RETURN POLICY

Returns are accepted on stock items up to 30 days from date of order. You must contact our Returns Department for a Return Authorization (RA) number. Return the goods - freight prepaid - in the original container and include original packing slip. C. O. D. returns are not accepted. Gems reserves the right to apply restocking charges.

Tel: 860-793-4357

Fax: 860-793-4563

Important Points

- Gems products must be maintained and installed in strict accordance with the National Electrical Code and the applicable Gems Product Instruction Bulletin that covers installation, operating and proper maintenance. Failure to observe this information may result in serious injury or damages.
- Please adhere to the pressure and temperature limitations shown throughout this bulletin. These limitations must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.
- Selection of materials for compatibility with the media is critical to the life and operation of Gems products. Take care in the proper selection of materials of construction, testing is required.
- Our sensors have been designed to resist shock and vibration. However, shock and vibration should be minimized.
- Our sensors must not be field-repaired.
- Physical damage sustained by product may render it unserviceable.

SS2114 Rev. A 01/03

Gems Sensors
One Cowles Road
Plainville, CT 06062-1198
Toll-Free: 1-800-378-1600

Instruction Bulletin No. 203022

Gems Sensors 809 Series Pressure Transducer

1.0 GENERAL INFORMATION

Every Model 809 has been tested and calibrated before shipment.

Gems Sensors 809 pressure transducers sense gauge pressure and convert this pressure difference to a proportional high level analog output. Three standard output and excitation versions are offered:

Excitation	Output
9 to 28 VDC	4 to 20 mA - (Must Observe Polarity)
9 to 30 VDC	0.5 to 5.5 VDC - (Reverse excitation protection)
4.9 to 8.1 VDC	0.5 to 4.5 VDC - (No reverse wire protection)

2.0 MECHANICAL INSTALLATION

2.1 Media Compatibility

Model 809 transducers are designed to be used with any gases or liquids compatible with 17-4 PH Stainless Steel.

2.2 Environment

The operating temperature limits of the 809 are -40° to +185°F (-40 to +85°C). The compensated temperature range is -4 to +176°F (-20 to +80°C).

2.3 Pressure Fittings

Typically, standard pipe fittings and procedures should be used. However, for pressure ranges in excess of 500 psig, we suggest the use of a sealant such as Loctite Hydraulic Sealant. Excessive torquing of metal fittings may cause a slight zero shift. The use of plastic fittings typically results in no noticeable zero shift. Torquing does not appreciably affect linearity or sensitivity.

2.4 Tube Stub Welding Instructions

Standard welding practices should be followed. Caution must be taken to protect the sensor against current paths that could damage the circuit board. Apply a heat sink between the weld zone and the sensor that is large enough to protect the sensor from overheating. Failure to use a heat sink may damage the housing seal or circuit board.

2.5 Venting

Because the reference pressure in a sealed gage transducer will vary due to changes in temperature and will affect overall accuracy (especially in units of less than 500 psig range), all 809 Series transducers are available as vented or sealed to atmosphere.

Vented units are ordered as PSIG range units. Sealed units are ordered as PSIS range units. The 809 PSIG transducers are vented through the cable. Hirschmann PSIG transducers are vented through the connector. Packard PSIG units are vented through a porous filter plug supplied on the unit.

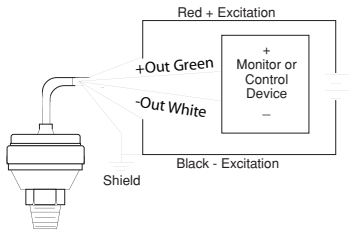
3.0 ELECTRICAL INSTALLATION

The Model 809 is available in four electrical terminations:

2 foot Cable	Hirschmann Connector
Packard Connector	Conduit Adapter, 1/2 inch

3.1 Voltage Output Units

The Model 809 voltage output is a 3-wire circuit. If the 809 is supplied with 2 feet of cable, the electrical connection is as follows:

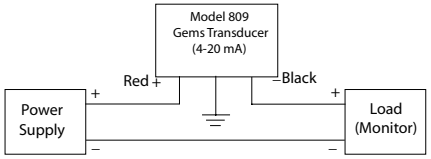


Red = + Excitation; connect to appropriate power supply.
Green = + Output; connect to controls or monitor.
Black = Common; connect to return of power supply.
White = - Output; connect to controls or monitor.
Shielding = Connect to system or earth ground.

CAUTION: Unit is reverse excitation protected. However, do not apply power to output lead as this could cause permanent damage.

3.2 Current Output Units

The Model 809 (current output) transducer is a true 2-wire, 4-20 mA current output device and delivers rated current into any external load of 0-800 ohms. The 4-20 mA units are designed to have current flow in one direction only - **PLEASE OBSERVE POLARITY.** We suggest that the electrical cable shield be connected to the system's loop circuit ground to improve electrical noise rejection. The electrical connection is as follows:



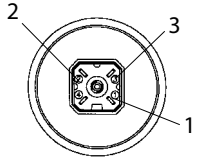
The 809 has a 2-wire cable, where red is positive and black is negative.

CAUTION: Reverse excitation will not cause damage to unit unless voltage applied is above 50 VDC. However, unit will not function if reverse wired.

3.3 Hirschmann or Packard Connectors - Voltage and Current Output

If the unit is provided with a Hirschmann or a Packard Connector, pin number designations are as follows:

Hirschmann Connector



Top View: Hirschmann Connector
Type: G4A1M#931807-106

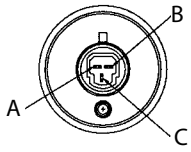
Voltage Output

Pin #	Function
1	+ Excitation (connect to appropriate power supply)
3	+ Output (connect to controls or monitor)
2	Common (connect to return of power supply)

Current Output

Pin #	Function
1	Positive
2	Negative

3-Pin Packard Connector



Top View: 3-Pin Packard Connector
Type: P2S Series 150

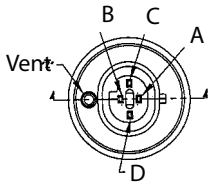
Voltage Output

Pin #	Function
B	+ Excitation (connect to appropriate power supply)
C	+ Output (connect to controls or monitor)
A	Common (connect to return of power supply)

Current Output

Pin #	Function
B	Positive
A	Negative

4-Pin Packard Connector



Top View: 4-Pin Packard Connector
Type: Metri-Pack 150

Voltage Output

Pin #	Function
A	+ Excitation (connect to appropriate power supply)
C	+ Output (connect to controls or monitor)
B	Common (connect to return of power supply)
D	(Not Used)

Current Output

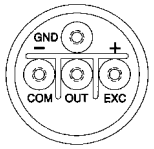
Pin #	Function
A	Positive
B	Negative

Gems does not supply the mating connectors as a standard. They can be ordered separately. Consult Factory

3.4 Conduit Adapter Electrical Termination - Voltage and Current Output Units

If the unit is provided with the conduit adapter version, terminal designations are as follows:

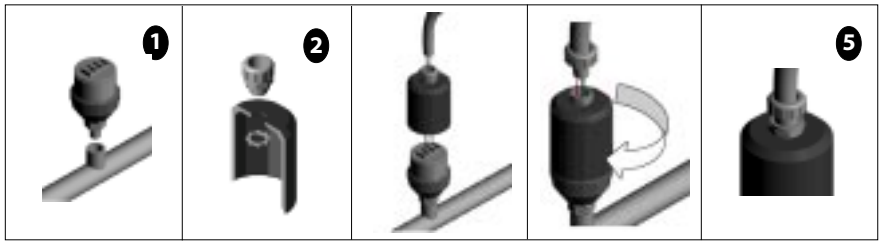
Conduit Adapter Version
(Voltage and Current Output Units)



For current (4-20 mA) output, use + and - terminals

For voltage output, use COM, OUT and EXC terminals

3.5 Conduit Fitting Installation



1. Connect the pressure port to the system.
2. Install a 1/2" conduit fitting into the 809 top cover, and fasten the retaining nut.
3. Feed wires from a flexible conduit through the 809 top cover, fasten the wires to terminals.
4. Screw on the Model 809 top cover.
5. Fit conduit into conduit fitting, and tighten conduit watertight strain relief.

3.6 EMC Certification

This product complies with EN61326 Electrical Equipment for Measurement, Control and Laboratory use – EMC Requirements for Minimum Requirements and Industrial Locations. Special caution should be taken to meet Standard EN61000-4-5: 1995 Surge Immunity if any of the following conditions apply to the installation: The product is installed outside; all or any part of the cable is exposed to the outside; the cable is greater than 30 meters in length. In order to meet the Surge Immunity requirements, the following conditions must be followed during installation:

1. Shielded cable must be used, and the shield must be tied to earth ground (not power supply ground) on at least one end of the cable shield/drain wire. The shield must be maintained all the way from sensor to the power supply.
2. If unshielded cable is used, an earth grounded metal conduit fitting can be used to replace the shielded cable.
3. For a sensor with a metal body or enclosure, the body/enclosure must be grounded to earth. If a protective metal housing is used, the metal housing should be grounded to earth
4. If a protective plastic housing is used, the housing must be able to withstand at least 2 KV from the housing to earth ground, without damaging the circuit.