

# Model AXD

## Operating Instructions



### 1.0 Introduction

Every sensor in the AXD product family has been tested and calibrated before shipment. Setra Systems AXD product family senses gauge, compound, vacuum gauge and converts this pressure difference to a proportional high level analog output. Three standard excitation and output versions are offered:

Excitation	Output	Output codes
9 to 28 VDC	4-20 mA reverse excitation protection	11
9 to 30 VDC	e.g. 0.5 to 5.5 VDC - (Reverse excitation protection)	24, 2E, et.al
4.9 to 8.1 VDC	Reverse excitation protection 0.5 to 4.5 VDC	45

### 2.0 Mechanical installation

#### 2.1 Media compatibility

The transducers in the AXD product family are offered with two different types of wetted materials. The AXD1 is made with 17-4PH stainless steel and the AXDH is made with 316 stainless steel. Prior to use in your application confirm that your media is compatible with the wetted materials of the ordered sensor.

#### 2.2 Environment

The operating temperature limits of the AXD are  $-40^{\circ}$  to  $+257^{\circ}\text{F}$  ( $-40$  to  $+125^{\circ}\text{C}$ ) on most electrical connection options (except where noted). The compensated temperature range is  $-4$  to  $+185^{\circ}\text{F}$  ( $-20$  to  $+85^{\circ}\text{C}$ ).

#### 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 Locite 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 gauge 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 AXD product family are available in both vented or sealed pressure types.

Vented units are ordered as gauge pressure type (e.g. PSIG) units. Sealed units are ordered as sealed gauge type (e.g. PSIS) range units. The AXD gauge transducers are vented through electrical termination as shown in table below.

Electrical termination	Venting
Cable (XX)	Venting through cable
3-pin packard (P1)	Venting through porous filter protected by loose o-ring
M12, 4-pin (M4)	Venting through connector
Terminal strip/conduit (*A1*)	Venting through porous filter on terminal strip

### 3.0 Electrical installation

The AXD product family is available with four electrical terminations:

- (2ft/0.5m, 6ft./2m, 12ft/4m, 25ft/8m) cable
- M12-4 PIN connector
- 3-pin packard connector
- Terminal connection w/ conduit adapter, 1/2 inch

### 3.1 Voltage and current output units

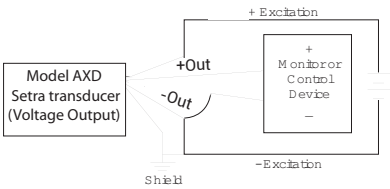
The Model AXD (voltage output) transducer is a 3-wire voltage device. It is operable in a 5000Ω load or greater. The wires for the individual conductors is as follows:

#### Current output units

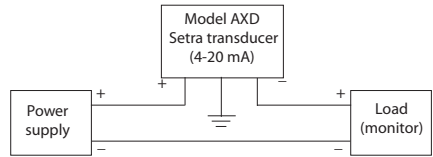
The Model AXD (current output) transducer is a true 2-wire, 4-20 mA current output device and delivers rated current into any external load of 0-800 ohms. The 4-20 mA units are designed to have current flow in one direction only - **Please observe polarity**. We suggest that the electrical cable shield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

### 3.2 Output wiring schematics

#### Voltage



#### Current output



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

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

**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.

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

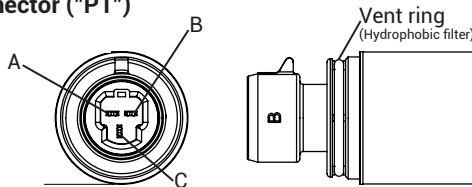
### 3.3 Electrical termination wiring instructions

#### Cable version ("XX")

	Voltage	Current
Red	+Exc	+Exc/supply
Green	+Out	N/C
Black	-Exc/common	-Exc/return
White	N/C /no connect	N/C
Shield	Earth ground/system ground	Earth ground/system ground

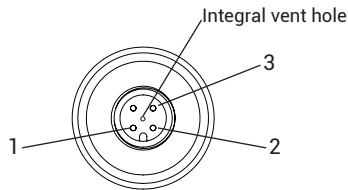
#### 3-pin packard connector ("P1")

Type: P2S series 150



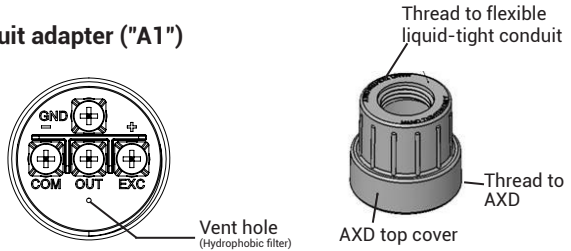
	Voltage	Current
A	-Exc/common	-Exc/return
B	+Exc	+Exc/supply
C	+Out	N/C

## M12 connector ("M4")



	Voltage	Current
1	+Exc	+Exc/supply
2	+Output	N/C
3	-Exc/common	-Exc/ return

## Terminal strip w/ 1/2 Conduit adapter ("A1")



	Voltage	Current
Exc	+Exc	+Exc/supply
Com	-Exc/common	-Exc/return
Out	+Output	
GND	Ground/case	

## To ensure water ingress protection (Nema 4x/IP66)

1. Loosely install liquid-tight 1/2" conduit fitting onto AXD top cover
2. Feed wires from a flexible conduit through the AXD top cover, fasten the wires to terminals.
3. Screw on the Model AXD top cover. Hand tighten only 2Lb-Ft (3N m) max torque.
4. Fit conduit into conduit fitting, and tighten conduit liquid-tight strain relief.

## 3.4 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: 2006 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.

## 4.0 Returning products for repair

Setra Systems cannot accept a Model AXD for repair unless the Form AXDERN is completed. Contact Setra Systems for an ERN number or the form AXDERN. Form AXDERN is included in this guide on page 15.

Please contact a Setra application engineer (800-257-3872, 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 01719-1304  
Attn: Repair Department

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

- Name and phone number of person to contact.
- Shipping and billing instructions.
- Full description of the malfunctions.
- Identify any hazardous material used with the 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.

### Calibration Services

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

## 5.0 Limited warranty & limitation of repair

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 a writing 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.

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



**Setra Systems, Inc.**

159 Swanson Road, Boxborough, MA 01719  
800.257.3872 • [www.setra.com](http://www.setra.com)