 bar	150P - 150 psi							Pressure Port
	10B0 - 10 bar	200P - 200 psi							01 - G1/4" External
	16B0 - 16 bar	250P - 250 psi							02 - 1/4"-18 NPT
Pressure Datum	G - Gauge	A - Absolute ¹	V - Compound ¹						04 - 7/16"-20 UNF with 37° Flare
									05 - G1/4" A Integral Face Seal
									08 - 1/8"-27 NPT
									0L - M12 x 1.5 - 6g
									0S - G1/8"-27 External

Notes:

- Contact Gems for availability
- Compatible with Ratiometric Output Only; Code T

6700 Series-Stable Industrial Transmitters with Turndown Capabilities

- ▶ Gauge and Absolute Pressure Models
- ▶ Submersible, General Purpose and Wash down Enclosures
- ▶ High Stability Achieved by Sputtered Sensing Element

The 6700 series features customer accessible 5:1 turndown from nominal range via a switch and potentiometer. Down ranging whether factory or user adjusted is ideal for applications requiring high overpressure. The 6700 are housed in a rugged enclosure for harsh conditions and features superb stability by incorporating Gems CVD sensing element.

Specifications

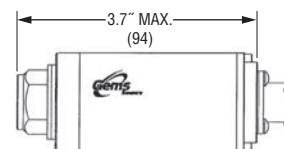
Input	
Pressure Range	0.5 to 400 bar; (7.5 to 6000 psi) Gauge and Absolute
Proof Pressure	2 x Full Scale (FS) (1.5 x FS for 400 bar, ≥ 5000 psi)
Burst Pressure	>35 x FS ≤ 100 psi (6 bar); >20 x FS ≤ 1000 psi (60 bar); >5 x FS ≤ 6000 psi (400 bar)
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Output	4-20 mA (2 wire)
Supply Voltage (Vs)	9.5 to 40 VDC (ExII 1G 9.5 to 28 Vdc)
Supply Voltage Sensitivity	0.005% of max span/Volt
Long Term Drift	0.15% of max span/year (non-cumulative)
Accuracy	0.15% FS typical
Thermal Error Typical	15°F to 120°F (-10°C to +50°C) 0.5% of max span -4°F to +176°F (-20°C to +80°C) 1% of max span
Operating Temperatures	-4°F to +185°F (-20°C to +85°C) elec. conn. code C G & L -4°F to +122°F (-20°C to +50°C) elec. conn. code M, 3 -22°F to +212°F (-30°C to +100°C) process/media
Zero Tolerance	0.15 % span, typical
Span Tolerance	0.15% span, typical
Zero Adjustment	±10% (100% at factory) by potentiometer
Span Adjustment	17% to 100% of span by potentiometer/switches
Max. Loop Resistance	(Vs-9.5) x 50 ohms
Mechanical Configuration	
Pressure Port	see ordering chart
Wetted Parts	17-4 PH Stainless Steel (1 & 1.6b 17-4 PH and 15-7 MO)
Electrical Connection	see ordering chart
Enclosure	318 Duplex SS, 17-4 PH SS IP40 for gauge datum elec code C, L IP65 for absolute datum elec code C, L IP65 for elec. code G, 3 IP68 for elec. code M
Vibration	35g peak sinusoidal, 5 to 2000 Hz
Acceleration	100g steady acceleration in any direction 0.036% FS/g for 10 psi (0.75 bar) range decreasing logarithmically to 0.0007% FS/g for 6000 psi (400 bar) range.
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE, Lloyds Register, optimal EXII 1G; E Exia II CT4 (-40°C < T amb < 75°C) Cert BASEEFA 02ATEX00040X
Weight	approx. 250 grams (additional; cable 75 g/m)



Dimensions in. (mm)

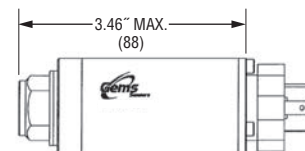
Max diameter 39mm, all models

Code C



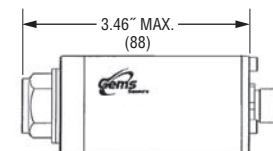
Six Pin Fixed Plug (10-6)

Code G



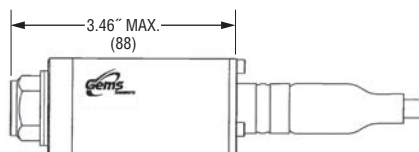
Fixed Plug to DIN 43650 Mating Connector Supplied

Code L



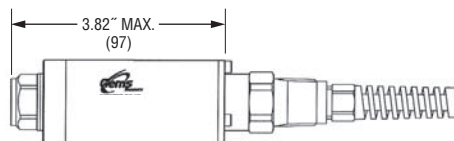
Electrical Connector M12 x 1 (5 Pin)

Code M



Immersible to 200mWG

Code 3



1/2 - 14 NPT conduit

3100 Series and 3200 Heavy Duty Series Compact OEM Pressure Transmitters

- ▶ 0–50 psi to 0-30,000 psi ranges (0-3.5 bar to 0-2,200 bar)
- ▶ High Proof Pressures
- ▶ Broad Choice of Outputs
- ▶ RoHS Compliant

For OEMs that need consistent high levels of performance, reliability and stability the 3100 and 3200 Series sputtered thin film units offer unbeatable price performance ratio in a small package size. They feature all-stainless steel wetted parts, a broad selection of electrical and pressure connections, and wide choice of electrical outputs to allow stock configurations suitable for most applications without modification. At the heart of both these series is a sputter element that also provides exceptional temperature specifications. Plus, our manufacturing process for the 3100 and 3200 Series include the latest automated equipment, producing the most consistent and best price to performance sensor on the market today.

Additionally, 3200 Series transmitters feature thicker diaphragms and a pressure restrictor to withstand the rigors of cavitations or extreme pressure spikes, delivering years of reliable and stable performance in pulsating applications.

The compact construction of both these series makes them ideal for installation where space is at a premium. And they are fully RoHS compliant.

Specifications

Performance	
Long Term Drift	0.2% FS/YR (non-cumulative)
Accuracy	
3100	0.25% FS
3200	0.5% FS for <1000 psi (60 bar)
Thermal Error	
3100	0.83% FS/100°F (1.5% FS/100°C)
3200	2% FS/100°C for <1000 psi (60 bar)
Compensated Temperatures	-40°F to +257°F (-40°C to +125°C)
Operating Temperatures	-40°F to +257°F (-40°C to +125°C)
Zero Tolerance	
3100	0.5% of span
3200	1% FS for <1000 psi (60 bar)
Span Tolerance	
3100	0.5% of span
3200	1% FS for <1000 psi (60 bar)
Response Time	1 ms
Fatigue Life	Designed for more than 100 M cycles
Mechanical Configuration	
Pressure Port	See under "How to Order," last page
Wetted Parts	17-4 PH Stainless Steel
Electrical Connection	See under "How to Order," last page
Enclosure	IP67 (IP65 for electrical codes B and R)
Vibration	40G peak to peak sinusoidal, (Random Vibration: 20 to 1000 Hz @ approx. 40G peak per MIL-STD-810E)
Shock	Withstands free fall to IEC 68-2-32 procedure 1
EMC (Radiated Immunity)	100 V/m
Approvals	CE, conforms to European Pressure Directive, Fully RoHS compliant, UL recognized files # E219842 & E174228
Weight	35 grams



Individual Specifications

Voltage Output (3-wire)	0 V min. to 10 V max. See under "How to Order," last page
Supply Voltage	2 Volts above full scale to 30 Vdc max @ 4.5 mA (6.5 mA on dual output version)
Source and Sinks	2 mA
Current Output (2-wire)	4-20 mA
Supply Voltage	8-30 Vdc
Maximum Loop Resistance	(Supply Voltage-8) x 50 ohms
Ratiometric Output	0.5 to 4.5 Vdc @ 4 mA (6.5 mA on dual output version)
Supply Voltage	5 Vdc ±10%

Pressure Capability

Pressure Range PSI (Bar)	Proof Pressure (x Full Scale)		Burst Pressure (x Full Scale)	
	3100	3200	3100	3200
50-300 (3.5-25)	3.00 x FS	3.00 x FS	40 x FS	
500-1,500 (40-100)			20 x FS	
2,000-6,000 (160-400)			10 x FS	
7,500-9,000 (600)			10 x FS	
10,000 (700)	2.00 x FS	3.00 x FS	4 x FS	>60,000 PSI (4,000 bar)
15,000 (1,000)				
25,000 (1,800)				
30,000 (2,200)	1.40 x FS	—	1.5 x FS	—

Pressure Ports

SAE Dimensions in Inches				
	Fitting Code Torque	08 = 1/8"-27 NPT 2-3 TFFT*	4D = 1/8"-27 NPTF Dryseal 2-3 TFFT*	02 = 1/4"-18 NPT 2-3 TFFT*
Fitting Code Torque	4C = 1/4"-18 NPTF Dryseal 2-3 TFFT*	4N = SAE J1926:2/3/8-24 18-20 NM	1J = 7/16"-20 UNF with O-Ring 18-20 NM	04 = 7/16"-20 UNF with 37° Flare 15-16 NM
			Metric Dimensions in MM →	
Fitting Code Torque	1G = SAE 4 Female 7/16" Schraeder 18-20 NM	1P = 9/16-18 "Heavy Duty" 18-20 NM		01 = G1/4"-27 External 30-35NM
Fitting Code Torque	05 = G1/4" A Integral Face Seal 30-35 NM	0L = M12 x 1.5 28-30 NM	2T = M12x1.5 HP Metal Washer Seal 30-35 NM	0K = M14 x 1.5 2-3 TFFT*

*NPT Threads 2-3 turns from finger tight. Wrench tighten 2-3 turns.

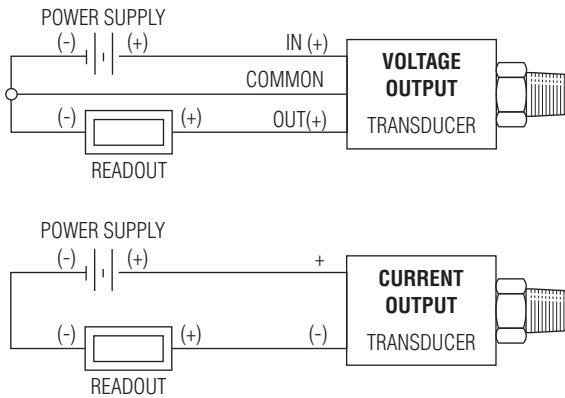
General Notes:

1. The diameter of all cans is 19 mm (0.748")
2. Hex is 22 mm (0.866") Across Flats (A/F) for deep socket mounting
3. O-Ring material, where applicable, is Nitrile[®] unless otherwise specified.

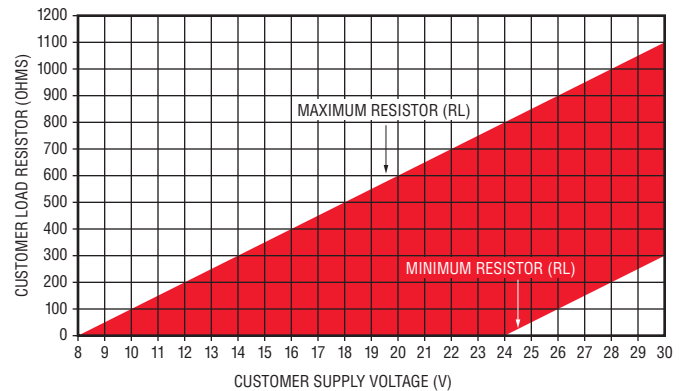
Electrical Connector

DIN 9.4 mm			M12 x 1P			Amp Superseal 1.5			Deutsch DT04-4P		
Code B		Code R		Code E		Code 6		Code 8			
Pin #	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	Voltage Mode	Current Mode	
1	V_{out1} (pressure)	No Connect	V_{supply}	Supply	V_{supply}	Supply	V_{out1} (pressure)	No Connect	Ground	Return	
2	V_{supply}	Supply	Ground	Return	V_{out1} (pressure)	No Connect	Ground	Return	V_{supply}	Supply	
3	V_{out2} (temp)	No Connect	V_{out} (pressure)	No Connect	Ground	Return	V_{supply}	Supply	V_{out2} (temp)	No Connect	
4	Ground	Return	V_{out2} (temp)	No Connect	V_{out2} (temp)	No Connect	—	—	V_{out1} (pressure)	No Connect	

Wiring Diagram

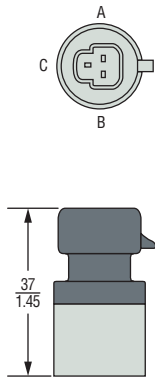


Current Output Mode (Load Resistor Range)



Cable-Out Types

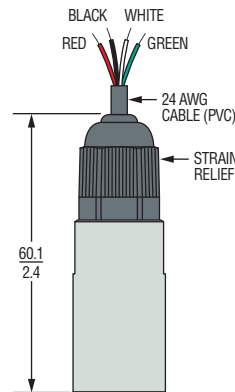
Packard MetriPack



Code 9

Pin ID	Voltage Mode	Current Mode
C	V_{out1} (pressure)	No Connect
A	Ground	Return
B	V_{supply}	Supply
—	—	—

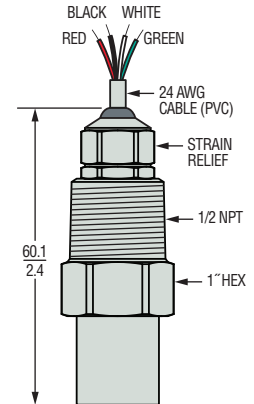
Cable



Code F

Wire Color	Voltage Mode	Current Mode
Red	Supply	Supply
Black	Ground	Return
White	V_{out1} (pressure)	No Connect
Green	V_{out2} (temp)	No Connect

1/2" Conduit Connection



Code 3

Voltage Mode	Current Mode
Supply	Supply
Ground	Return
V_{out1} (pressure)	No Connect
V_{out2} (temp)	No Connect

Mating Connectors

Part Number	Description	For Use on Elect. Code #
557230	MINI DIN Connector, Strain Relief (with drive screw & gasket)	B and R
557703-01M0	M12 Cord Set – 1 Meter (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-03M0	M12 Cord Set – 3 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-04M0	M12 Cord Set – 4 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
557703-05M0	M12 Cord Set – 5 Meters (Red 1, Green 2, Blue 3, Yellow 4)	E
	Recommended Mating Parts (AMP p/n: Housing 282087-1; Contacts 3X 183025-1; Seal 281934-1; Boot 880811-2)	6
557701	AMP Superseal Mate Kit	6
210729	AMP 3.5' Cable Cord Set – Clear Pos 1, Black Pos 2, Red Pos 3	6
210730	AMP 12" Flying Leads Cord Set – White Pos 1, Black, Red Pos 3	6
	Recommended Mating Parts (AMP p/n: Socket Conn 1-967325-1. Consult AMP for Contacts, Wire Seal and Strain Relief options)	7
557702	DIN 72585 Twist Lock Mate Kit	7
	Recommended Mating Parts (Deutsch p/n: Housing Plug DT064S-P012; Wedge W4S-P012; Sockets 4X 0462-201-1631)	8
224153	Deutsch Cord Set 3' Long (18 AWG PVC Cable – Black 1, Red 2, Green 3, White 4)	8
	Recommended Mating Parts (Delphi Packard MetriPack p/n: Body 12065286; Seal 12052893. Consult Delphi for Contacts)	9
218760	Packard Mate Kit	9
223974	Packard Cord Set 3' Long (24 AWG PVC Cable – White 1, Black 2, Red 3)	9
223975	Packard Cord Set 6' Long (24 AWG PVC Cable – White 1, Black 2, Red 3)	9
227987	Packard Cord Set 14.75' Long (22 AWG PVC Cable - White 1, Black 2, Red 3)	9
220492	Packard Mate - 12" Flying Leads – 3 Conductor PVC 18 AWG	9
222976	Packard Mate - 18" Flying Leads – 3 Conductor PVC 18 AWG	9
220797	Packard Mate - 24" Flying Leads – 3 Conductor PVC 18 AWG	9

PRESSURE TRANSDUCERS

How to Order

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

			3100	B	200PG	02	B	R	01	
Series	<p>3100 / 3200 - Pressure Transducer – Combination Pressure and Temperature¹ 3101 / 3201 - Temp. Output Range -40°C to 125°C 3102 / 3202 - Temp. Output Range 0°C to 100°C 3103 / 3203 - Temp. Output Range 0°C to 80°C</p>									Cable Length (For electrical connections F& 3 only)
Output	<p>B - 4-20 mA C - 1-6 V H - 1-5 V N - 0.5-4.5 V R - 0-5 V S - 0-10 V T - 0.5-4.5 V Ratiometric</p>									Optional Restrictor (3200 only) R - Restrictor 0 - No Restrictor
Pressure Range – psi	<p>050PG - 0-50 psiG⁵ 10CPG - 0-1,000 psiG 10KPS = 0-10,000 psiS 075PG - 0-75 psiG 15CPG - 0-1,500 psiG 15KPS - 0-15,000 psiS² 100PG - 0-100 psiG 20CPS - 0-2,000 psiS 20KPS - 0-20,000 psiS² 150PG - 0-150 psiG 25CPS - 0-2,500 psiS 25KPS - 0-25,000 psiS² 200PG - 0-200 psiG 30CPS - 0-3,000 psiS 300PG - 0-300 psiG 35CPS - 0-3,500 psiS 500PG - 0-500 psiG 40CPS - 0-4,000 psiS 600PG - 0-600 psiG 50CPS - 0-5,000 psiS 750PG - 0-750 psiG 60CPS - 0-6,000 psiS 75CPS - 0-7,500 psiS</p>									Electrical Connection B - Industrial DIN 9.4 mm (mating connector not supplied) E - M12 x 1P (4-Pin) F - Cable version ⁶ G - Large DIN R - Industrial DIN 9.4 mm (alternate pin out) 3 - 1/2" NPT Male Conduit ⁶ 6 - Amp - Superseal 1.5 Series 8 - Deutsch DT04-4P 9 - Packard MetriPack
Pressure Range - bar	<p>0004G - 0-4 barG⁵ 0160S - 0-160 barS 1000S - 1,000 barS² 0005G - 0-5 barG 0250S - 0-250 barS 1600S - 1,600 barS² 0010G - 0-10 barG 0400S - 0-400 barS 0016G - 0-16 barG 0600S - 0-600 barS 0025G - 0-25 barG 0040G - 0-40 barG 0060G - 0-60 barG 0100G - 0-100 barG</p>									Pressure Port ⁴ 08 - 1/8-27 NPT External 02 - 1/4-18 NPT External 04 - 7/16-20 External (SAE #4, J514) 1J - 7/16-20 External (SAE #4, J1926-2) 0E - 1/4"-18 NPT Internal 0K - M14 x 1.5 Straight 1G - Schrader SAE #4, 7/16" Internal 1P - SAE 6 (9/16"-18 UNF 2A) 4C - 1/4-18 NPTF External (Dryseal) 4D - 1/8-27 NPTF External (Dryseal) 4N - SAE 3 (3/8-24 UNF External)

Notes:

- Temperature outputs are for voltage output pressure sensors only (applies to codes **-C**, **-H**, **-N**, and **-T** only) and limited to connections that have 4 pins (Electrical codes **-B**, **-E**, **-7**, and **-8**). Accuracy is 3.5% of temperature span. Requires additional 2mA of power.
- Ranges 15,000 psi (1,000 bar) and above available with **-2T** pressure port only.
- For use with pull-up or pull-down resistors, contact factory.
- Pressure ports **0E** and **1G** are NOT available with the Restrictor option.
- 0-50 PSI (4 bar) – **NOT** available with 4-20 mA or 0-10 Vdc outputs.
- For electrical codes **F** & **3**, specify cable length in meters.



How to Order

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

- SELECT:** **4700 B G B10 00 G 3 000 E**
- 4700** bar units, **4710** psi units
 - Output Response: **B** 4-20 mA Undamped
 - Pressure Datum: **G** gauge; **A** absolute
(For differential models and compound ranges consult sales)
 - Insert pressure range code from table below
 - Pressure Port see chart
 - Electrical Connection **G**
C Fixed plug size 10-6, mate sold separately part # 499532-0006
G Fixed plug to DIN 43650 mating plug supplied; **L** M12 x 1 (5 pin)
M IP68 immersible cable; **3** 1/2-14 NPT Conduit
 - Approvals/Protection (For flame proof units see next page)
3 CE; **G** ATEX approved intrinsically safe EEIa IIC T4, Galvanic, isolators
 - Cable Length in meters (requires electrical connection code F)
000 No Cable; **001** 1 meter; **999** 999 meters
 - Static/Thermal Performance
E 0.2%/1.6%; **F** 0.2%/1.0%. 500mbar range performance code **E** only

Electrical Connections

Electrical Connection Code	Wiring		
	(+)	(-)	EARTH
G "DIN"	1	2	4
C "10-6 Bayonet"	A	B	E
F "IP 68 Cable"	R	BL	DRAIN

Cable Legend:
R = Red BL = Blue

4700 Model Bar Ranges	Range Code	Gauge (G)* Absolute (A)
0 to 500mb	N50	G, A
0 to 1	A10	G, A
0 to 1.6	A16	G, A
0 to 2.5	A25	G, A
0 to 4	A40	G, A
0 to 6	A60	G, A
0 to 10	B10	G, A
0 to 16	B16	G, A
0 to 25	B25	G, A
0 to 40	B40	G, A
0 to 60	B60	G, A
0 to 100	C10	G, A
0 to 160	C16	G, A
0 to 250	C25	G, A
0 to 400	C40	G, A
0 to 600	C60	G, A**
0 to 690	C69	G, A**

4710 Model PSI Ranges	Range Code	Gauge (G)* Absolute (A)
0 to 10	F10	G
0 to 15	F15	G, A
0 to 30	F30	G, A
0 to 60	F60	G, A
0 to 100	G10	G, A
0 to 150	G15	G, A
0 to 200	G20	G, A
0 to 300	G30	G, A
0 to 500	G50	G, A
0 to 1000	H10	G, A
0 to 1500	H15	G, A
0 to 3000	H30	G, A
0 to 5000	H50	G, A
0 to 6000	H60	G, A
0 to 10000	J60	G, A**

* For compound ranges please consult factory
** Inconel pressure port required.

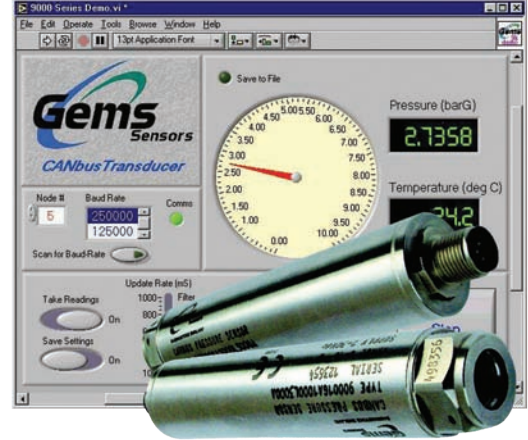
Pressure Ports - See Page H-24 for Dimensions

Codes		Description
SS	Inconel	
OO	OK	G 1/4 internal
AO	AK	G 1/4 AT external
KO	KK	7/16-20 UNF 3A external
MO	MK	M14 x 1.5 external
PO	PK	G 1/2 AT external
BO	BK	1/4-18 NPT external
GO	GK	1/2-14 NPT external
SO	SK	7/16-20 UNJF external, MS 33656E4
Immersible		
10		Plastic nose cone
20		Nose cone with restrictor
30		Nose cone w/ss Sink Weight

9000 Series CANbus Digital Output Pressure Transducer



- ▶ High accuracy over wide operating temperature range
T.E.B. $\pm 0.2\%$ Span, -40°F to $+185^{\circ}\text{F}$ (-40°C to $+85^{\circ}\text{C}$)
- ▶ Excellent Long Term Stability
 $<0.05\%$ per year, non-cumulative
- ▶ Small size: 25mm diameter, 120mm length
- ▶ Isolated high speed CAN interface - ISO11898
- ▶ Programmable update rate
- ▶ Standard application interface - CANopen DS301 & DSP404
- ▶ In system programmable
- ▶ Self diagnostics - bridge fault detection, hours in service, watchdog, last calibration date, next calibration date
- ▶ Unsurpassed customer support - Rapid Development Kit

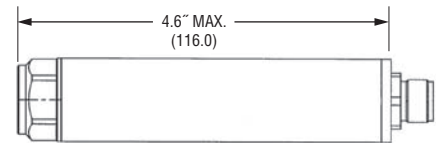


The 9000 CANBUS pressure transducer meets the demands of the test and measurement industry, including automotive and marine applications, with high levels of accuracy over a wide temperature range. The digital output in engineering units eliminates the need for user system calibration.

Designed to have a wide input voltage range, input to output isolation, immunity to noise and self-diagnostics the 9000 is ideal for electrically noisy environments or applications where earthing or grounding can be a problem.

Through the standard CANopen protocol multiple devices can be used on a single bus reducing user cabling.

Dimensions in. (mm)

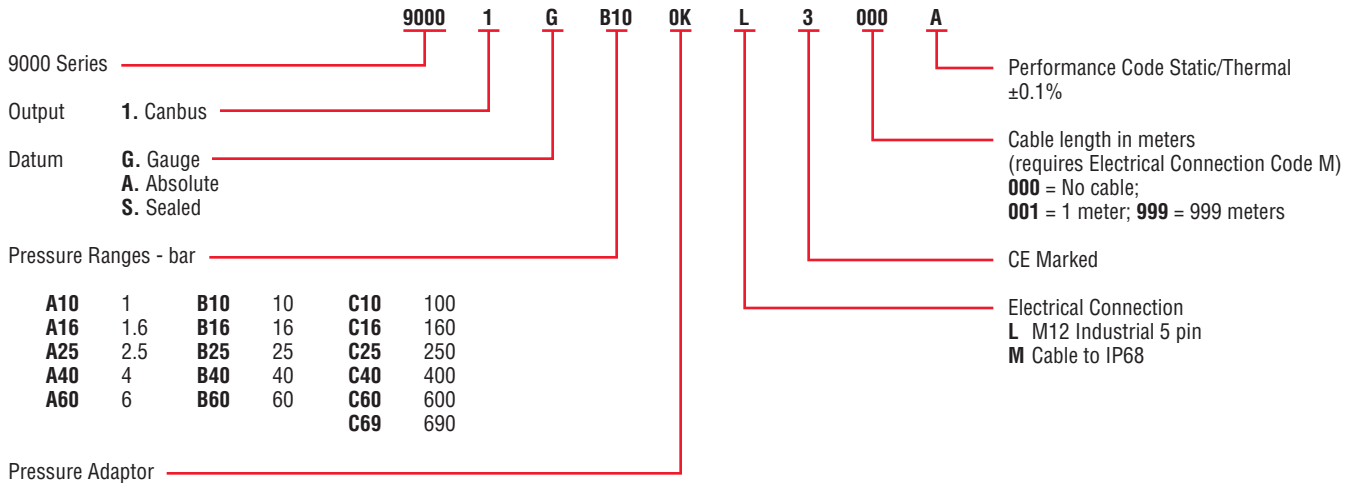


Specification

Input	
Pressure Range	0 to 1 - 0 to 690 bar
Proof Pressure	2 x FS (Inconel 1.5 x F.S.)
Burst Pressure	>35 x FS for ranges / 87 psi (6 bar) >15 x FS for ranges ≥ 1450 psi (100 bar) >4 x FS for ranges ≤ 10007 psi (690 bar)
Supply Voltage	7-30 VDC
Performance	
Long Term Stability	Zero drift $<0.05\%$ Full range output non cumulative
Accuracy	$\pm 0.1\%$ Full Scale
Total Error Band	$\pm 0.2\%$ Full Scale
Compensated Temperature	-40°F to $+185^{\circ}\text{F}$ (-40°C to $+85^{\circ}\text{C}$)
Operating Temperature	-40°F to $+185^{\circ}\text{F}$ (-40°C to $+85^{\circ}\text{C}$)
Mechanical Configuration	
Pressure Port	(see table on next page)
Wetted Parts	17-4 PH or Inconel
Electrical Connection	5 pin M12 x 1, cable to IP68, others on request
Enclosure	SS
Vibration	$<0.08\%$ FRO/g 20Hz to 2000Hz, 35g
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE Emissions EN 61000-6-4, Immunity EN 61000-6-2
Weight	<180 grams

How to Order

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



Stainless Steel	Inconel	Description
OO	OK	G1/4 internal
AO	AK	G1/4 AT external
KO	KK	7/16-20 UNF-3A external
MO	MK	M14 x 1.5 external
PO	PK	G1/2 AT external
BO	BK	1/4-18 NPT external
GO	GK	1/2-14 NPT external
SO	SK	7/16-20 UNJF-3A, MS 33656F4

Accessories

Order Code	Description
557002	Restrictor Kit
499877-1000	Saddle Mounting Kit
562320-02M0	2m, unscreened, 5core, cable - Terminated to M12 male connector
562320-05M0	5m, unscreened, 5core, cable - Terminated to M12 male connector
562321	Rapid Development Kit - including 9V battery, M12 to 9 way D type cable terminated assembly, USB to CAN Interface, Gems start up CD ROM
562293	User manual

Accessories, Adaptors

These adaptors can be factory fitted or supplied separately and thread into the 6700, 4000 and 4700 series. When factory fitted, they are electron-beam welded to the transducers providing additional strength and a guaranteed hermetic seal. For 1200/1600 and 2200/2600 series refer to their respective sections.

Description	Code SS	Code Inconel	Description	Code SS	Code Inconel
G 1/4 External 	A0	AK	M 1/4 x 1.5 (DIN) External 	M0	MK
1/4" 18 NPT External 	B0	BK	G 1/2 AT External 	P0	PK
1/2" -14NPT External 	G0	GK	7/16 - 20 UNF External 	S0	SK
Plastic Nosecone 	10	1K	Nose cone with restrictor 	20	N/A
Sink weight nose cone 	30	N/A			

Dimensions expressed: inch (mm)

PRESSURE TRANSDUCERS

Gems Capacitance Transducers —Functional Simplicity with Structural Sophistication

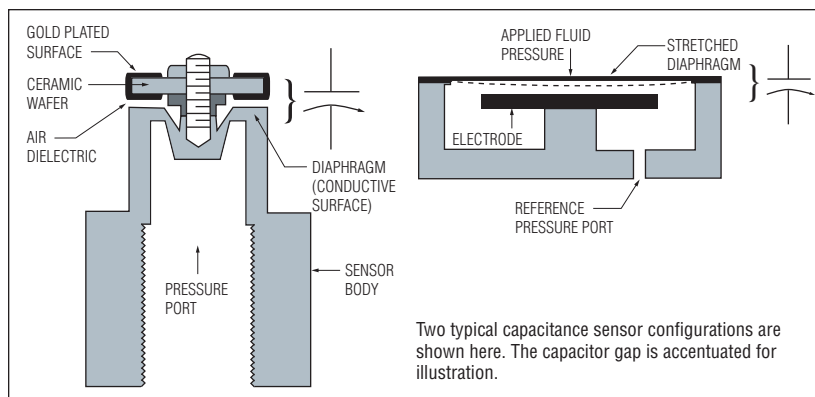
- ▶ High Accuracies
- ▶ Minimal Mechanical Motion
- ▶ Broad Range Capabilities
- ▶ Long Term Stability
- ▶ High Level Output
- ▶ Broad Media Compatibility
- ▶ High Electromagnetic Compatibility
- ▶ Resistant to Harsh Environments

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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876 Series.....	H-36
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5000 Series.....	H-40
2400 Series.....	H-42



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/Terminal Block



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/Terminal Block	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. (T1 version is same without conduit connection.)	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 / T1 - Terminal Block	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")
- T1** - Terminal Block
- 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

820G Series – Absolute

- ▶ Standard Torr, kPa and mbar Vacuum Ranges
- ▶ Wide Compensated Operating Temperature
- ▶ Protected Against Miswiring

The 820G Series sensor is an accurate, low-cost absolute sensor for even the most demanding vacuum applications. An all-welded construction eliminates stability issues inherent in other designs caused by frictional contact between dissimilar metals. 820G Series manometers are offered with a variety of vacuum pressure fittings, and a rugged design provides a high overpressure capability over a wide temperature range.

Common Specifications

Input	
Pressure Range	0 to 1000 Torr or 0 to 100 kPa
Proof Pressure	See ordering chart
Burst Pressure	See ordering chart
Fatigue Life	>1 million cycles
Performance	
Output	0-5 VDC or 0-10 VDC @ 6mA (3 wire)
Supply Voltage (Vs)	9-30 VDC (14-30 VDC for 10 VDC output)
Long Term Drift	±0.5% FS/year
Accuracy	±0.5% RDG
Thermal Error Zero	±0.01% FS/°F (±0.018% FS/°C)
Thermal Error Span	±0.015% RDG/°F (±0.027% RDG/°C)
Compensated Temperatures	32°F to +122°F (0°C to 50°C)
Operating Temperatures	-4°F to +176°F (-20°C to +80°C)
Storage Temperatures	-4°F to +185°F (-20°C to +85°C)
Zero Tolerance	.5% FS
Span Tolerance	.5% FS
Minimum Load Resistance	5000 ohms
Response Time	20 ms
Mechanical Configuration	
Pressure Port	See ordering chart
Wetted Parts	Inconel® with Stainless Steel (4T fitting—All Inconel)
Electrical Connection	9-Pin D-Sub
Enclosure	All-Welded Stainless Steel
Shock	50g
Approvals	CE – 89/336/EEC for Heavy Industrial, fully RoHS compliant
Weight	5 oz



Applications

- Semiconductor Manufacturing
- Absorption Chillers
- Lasers
- Autoclaves
- Freeze Drying
- Vacuum Distillation

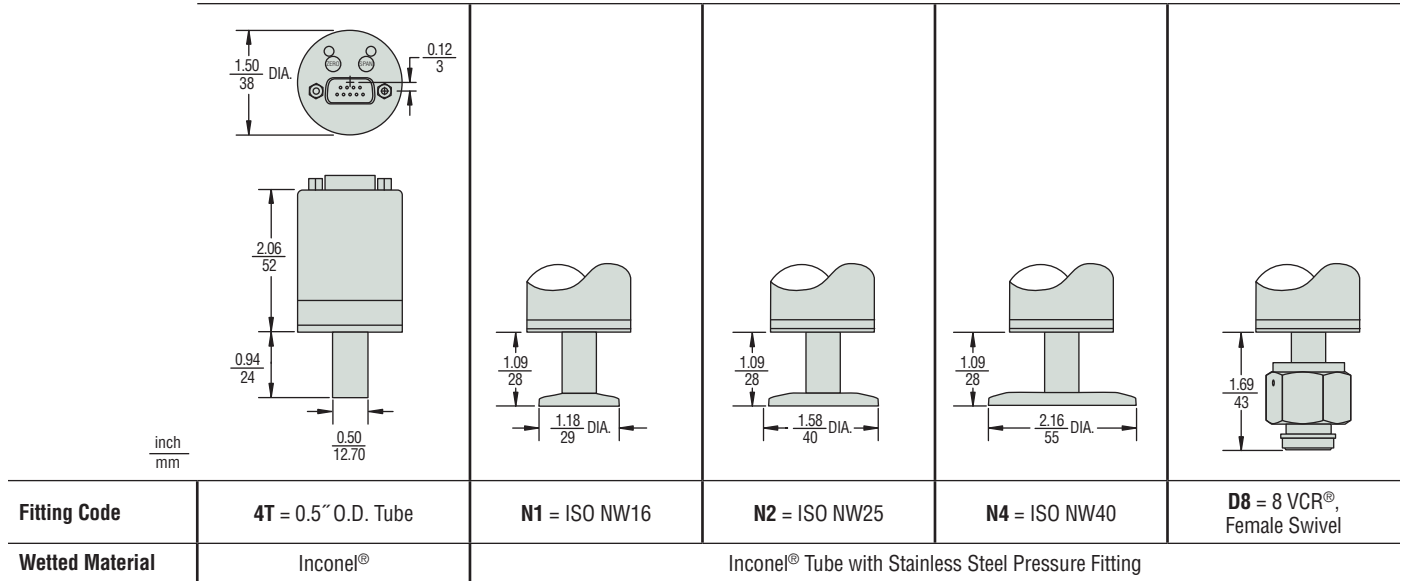
How They Operate

820G Series manometers feature an Inconel® diaphragm and insulated electrode, which forms a variable capacitor. As pressure (vacuum) increases or decreases, the capacitance changes. This capacitance is detected and converted to a fully-conditioned linear voltage output signal.

Conversion Chart

Torr	x	1.333	=	mbar
Torr	x	0.1333	=	kPa
Torr	x	0.0193	=	psi
kPa	x	10.0	=	mbar
kPa	x	7.501	=	Torr
kPa	x	0.145	=	psi
mbar	x	0.10	=	kPa
mbar	x	0.7501	=	Torr
mbar	x	0.0145	=	psi

Dimensions



How to Order

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

SELECT

820 - 020T - A - 4T - 2B - D9 - K

Series **820** - 820G Series

Pressure Range Code

Torr			kPa			Millibar		
Code	Range (Torr)	Proof (psia)	Code	Range (kPa)	Proof (kPa)	Code	Range (mbar)	Proof (mbar)
010T	0-10	45	001K	0-1	300	010M	0-10	3000
020T	0-20	45	002K	0-2	300	020M	0-20	3000
100T	0-100	45	010K	0-10	300	100M	0-100	3000
10CT	0-1000	45	100K	0-100	300	10CM	0-1000	3000

Datum **A** - Absolute

Pressure Port **4T** - 0.5" O.D. Tube
N1 - ISO NW16
N2 - ISO NW25
N4 - ISO NW40
D8 - 8 VCR®, Female Swivel

Accuracy
K - ±0.5% of Reading (Standard)
A - ±0.25% of Reading (Optional)

Electrical Connection
D9 - 9 Pin D-Sub
T1 - 5 Pin Terminal Strip

Output
2B - 0-5 VDC
2C - 0-10 VDC

VCR® is a registered trademark of Swagelok Marketing Co.
 Tri-Clover® is a registered trademark of Tri-Clover, Inc.
 Inconel® is a registered trademark of Special Metals Corp.

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 250 psi (17 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	<250 psia (17 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.

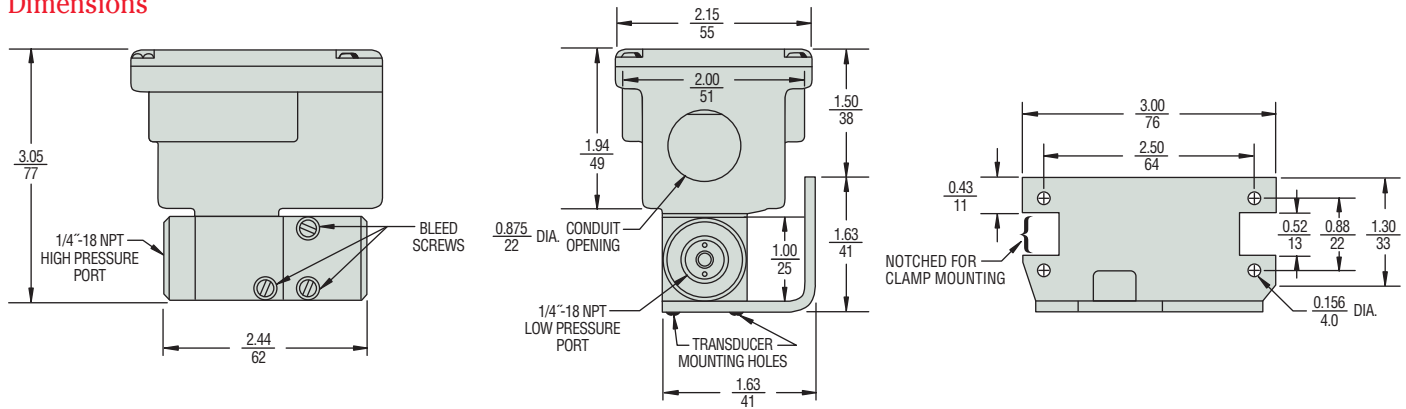
Applications

- 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.

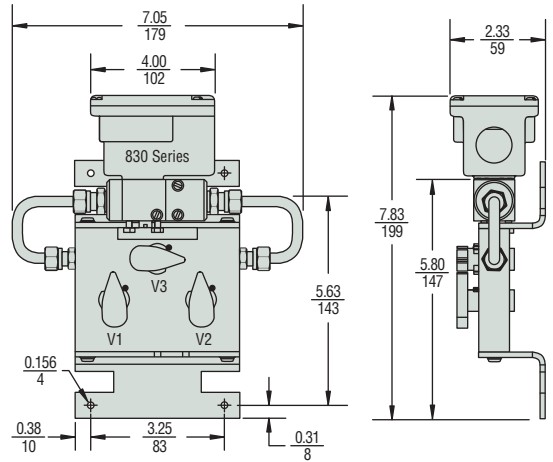
Dimensions



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

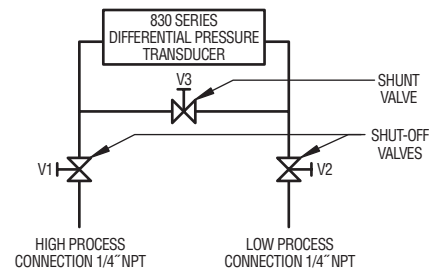
SELECT

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	250	62.5	1000	010PB - ±10	200	25.00	1000
030PD - 0-30	250	62.5	1000	025PB - ±25	250	62.50	1000
050PD - 0-50	250	125.0	1000	050PB - ±50	250	125.00	1000
100PD - 0-100	250	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



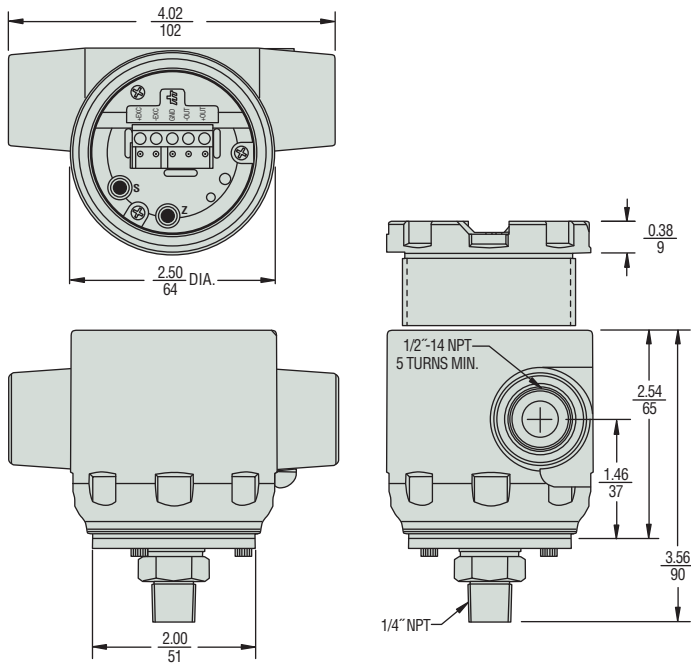
Applications

- 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

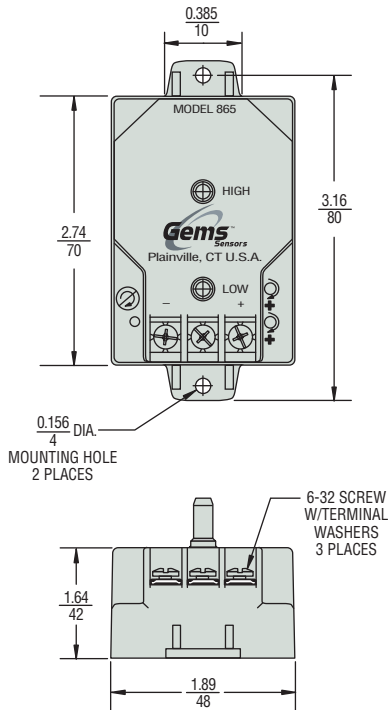
- HVAC
- Energy Management Systems
- Variable Air Volume and Fan Control (VAV)
- Environmental Pollution Control
- Static Duct and Clean Room Pressures
- Oven Pressurization and Furnace Draft Controls

How They Operate

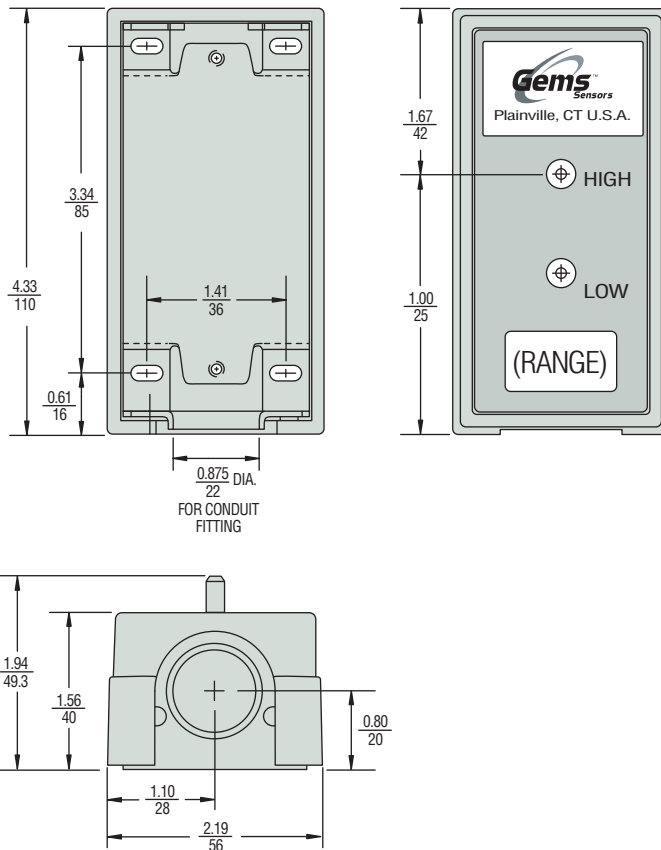
A tensioned stainless steel diaphragm and insulated stainless steel electrode, positioned close to the diaphragm, form a variable capacitor. Positive pressure moves the diaphragm toward the electrode, increasing the capacitance. A decrease in pressure moves the diaphragm away from the electrode, decreasing 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

PRESSURE TRANSDUCERS

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



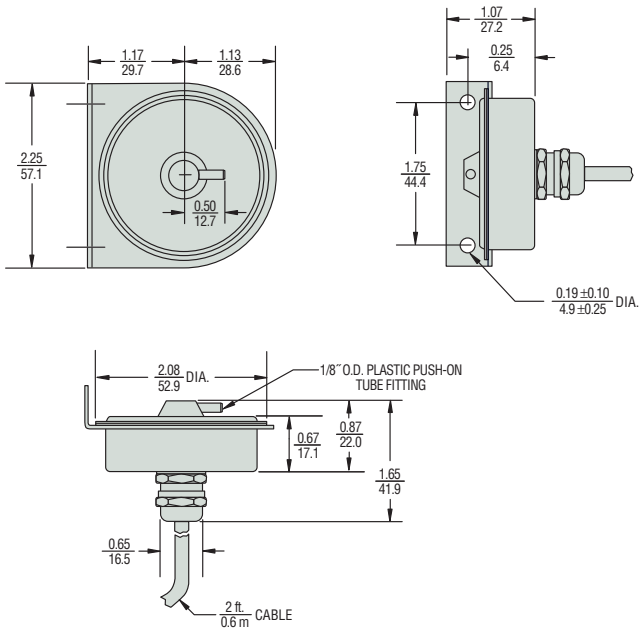
Applications

- 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



Applications

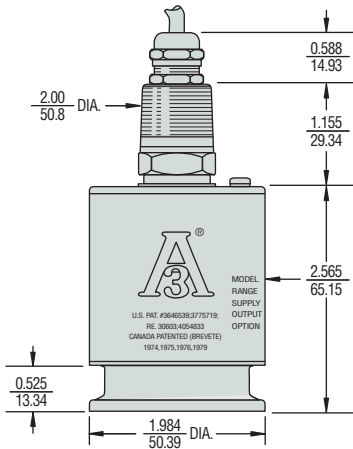
- Food Processing
- Dairy & Beverage Processing
- Pharmaceutical Processing
- Sanitary Pipelines

How They Operate

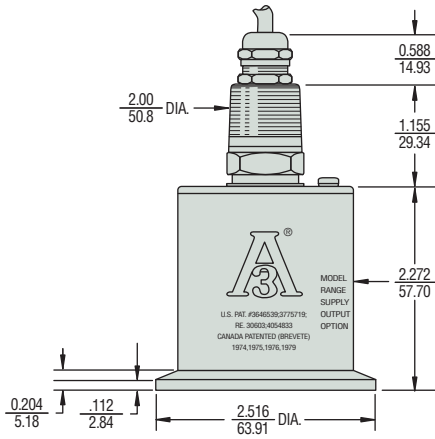
A stainless steel diaphragm and an insulated electrode form a variable capacitor. Pressure on the diaphragm alters the sensor's capacitance, which is then detected and converted to a highly accurate linear 4-20 mA signal by electronic circuitry featuring Gems' patented charge-balance principle. Low hysteresis,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

Dimensions

1.5" Fitting



2" Fitting



Gems adheres to strict quality standards including MIL-1-45208A and ANSI-2540-1.

How to Order

Order as 890 Series Sanitary Pressure Transmitters. Specify Pressure Range (tabulated below), Fitting Size and any Options. Use **bold** characters to construct a product code.

SELECT

C890 - 10 - 1.5 - * - * - * - *

1. Series **C890** - 890 Series

2. Pressure Ranges

2" Tri-Clover Sanitary Fittings				1.5" Tri-Clover Sanitary Fittings		
Operating Range psig	in. H ₂ O	Proof psig	Burst psig	Operating Range psig	Proof psig	Burst psig
1	22.7	50	100	30	1000	1200
2	55.4	100	150	60	1000	1200
5	138.4	150	200	100	1000	1200
10	276.8	150	200	300	1000	1200
15	415.2	150	200	500	1000	1500
30	830.4	150	300	1000	1250	2400
60	1160.8	180	400	-14.7 to 15	1000	1200
100	2768.0	200	400	-14.7 to 45	1000	1200
150	4152.0	225	400			
-14.7 to 15	-407 to 415	150	300			

3. Pressure Port **1.5** - 1.5" Tri-Clover Sanitary Fitting
2.0 - 2" Tri-Clover Sanitary Fitting

4. Options (*Add as suffix to base part code as needed)
715 - ±0.1% FS accuracy
884 - 20 Ra finish
911 - Etched metal stainless steel tag
 Cable Length:
816-825 - For cable lengths of 16 to 25 feet (15 ft. is standard).
 Please specify cable length by code (e.g., 820 for 20 ft. cable).
 Consult factory for cable longer than 25 feet.
 Calibration Certificate:
901 - 11-point calibration certificate.

PRESSURE TRANSDUCERS

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 (≤ 80 "wc) 60psi (≤ 150 "wc); 100psi (>150 "wc)
Burst Pressure	45psi (≤ 28 "wc) 60psi (>28 "wc to 80"wc) 90psi (≤ 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, Viton (Nitrile 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

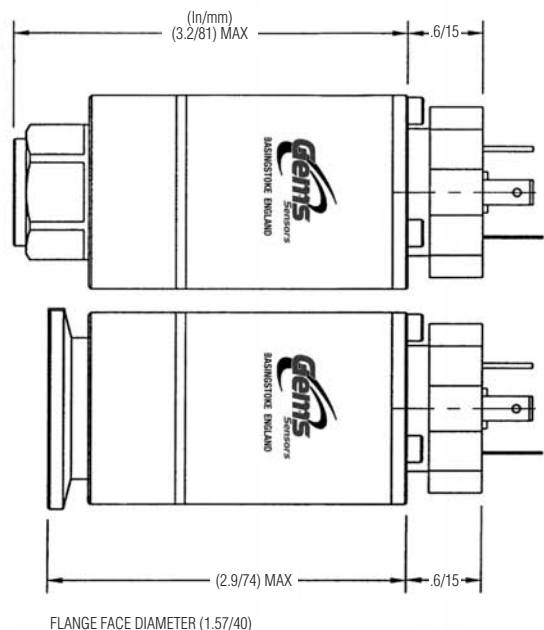
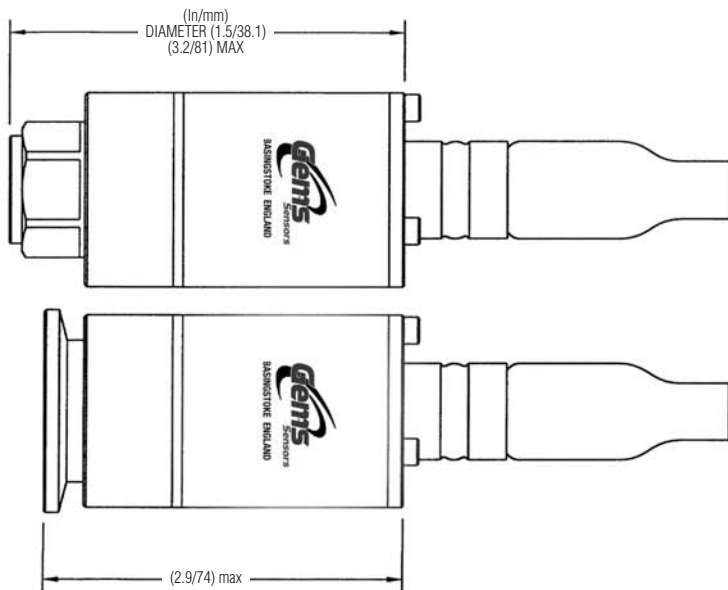


How to Order

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 { 19 Plastic Nose Cone Nose Cones { 29 Stainless Steel Nose Cone</p>
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2400 Slimline Borehole Transducer/Transmitters

- ▶ Triple sealed to ensure immersible integrity
- ▶ <10ms switch on/settling period
- ▶ 19mm diameter

Gems Sensors 2400 Series immersible pressure transducer has been specifically designed to meet the rigors of long term immersibility. A custom designed hermetic header guarantees that water cannot enter the transducer even if the cable sheath is damaged during use. The large bore vent tube is connected directly to the back of the sensor which provides rapid venting, even on the longest cable run. The sensor itself is impervious to the effects of water guaranteeing long service life even in areas of high humidity, which can cause condensation. The all welded electronics enclosure is completely segregated from all other areas with the electronics themselves designed to provide fast switch on and settling to ensure maximum battery life and ease of calibration.

Specifications

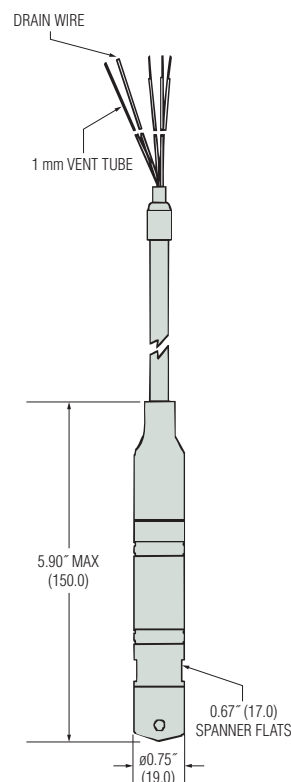
Input	
Pressure Range	0 to 4 to 0 to 200mWg (mA & V) 0 to 10, 20, 50,100, 200mWg (mV)
Proof Pressure	1.5 x Fs nominal range
Burst Pressure	3 x Fs
Fatigue Life	Designed for more than 100 million FS cycles
Performance	
Long Term Drift	0.2% FS/year (non-cumulative)
Accuracy	0.25% FS typical
Thermal Error	0.5% Typical 30°F to 120°F (0°C to 50°C)
Compensated Temperatures	15°F to 120°F (-10°C to +50°C)
Operating Temperatures	-40°F to +180°F (-40°C to +80°C)
Zero Tolerance	1% of span
Mechanical Configuration	
Pressure Port	G1/4" AT external fitted with nosecone
Wetted Parts	316 Stainless Steel, Polyurethane, Acetal
Electrical Connection	Polyurethane Cable
Enclosure	IP68 to 650ft (200mWG)
Vibration	35g peak sinusoidal, 5 to 2000 Hz
Shock	Withstands free fall to IEC 68-2-32 procedure 1
Approvals	CE
Weight	Approx. 100 grams (additional; cable 75 g/m)

Individual Specifications

Voltage Output units	
Output	0 to 10V
Supply Voltage (Vs)	13 to 28 VDC
Supply Voltage Sensitivity	0.026% span/V
Min. Load Resistance	(FS output / 2) Kohms
Current Consumption	Approx 6 mA @ 8 VDC
Current Output units	
Output	4-20 mA (2 wire)
Supply Voltage (Vs)	24 VDC, (8-28 VDC)
Supply Voltage Sensitivity	0.026% span/V
Max. Loop Resistance	(Vs-7) x 50 ohms
Millivolt units	
Output	100mV ±1mV
Supply Voltage	10 VDC regulated (15 VDC max)
Bridge Resistance	3.5KOHM ± 20% @ 77°F (25°C)
Sink Weight	P/N 198700



Dimensions in. (mm)



PRESSURE TRANSDUCERS

2400 B 1 010 @ 7 psi

For electrical output codes B&S specify in 1psi increments the full scale calibration required.

Cable Length

001 = 1 metre, 999 = 999 metres etc

Code

- 1** Millivolt 10mWG
- 2** 20mWG
- 3** 50mWG
- 4** 100mWG
- 5** 200mWG

Code

- 1** 6 to 14psi (4 to 10mWG)
- 2** 15 to 28psi (11 to 20mWG)
- 3** 29 to 57psi (21 to 40mWG)
- 4** 58 to 142psi (41 to 100mWG)
- 5** 143 to 284psi (101 to 200mWG)

Code Electrical Output

- A** 100 mV Not Rangeable
- B** 4-20 mA
- S** 0-10 VDC

NOTES

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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

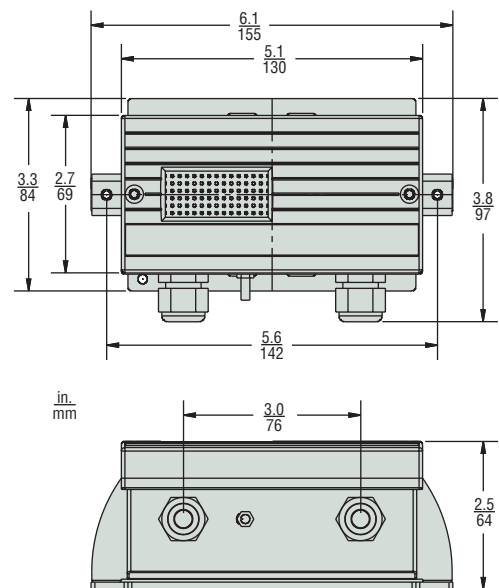


Applications

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

Dimensions

Front and Side View



Mounting Bracket

