4.0 RETURNING PRODUCTS FOR REPAIR/ LIMITED WARRANTY AND LIABILITY

Please contact a Setra application engineer (800-257-3872, 978-263-1400) before returning unit for repair to review information relative to your application. When returning a product to Setra please call 800-257-3872 or email orders@setra.com to obtain RMA number, before sending unit(s) back to us. Once an RMA number has been assigned to you, please send the package back to the below address. To download return form, visit www.setra.com/support/service.

Setra Systems, Inc.
159 Swanson Road
Boxborough, MA
01719-1304
Attn: RMA #

Do not return accessories when sending in unit for repair or calibration. To assure prompt handling, please make sure the RMA number is on the outside of the box and a copy of the service request form is included in the shipment. If applicable, include a copy of the PO for the return in the shipment.

Calibration Services: Setra maintains a complete calibration facility that is traceable to the National Institute of Standards & Technology (NIST). Setra warrants its Model MicroCal to the original consumer purchaser against defects for a period of one year from the date of sale by SETRA, as shown in its shipping documents.

Without charge, SETRA will repair or replace products found to have manufacturing defects within the warranty period. The serial number or date code must not have been removed, defaced or otherwise changed. SETRA must be notified in advance of any returns; any products returned to SETRA must be transportation prepaid. The foregoing warranty is in lieu of all warranties, express, implied or statutory, including but not limited to, any implied warranty of merchantability for a particular purpose.

Setra's liability for breach of warranty is limited to repair or replacement, or if the goods cannot be repaired or replaced, to a refund of the purchase price. SETRA's liability for all other breaches is limited to a refund of the purchase price. In no instance shall SETRA be liable for incidental or consequential damages arising from a breach of warranty, or from the use or installation of its products. No representative or person is authorized to give any warranty other than as set out above or to assume for SETRA any other liability in connection with the sale of its products.

For all CE technical questions, contact Setra Systems, USA. EU customers may contact our EU representative Hengstler GmbH, Uhlandstr. 49, 78554 Aldingen, Germany (Tel: +49-7424-890, Fax: +49-7424-89500).

SS2008 RevN 04/2017

Installation Guide
Model 209/209H
Pressure Transducer

1.0 GENERAL INFORMATION

Every sensor in the 209 product family has been tested and calibrated before shipment. Setra Systems 209 product family 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

The transducers in the 209 product family are offered with two different types of wetted materials. The 209 is made with 17-4PH stainless steel wetted materials. The 209H is made with 316 stainless steel.
Prior to use in your application confirm that your median is compatible with the wetted materials of the ordered sensor.

2.2 Environment

The operating temperature limits of the 209 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 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 200 psig range), all transducers in the 209 product family 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 209 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 209 product family is available with four electrical terminations:

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

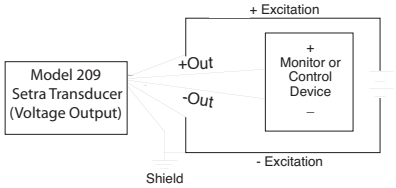
3.1 Voltage and Current Output Units

See Section 3.2 for additional instructions for 209H N1, N3, and N4.
The voltage output is a 3-wire circuit. The wires for the individual conductors is as follows:

Current Output Units

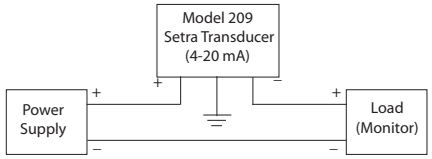
The Model 209 (current output) transducer is a true 2-wire, 4-20 mA current output device and delivers rated current into any external load of 0-800 ohms. The 4-20 mA units are designed to have current flow in one direction only -
PLEASE OBSERVE POLARITY. We suggest that the electrical cable shield be connected to the system's loop circuit ground to improve electrical noise rejection. The electrical connection is as follows:

Voltage



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

Current Output



The 209 has a 2-wire cable, where red is positive and black is negative.

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

Table: Voltage

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.

Cable Version Voltage

Red	+ Excitation; connect to appropriate power supply.
Black	Common; connect to return of power supply.

Model 209H: In case of electrical noise pickup we suggest connecting a 22 µF non-polar electrolytic capacitor rated 50V between +ve and -ve terminals of power supply to improve noise rejection.

3.2 CSA Listed to ANSI/ISA-12.12.01-2016/CSA Std-C22.2 no 213-16

The 209H unit may be installed in Class 1 Hazardous (Classified) Group A, B, C, D Division 2 locations, if the unit was ordered N1, N3, and N4 designations in the Part Number, 12th and 13th digits. Safety barriers are not required as long as the unit is operated under normal conditions with a maximum excitation voltage of 30 VDC between the input terminals.

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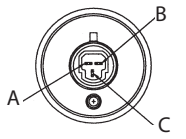
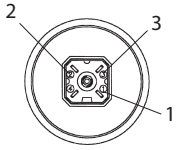
- **WARNING - DO NOT SEPARATE WHEN ENERGIZED**
- Connectors must be securely attached before power is applied
- The shielded cable must be used and the drain wire of the cable must be connected to the earth ground. The transducer body must be connected to the earth ground.
- The maximum allowable transient disturbance must not exceed more than 40% of the maximum excitation voltage.
- For cable termination, Type PLTC cable shall be installed and terminated appropriately for Class I Division 2 in accordance with the NEC and CEC Part I

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:



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



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

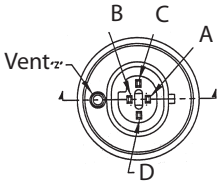
Voltage Output

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

Current Output

Pin #	Function
1/B	Positive
2/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

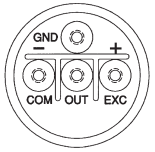
Pin #	Function
A	Positive
B	Negative

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

3.4 Conduit Adapter Electrical Termination - Voltage & Current Output Units

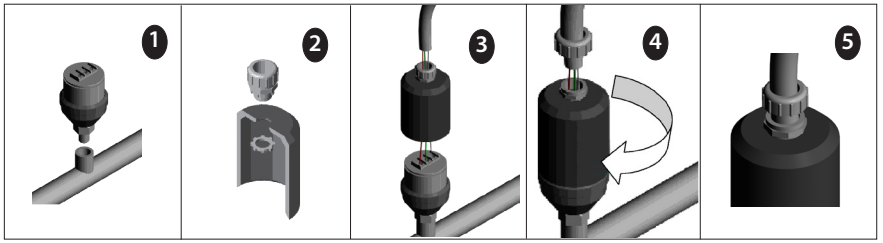
If the unit is provided with the conduit adapter version, terminal designations are as follows:

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



1. Connect the pressure port to the system.
2. Install a 1/2" conduit fitting into the 209 top cover, and fasten the retaining nut.
3. Feed wires from a flexible conduit through the 209 top cover, fasten the wires to terminals.
4. Screw on the Model 209 top cover.
5. Fit conduit into conduit fitting, and tighten conduit watertight strain relief.

3.5 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.