

# 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

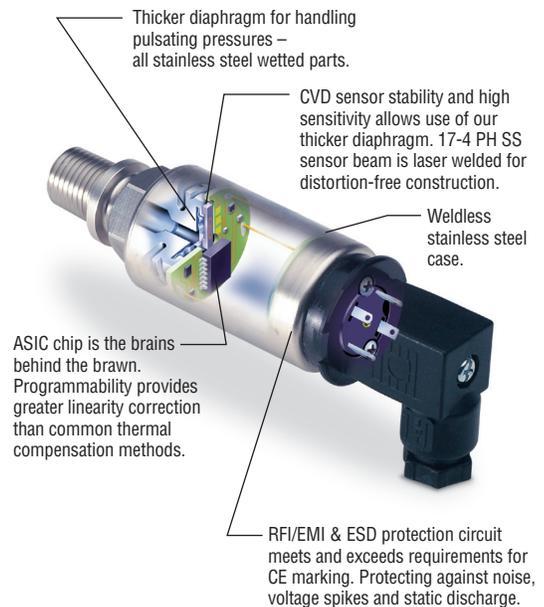
The 1200 Series features stability and toughness via its CVD and ASIC design coupled with a thicker diaphragm. The thicker diaphragm enables these sensors to survive most pressure spikes caused by pump ripple, solenoid valves, etc. The 1600 Series extends the packaging options by providing an all welded 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

<b>Input</b>	
<b>Pressure Range</b>	Vacuum to 6000 psi (400 bar)
<b>Proof Pressure</b>	4 x Full Scale (FS) (<1% FS Zero Shift)
<b>Burst Pressure</b>	>35 x FS <= 60 psi (4 bar); >20 x FS <= 600 psi (40 bar); >5 x FS <= 6000 psi (400 bar)
<b>Fatigue Life</b>	Designed for more than 100 million FS cycles
<b>Performance</b>	
<b>Supply Voltage Sensitivity</b>	0.01% FS/Volt
<b>Long Term Drift</b>	0.2% FS/year (non-cumulative)
<b>Accuracy</b>	0.5% FS typical
<b>Thermal Error</b>	2.0% FS typical
<b>Compensated Temperatures</b>	-5°F to +180°F (-20°C to +80°C)
<b>Operating Temperatures</b>	-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
<b>Zero Tolerance</b>	1% of span
<b>Span Tolerance</b>	1% of span
<b>Response Time</b>	0.5 ms
<b>Mechanical Configuration</b>	
<b>Pressure Port</b>	see ordering chart
<b>Wetted Parts</b>	17-4 PH Stainless Steel
<b>Electrical Connection</b>	see ordering chart
<b>Enclosure</b>	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
<b>Vibration</b>	70g, peak to peak sinusoidal, 5 to 2000 Hz (Random Vibration: 20 to 200 Hz @ ≈20g Peak per MIL-STD.-810E Method 514.4)
<b>Acceleration</b>	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.
<b>Shock</b>	20g, 11 ms, per MIL-STD.-810E Method 516.4 Procedure I
<b>Approvals</b>	CE, UR (12 ET, 16 ET Intrinsically safe)
<b>Weight</b>	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.



PRESSURE TRANSDUCERS

## Individual Specifications

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

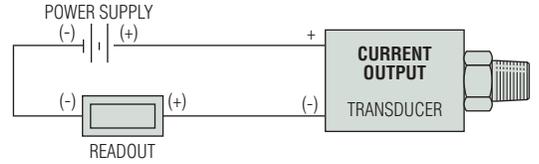
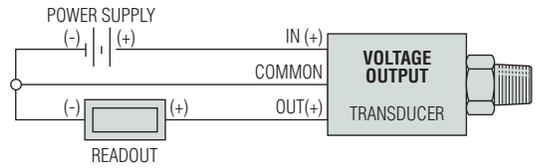
Electrical Connection Cable		Voltage Units				Current Units (4-20 mA)		
		IN+	COM	OUT+	EARTH	(+)	(-)	EARTH
A, B, G "DIN"	PIN	1	2	3	4	1	2	4
C "10-6 Bayonet"	PIN	A	C	B	E	A	B	E
D "cable"		R	BK	W	DRAIN	R	BK	DRAIN
F "IP 67 cable"		R	BK	W	DRAIN	R	BK	DRAIN
1 "8-4 Bayonet"	PIN	A	C	B	D	A	B	D
2 "cable"		R	BK	W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

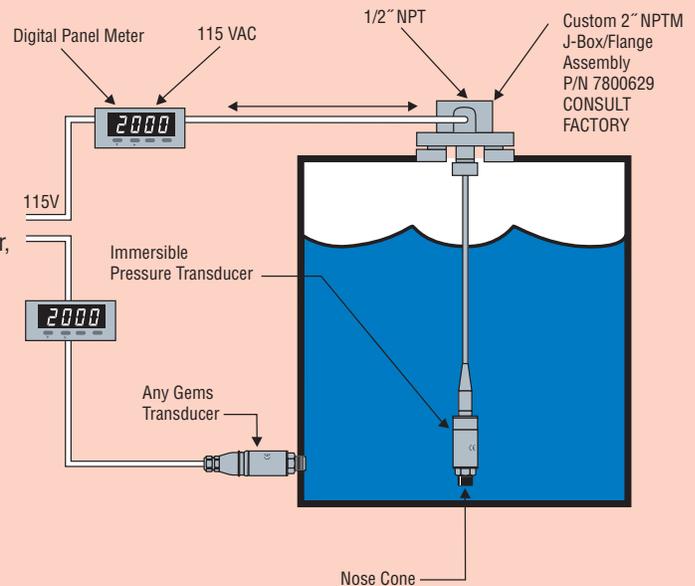
Tank Level:

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

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

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

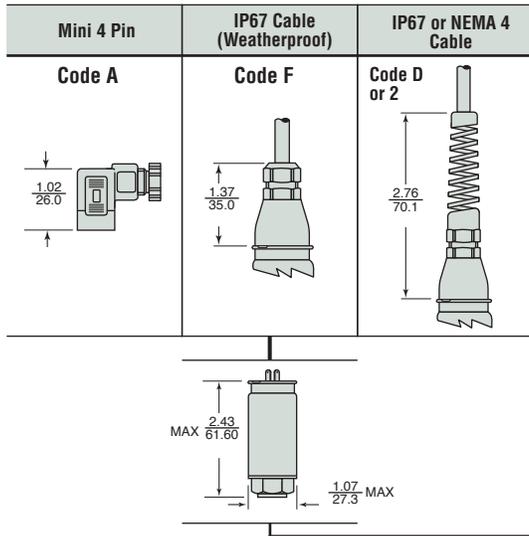
Using a Psibar Series 1200, 1600, 2200 or 2600 transducer, specify Pressure Range code **F15** (0-15 PSI).



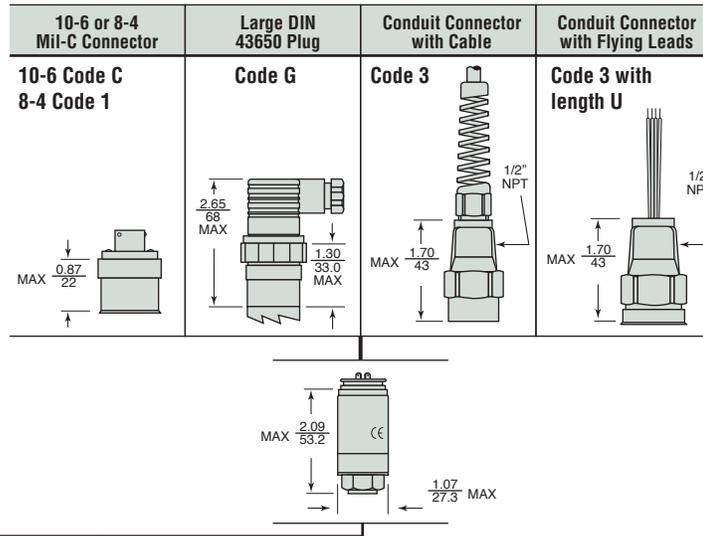


Dimensions

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
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 Range<sup>3</sup> - 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 Range<sup>3</sup> - 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 Length<sup>1</sup>: 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.