

# setra

OPERATING INSTRUCTIONS  
MODEL 205-2 PRESSURE TRANSDUCER  
FOUR-WIRE, VOLTAGE OUTPUT

#### GENERAL INFORMATION

Your Setra transducer has been carefully calibrated before shipment to you, and it should be handled with the same care given any precision instrument. Pressure ranges and dimensions are reported on the specification bulletin for the transducer.

#### INSTALLATION

Do not use in ambient conditions corrosive to polyvinyl chloride (cable) or stainless steel, submerged in liquids, subject to spray or drip, or in a high vibration environment. The 205-2 Series is very slightly sensitive to acceleration in the pressure fitting axis, less than 0.05 psi/g typical. Factory calibrated in the vertical position, with pressure port downward, this position often minimizes damage from dripping of pressure system piping.

##### *Installation of pressure fitting:*

For very high pressure use of sealant such as Loctite hydraulic sealant is suggested. For other pressure ranges, standard sealants such as Teflon tape generally are satisfactory. For the most sensitive pressure ranges, excessive high torquing of a metal pressure fitting may cause a slight zero shift which may be trimmed out using the zero adjustment. Use of plastic fittings often shows no noticeable zero shift. The torquing effect does not appreciably affect linearity or sensitivity. Use the wrench flats on the 205-2 when attaching to fittings.

#### ATMOSPHERIC REFERENCE (Gage pressure transducers only)

Lower range units are subject to excessive thermal zero shift unless vented to atmosphere. The electrical cable provides this equalization vent.

#### ELECTRICAL CONNECTIONS:

##### CABLE LEAD

Red  
Green  
White  
Black  
Shield

##### FUNCTION

positive excitation  
positive output  
negative output  
negative excitation  
case

#### ELECTRICAL

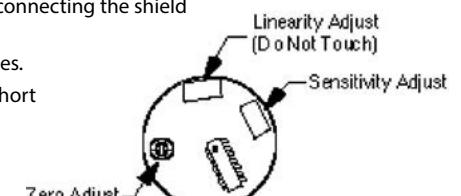
The electrical circuit is equivalent to a 4 terminal network, which can be grounded at only one point, either at the negative excitation or the negative output lead, but must not be commoned or grounded at more than one point. The negative output lead is approximately 1.66 VDC above the negative excitation lead. The positive output lead is at this same 1.66 VDC common mode voltage plus the output signal from applied pressure (thus goes from approximately 1.66 VDC up to 6.66 VDC above the negative excitation).

The pressure transducer must be operated with the case connected either to the negative excitation terminal or to the negative output terminal. Failure to do this may result in damage to or unsatisfactory operation of the unit. This connection may be made by connecting the shield to white or shield to black leads. Best shielding against noise will be obtained by connecting the shield and negative excitation (black) leads.

Circuit is reversed voltage protected for at least 5 minutes.

Internal transient suppression network is provided for short duration transients to 150 volts.

In some instances, use of long cables (several hundred feet length) may introduce enough cable capacitance



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in to the output circuit to cause output oscillation. If encountered, this oscillation may be eliminated by connecting a 100 ohm resistor (1/8 watt or larger) in series in each of the output leads at the end of the 2 foot transducer cable. These series resistors, of course, add to the output resistance.

**CAUTION:** Excitation power, or voltage in excess of 15 VDC, inadvertently applied to the output leads may damage the electrical circuit. Care must be taken when installing this transducer that the excitation voltage is not applied to the output leads by mistake. Shielding or other precaution should be provided to assure that transient voltages in excess of 15 VDC are not applied to the output leads.

#### ADJUSTMENTS (with cover removed)

**CAUTION: TURN OFF EXCITATION POWER DURING COVER REMOVAL OR REPLACEMENT.**

#### ZERO PRESSURE OUTPUT

Unit factory adjusted to within  $\pm 50$  mV. Can be adjusted by the air trim capacitor as shown in the diagram. Any adjustments will begin to change sensitivity.

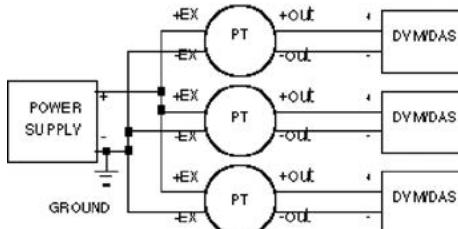
#### SENSITIVITY

Can be adjusted by potentiometer as shown on diagram. Unit factory adjusted to order specifications.

#### OTHER ADJUSTMENT

Adjusted at factory. Touching any adjustments other than zero output or sensitivity may necessitate recalibration. Do not touch.

#### INSTALLATION INSTRUCTIONS FOR MULTIPLE HOOK UP OF A 4-WIRE SETRA PRESSURE TRANSDUCER



#### Option #1

Uses a single, ground referenced power supply for excitation and separate, isolated, (not ground referenced), readout or "differential input" to a data acquisition system for each pressure transducer output.

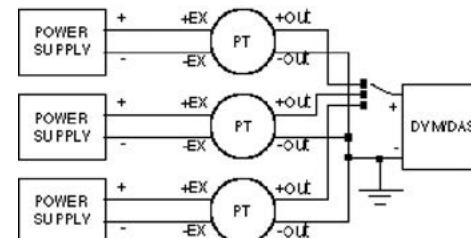
#### Option#2

Uses a separate, isolated power supply for each pressure transducer's excitation and a single, ground referenced readout or "single-ended input" to a data acquisition system for all of the outputs.

PS - Power Supply (Nominal 24 VDC)

PT - Pressure Transducer (4 Wire Circuit)

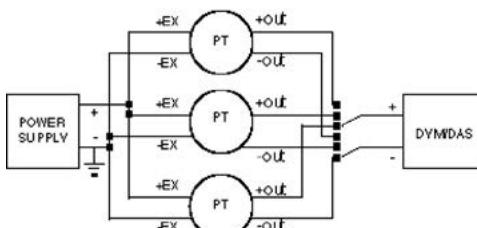
DVM/DAS - Digital Volt Meter or Data Acquisition System



#### Option #3

Uses a single, ground referenced power supply for excitation and either a single, isolated readout with a bipolar switch that "breaks before makes" both the + output and - output of each pressure transducer, or a single data acquisition system with a multiplexer (MUX).

NOTE: The shield is internally commoned to the case and pressure port of the transducer. When the shield is connected to ground, the case and pressure port of the transducer will also be commoned to that ground.



#### CALIBRATION SERVICES

Setra maintains a complete calibration facility that is traceable to the National Institute of Standards & Technology (NIST). If you would like to recalibrate or recertify your Setra pressure transducers please call our Repair Department at 1-800-257-3872 (978-263-1400) for scheduling, cost and turnaround estimates.

#### RETURNING PRODUCTS FOR REPAIR

Please contact Setra (1-800-257-3872 or 978-263-1400) before returning unit for repair to review information relative to your application. Many times, only minor field adjustments may be necessary.

When returning a product to Setra, the material should be carefully packaged and shipped prepaid to:

Setra Systems, Inc.  
159 Swanson Road  
Boxborough, MA 01719  
Attn: Repair Department

To assure prompt handling, please supply the following information and include it inside the package of returned material:

1. Name and phone number of person to contact.
2. Shipping and billing instructions.
3. Full description of the malfunction.
4. Identify any hazardous material used with product.

Notes: Please remove any pressure fittings and plumbing that you have installed and enclose any required mating electrical connectors and wiring diagrams.

Allow approximately 3 weeks after receipt at Setra for the repair and return of the unit.

Non-warranty repairs will not be made without customer approval and a purchase order to cover repair charges.

#### LIMITED WARRANTY AND LIMITATION OF LIABILITY

SETRA warrants its products to be free from defects in materials and workmanship, subject to the following terms and conditions: Without charge, SETRA will repair or replace products found to be defective in materials or workmanship within the warranty period; provided that:

- a) the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of instructions furnished by SETRA;
- b) the product has not been repaired or altered by anyone except SETRA or its authorized service agencies;
- c) the serial number or date code has not been removed, defaced, or otherwise changed; and
- d) examination discloses, in the judgment of SETRA, the defect in materials or workmanship developed under normal installation, use and service;
- e) SETRA is notified in advance of and the product is returned to SETRA transportation prepaid.

Unless otherwise specified in a manual or warranty card, or agreed to in writing and signed by a SETRA officer, SETRA pressure and acceleration products shall be warranted for one year from date of sale.

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.