



GP SERIES GAGE PRESSURE TRANSDUCER

Installation & Operation Instructions

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GENERAL INFORMATION

The GP Series pressure sensor is a 4-20mA current output device that is designed to provide excellent accuracy and reliability in commercial, industrial, and process control applications where performance is critical. The GP Series is available in two pressure sensing types: Gage (PSIG) and Sealed Gage (PSIS). Gage sensors (PSIG) measure pressure relative to ambient pressure through a port that is open to the atmosphere, and are used in lower pressure applications where measurement in a vacuum is not required. Sealed sensors (PSIS) measure pressure relative to a port that is connected to a sealed perfect vacuum chamber. Sealed pressure transducers are calibrated to have 4 mA at +14.5 PSIA.

OPTIONAL ACCESSORIES

Pressure Snubber

ACI recommends the use of the A/0.25" Snubber (Water or Air/Gas) with all GP series sensors. The use of a pressure snubber is a cost-effective solution that can extend the life of your sensor by smoothing out pressure spikes, surges and pulsations, and prevent debris from collecting in the sensor diaphragm opening. The A/0.25" Snubbers are made of 316 Stainless Steel and should be used with compatible materials.

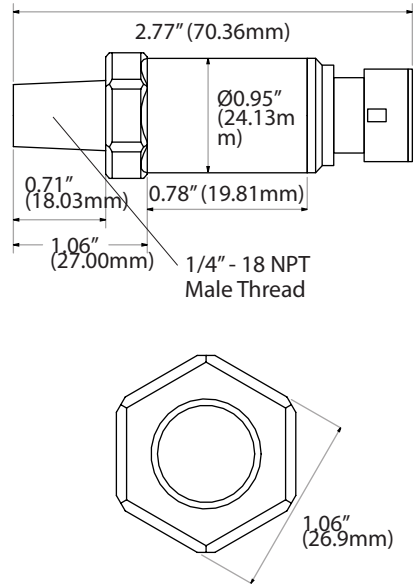
Syphons

The A/Syphon must be used to protect the sensor from extreme operating temperatures when the operating temperature of the steam being monitored is higher than the maximum operating temperature of the GP pressure sensor. There are three bend configurations available (90°, 180°, and 270°) to allow the mounting of the sensor vertically away from the main pipe.

NEMA 4 Enclosure

ACI recommends the use of a NEMA 4 enclosure to protect the gage pressure sensor in applications where debris and moisture could contact the sensor or electrical connections. The A/GP-(xx)-NEMA 4 GP Series pressure sensor is mounted in a NEMA 4 Rated, steel enclosure with one 1/2" conduit knockout. A 1/4" male NPT Stainless Steel fitting is provided for installation to your pipe, tank, or reservoir.

FIGURE 1: PRODUCT DIMENSIONS



MEDIA COMPATIBILITY

The bulk micro-machined transducer features a stainless steel diaphragm with welded construction that contains no O-rings, which makes them compatible with any gas or liquid that's compatible with 304L stainless steel. Some compatible gasses and liquids include refrigerants, glycol, motor oil, diesel, hydraulic fluid, brake fluid, water, waste water, hydrogen, nitrogen and air.

INSTALLATION

LOCATION

Install the sensor in a location where it will not be exposed to extreme temperatures, vibration or shock. Install the pressure sensor above or on the side of pipes, in a location where liquid will not drip on the unit. Condensation can potentially build up and run down the harness, position the unit and harness so water does not pool on the back of the sensor. Do not install the sensor at the end of a long run of pipe.

CONNECTION

The GP uses a standard 1/4"-18 NPT external fitting. Standard pipe fittings and installation procedures should be used during installation. Install pipe tape, thread sealant or other suitable pipe compound when connecting the sensor to the pressure source or any of the accessories. For pressure ranges more than 500 PSI (3447.4 kPa), we recommend the use of a sealant such as Loctite Hydraulic Sealant. Do not use excessive amounts of sealant or you might block the pressure going into the transducer. Install the device using a wrench on the hex flats provided. Do not use a strap wrench on the body. When installing the GP sensor, the torque limit is 150 in lbs (16.95 Nm), Do Not over tighten. Overtightening metal fittings may cause a slight zero shift. The use of plastic fittings typically results in no noticeable zero shift. The torquing effect does not appreciably affect linearity or sensitivity. In liquid pressure monitoring applications, air present in the lines will cause erratic readings, use bleed fittings to bleed off any air that has been trapped before transducer installation.

WIRING INSTRUCTIONS

The transducer requires a supply voltage of +14.5 to 30 VDC with a minimum supply current of 25 mA (per unit) to power the loop. The transducer is equipped with a Packard connector for easy installation, and is designed for use with the GP Harness. Install the GP Sensor onto the harness then make the proper connections to the harness. Connect the Power lead (Red) to the plus terminal of the supply voltage. Connect the Return lead (White) to the Analog Input(+) terminal of the current measuring device(controller). Connect the Common(-) terminal of the current measuring device to the Common(-) terminal of the supply voltage. If the unit is equipped with a Shield Wire, it should be connected to the system or earth ground. See **Figure 3 (p. 3)**, wiring diagram.

Note: Black wire is not used.

FIGURE 2: ASSEMBLY

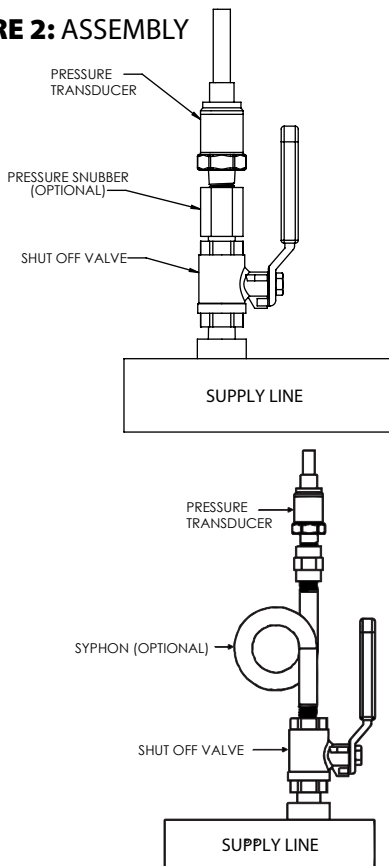
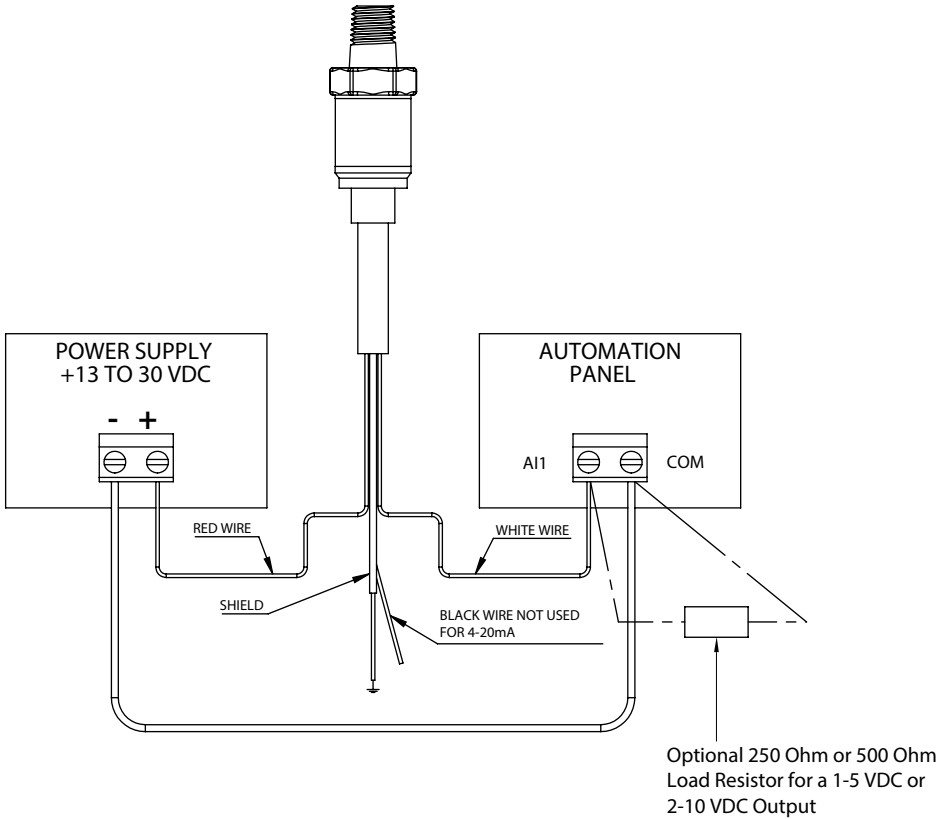


FIGURE 3: WIRING DIAGRAM



TROUBLESHOOTING

PROBLEM	SOLUTION(S)
No Output or Output Signal Reading Low:	<ul style="list-style-type: none"> • Confirm the DC supply voltage is: 4-20 mA Output: 250 Ohm Load: +14.5 to 30 VDC 500 Ohm Load: +20 to 30 VDC.
Output Signal is Inaccurate:	<ul style="list-style-type: none"> • Disconnect the sensor from the line to ensure No debris or sediment is blocking the inlet port of the transducer. • Determine that the proper output is being transmitted based on the predetermined span. Measure the output of the transmitter with a handheld multimeter and compare the measured output to calculate output.

PRODUCT SPECIFICATIONS

SENSOR	
Supply Voltage:	250 Ohm Load: +14.5 to 30 VDC 500 Ohm Load: +20 to 30 VDC
Supply Current:	25 mA minimum
Output Signal:	4 to 20 mA (2-Wire, Loop Powered)
Accuracy¹ @ 22°C (71.6°F):	< +/- 1.5% FS
Thermal Error (-40° to 105°C):	15 to 60 PSIG: < +/- 1.0% FS 75 to 300 PSIG: < +/- 0.5% FS 500 PSIS²: < +/- 0.5% FS
Stability (250 Hours @ 225°F (125°C)):	+/- 0.03% FS @ 0 PSIG; +/- 0.12% FS @ 1000 PSIG
Operating Storage Temperature Ranges:	-40 to 221°F (-40 to 105°C) -40 to 176°F (-40 to 80°C)
Process Fitting Material Thread Size:	304L Stainless Steel 1/4"-18 NPT
Maximum Load Resistance:	800 Ω @ 24 VDC Formula: (Supply VDC - 8 VDC) / 0.020 A
Proof Pressure:	3x FS
Operating Humidity Range:	0 to 95% RH, non-condensing
Media Types:	Any gas or liquid compatible with 304L Stainless Steel
Recommend Torque Specification:	150 lbs-in (16.95 Nm)

Note 1: Accuracy includes Hysteresis, Repeatability, and Non-linearity (BFSL)

Note 2: Additional error over temperature range.

Note 3: PSIS transducers are not vented to atmosphere, but are calibrated to have 4 mA at +14.5 PSIA

W.E.E.E. DIRECTIVE

At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with household waste. Do not burn.

WARRANTY

The GP Series Pressure transducers are covered by ACI's Two (2) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, www.workaci.com.

