

## 2808-15A

### Low Power Pressure Transmitter

Bristol Babcock offers the best solution to your process measurement and control needs. The low power *Series 2808 Transmitter* provides the ease of installation, use, and external field calibration adjustments. Model 2808-15A is a reliable, compact pressure transmitter designed to accurately measure and provide a fast response to gauge pressure. Many applications include high speed control of compressors, pneumatic control systems and pressure sensor calibration system control as well as many traditional industrial and process control systems.

The low power 15A is user-configurable for a 1-5V or 4-20mA output proportional to input pressure. For battery and solar powered systems, the 15A produces a 1-5V output drawing only 1.5 mA with an operating voltage as low as 6 Vdc. In the current mode, a 4-20mA output will drive a 250 ohm load with only a 12Vdc power source. This low power feature is especially ideal for low power RTUs such as the Bristol Babcock 3530 Solar Power TeleRTU. For other applications, the output signal can be supplied to the input of a recorder, indicator or similar device.

The 15A is an adjustable range transmitter that is calibrated at the factory to a specific measurement range. Input ranges covering 17 inH<sub>2</sub>O through 5000 psig are available. Fine offset and gain pots can be found on the outside housing of the transmitter to make calibration/verification a breeze. The uniquely designed circuitry makes field calibrations simpler than the competition. Internal coarse settings allow the user to determine the coarse span and zero elevation/suppression range capability. This modular design concept makes the 15A a truly low cost transmitter for all applications.

Because of its compact size and lightweight, the 2808-15A transmitter is installed directly on, and supported by, the process piping. For installations that require other mounting arrangements, the transmitter may be specified with a universal mounting bracket. The 15A is the best answer for the need of a low power pressure transmitter for all process measurement and control applications.



### Operation

The sensor module provides a ½ inch NPT bottom entry process connection. This connection exposes one side of the process diaphragm to line pressure. The 15A contains a micromachined transduction element, fabricated using integrated circuit technology, to sense input pressure. This sensing technology combines the mechanical aspects of silicon, which is literally as strong as steel and hysteresis free, with the inherent semiconductor and electronic properties of an integrated circuit. The sensor consists of an internal silicon diaphragm into which piezoresistive strain gauge resistors are implanted, then interconnected to form a pressure sensitive Wheatstone Bridge. The outer process diaphragm is hydraulically connected to the silicon diaphragm using a suitable fill fluid. When the sensor is energized, by applying pressure to the outer diaphragm, the silicon diaphragm deflects, resulting in an electrical output change proportional to the input pressure. Because of the single crystal nature of the silicon diaphragm, linearity is excellent and pressure hysteresis is essentially unmeasurable.

**Features**

- Low cost of ownership
- ±0.1% accuracy
- Direct process mounting
- 2-year warranty
- Explosion-proof electronic housing
- Local indicator option, linear or in engineering units

**Functional Specifications**

• **Input ranges**

Min.	-	Max.Span	Max. Working Pressure
0-17	to	0-100 inH <sub>2</sub> O	300 inH <sub>2</sub> O
0-50	to	0-300 inH <sub>2</sub> O	900 inH <sub>2</sub> O
0-67	to	0-400 inH <sub>2</sub> O	1200 inH <sub>2</sub> O
0-4	to	0-25 psi	75 psi
0-8	to	0-50 psi	150 psi
0-17	to	0-100 psi	300 psi
0-50	to	0-300 psi	900 psi
0-83	to	0-500 psi	1500 psi
0-167	to	0-1000 psi	3000 psi
0-500	to	0-3000 psi	4500 psi
0-833	to	0-5000 psi	7500 psi

• **Current Loop Mode**

Supply Voltage:  
 24V dc nominal  
 7.0V dc minimum at transmitter  
 10V dc minimum with Local Digital Indicator option  
 37V dc maximum at transmitter  
 42V dc with external load specified  
 Reverse polarity protected

**Output:**

Two wire analog, 4-20 mA proportional to pressure or level  
 Current limited: 28 mA maximum  
 Minimum current: 2 mA

The maximum loop resistance can be determined as follows:

$$R\text{-loop maximum} = \frac{V_{\text{supply}} - 7}{0.02} \text{ ohms}$$

The maximum load capacitance is at least 50uF

- **Voltage Mode**  
 Supply Voltage:  
 6-42 Vdc  
 Reverse polarity protected to 90 Vdc

Supply Current:  
 1.5 mA nominal

Output into resistive load. (maximum cap. load 5 nf):  
 1-5 Vdc (3-wire)

• **Calibration Adjustments**

Span Adjustment:  
 Adj. range is 16 to 100% URL (6:1 turndown)  
 Coarse Span set by Rotary switch package  
 Fine Span set by 25-turn potentiometer.

Zero Adjustment:  
 Adj. range is -600 to 600% LRL for elevation and suppression.  
 Coarse Zero provided by DIP switch selections.  
 Fine Zero set via 25-turn potentiometer.

• **Response Time & Damping**

Time Constant:  
 (Time required for 63% change in output with a 100% input change)

<u>Damping Out</u>	<u>Damping In</u>
1 ms	50 ms

Recovery:  
 Time to steady output after application of 24 volt supply with constant pressure is 100 ms maximum (With No Damping):  
 5 ms

Damping:  
 User selectable by jumper circuit  
 Damping OFF = approx. 1 ms  
 Damping ON = .05 sec ±25% time constant

• **Reverse Pressure**

On low-range models, full vacuum can represent an appreciable percentage of URL. If on those models, calibration contains 50% of zero elevation, non-linearity errors can be as high as ±1%.

• **Overpressure Effect**

±0.2% URL at maximum operating pressure

## Performance Specifications

- **Accuracy**  
±0.1% of calibrated span.  
Includes the combined effects of independent linearity, hysteresis, and repeatability.
- **Stability**  
At constant conditions. ±0.25% of URL/yr
- **Temperature Effect – Total (Includes Zero and Span)**  
±0.010% of URL per °F from -25 to 75°F  
±0.015% of URL per °F from 75 to 185°F  
±0.020% of URL per °F on 100 inH<sub>2</sub>O only
- **Power Supply Effect**  
±0.005% of upper range limit per volt change
- **Ripple and Noise**  
In accordance with ISA 50.1, Section 4.6
- **Mounting Position Effect on Transmitter Accuracy**  
±2 in H<sub>2</sub>O which can be corrected by calibration

## Environmental Specifications

- **Temperature Limits**  
Wet End:  
-40° to 220°F (-40° to 104°C) – DC 200 fill \*  
0° to 220°F (-17.8° to 104°C) – Fluorolube fill \*  
(Fluorolube fill can be obtained via special orders only)  
Contact Watertown.  
Amplifier:  
-25° to 185°F (-32° to 85°C) – Standard  
Storage:  
-40° to 212°F (-40° to 100°C) – Standard  
  
\*The maximum permissible temperature inside the enclosure (irrespective of sensor temperature) is 185°F (85°C) for the amplifier board.
- **Optional Local Indication:**  
Operating: -25°C to +55°C  
Storage: -40°C to +85°C
- **Humidity Limits (cover in place)**  
15 to 95% RH @ 140°F (60°C)  
15 to 50% RH @ 185°F (85°C)
- **EMI Effect**  
±1% of upper range limit @ 10V/M from 20 to 500 MHz  
Meets /SAMA PMC-33-1C with transmitter cover in place and all wiring contained in grounded conduit.

- **Surge Protection**  
Bipolar, differential surge  
1000 watts for 1 ms – without local indicator  
  
May be used with purchased surge protector for additional protection (for non-hazardous, non-approved installations only).
- **Vibration Effect**  
Less than ±0.1% of URL for 10 to 500 Hz at 1 g on any axis.  
Meets SAMA PMC-31-1.
- **Hazardous Locations:**  
Class 1, Division 1, Groups C & D, Explosion-Proof

## Physical Specifications

- **Diaphragm and Connection Materials**  
316 Stainless Steel or Hastelloy C
- **Process Connection**  
1/2 inch NPT male
- **Electrical Connection**  
½ inch NPT conduit connection with internal field wiring terminals
- **Fill Media**  
DC 200 Silicone  
Fluorolube fill can be obtained via special orders only.  
Contact Watertown
- **Electronics Housing Material and Rating**  
Low copper aluminum, epoxy finish. NEMA 4X
- **Optional Local Indication**  
4-1/2 Digit User-Configurable LCD Meter: Linear (0 to 100%), or in engineering units  
Zero: Can be adjusted approx. 20% of span  
Polarity: Automatic (-) displayed
- **Weight**  
Standard: 2.4 lbs.  
With meter option: 2.5 lbs.

**MODEL NUMBER SPECIFICATION**

**2808-15A-AB-C-D-E-F-G-H**

<b>AB</b>	<b>Input Range</b>	<b>ACCESSORY:</b>	<b>PARTNUMBER</b>
	Min. - Max. Span	Transient Protector	388630-01-9
	0-17 to 0-100 inH <sub>2</sub> O		
	0-50 to 0-300 inH <sub>2</sub> O		
	0-67 to 0-400 inH <sub>2</sub> O		
	0-4 to 0-25 psi		
	0-8 to 0-50 psi		
	0-17 to 0-100 psi		
	0-50 to 0-300 psi		
	0-83 to 0-500 psi		
	0-167 to 0-1000 psi		
	0-500 to 0-3000 psi		
	0-833 to 0-5000 psi		
<b>C</b>	<b>Diaphragm &amp; Connector Material</b>		
	316 Stainless Steel		1
	Hastelloy C		2
<b>D</b>	<b>Filling Material</b>		
	DC 200 Silicone Fluid		1
	Fluorolube - Contact Watertown		
<b>E</b>	<b>Indication</b>		
	None		0
	Local Indication *		1
<b>F</b>	<b>Mounting Bracket</b>		
	None		0
	Neck Mounted Bracket		1
<b>G</b>	<b>Certification</b>		
	UL/CUL Explosion-proof for		1
	Class 1, Division 1, Groups C & D		
	CENELEC*		2
<b>H</b>	<b>Warning Plate</b>		
	Not Applicable		0
	Russian		1
	(Not available with local indications)		

\* Check with Watertown for availability

**Bristol Babcock**

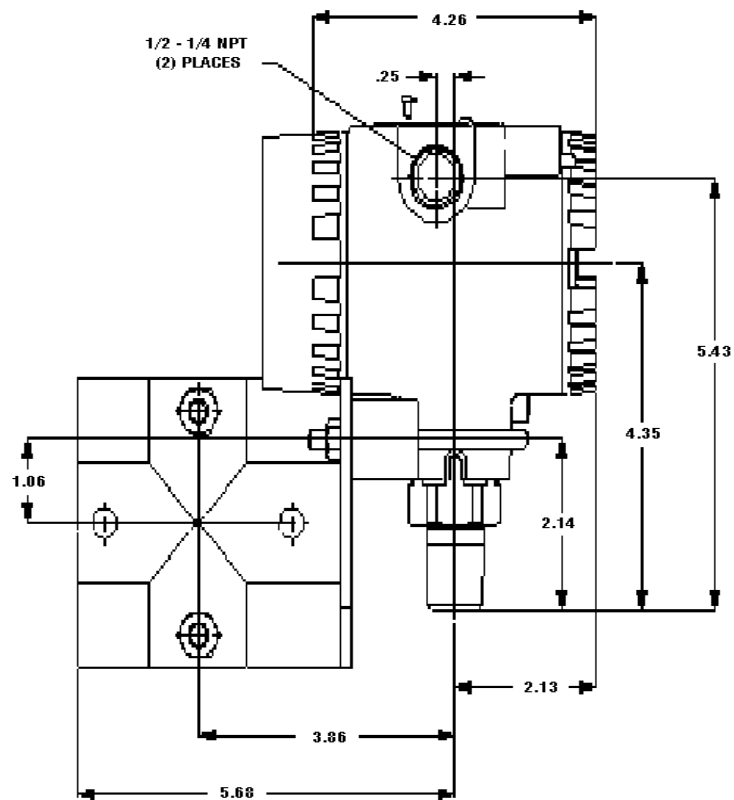
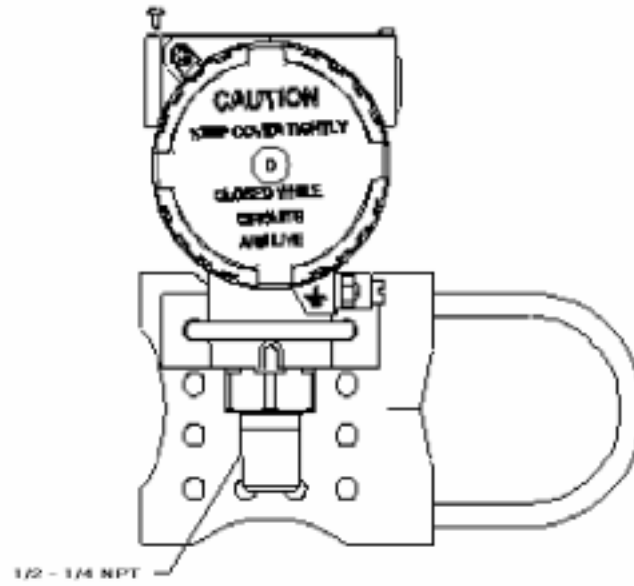
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### Physical Dimensions



**Physical Dimensions**

