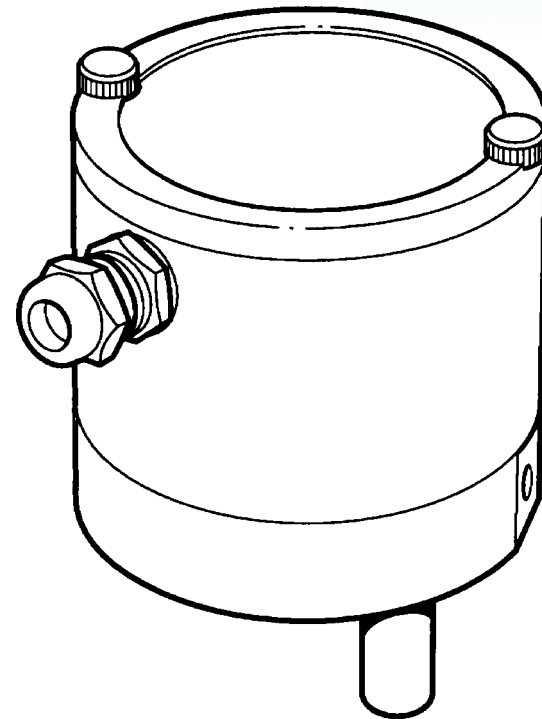


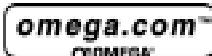
User's Guide

PX238

Absolute Pressure Sensor



www.omega.com
e-mail: info@omega.com



OMEGAnet@On-Line Service www.omega.com	Internet e-mail info@omega.com
---	-----------------------------------

Servicing North America:

USA: One Omega Drive, P.O. Box 4047
 Stamford CT 06907-0047
 TEL: (203) 359-1660 FAX: (203) 359-7700
 e-mail: info@omega.com

Canada: 976 Bergar
 Laval (Quebec) H7L 5A1
 TEL: (514) 856-6928 FAX: (514) 856-6886
 e-mail: info@omega.ca

For immediate technical or application assistance:

USA and Canada: Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA®
 Customer Service: 1-800-622-2378 / 1-800-622-BEST®
 Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN®
 TELEX: 996404 EASYLINK: 62968934 CABLE: OMEGA

Mexico: TEL: (001) 800-826-6342 FAX: (001) 203-359-7807
 En Español: (001) 203-359-7803
 e-mail: espanol@omega.com
 info@omega.com.mx

Servicing Europe:

Benelux: Postbus 8034, 1180 LA Amstelveen, The Netherlands
 TEL: +31 (0)20 6418405 FAX: +31 (0)20 6434643
 Toll Free in Benelux: 0800 0993344
 e-mail: nl@omega.com

Czech Republic: Rudé armády 1868, 733 01 Karviná 8
 TEL: +420 (0)69 6311899 FAX: +420 (0)69 6311114
 Toll Free in Czech Republic: 0800-1-66342
 e-mail: czech@omega.com

France: 9, rue Denis Papin, 78190 Trappes
 TEL: +33 (0)130 621 400 FAX: +33 (0)130 699 120
 Toll Free in France: 0800-4-06342
 e-mail: france@omega.com

Germany/Austria: Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
 TEL: +49 (0)7056 3017 FAX: +49 (0)7056 8540
 Toll Free in Germany: 0800 TC-OMEGASM
 e-mail: germany@omega.com

United Kingdom: One Omega Drive, River Bend Technology Centre
 ISO 9002 Certified Northbank, Irlam, Manchester
 M44 5EX United Kingdom
 TEL: +44 (0)161 777 6611 FAX: +44 (0)161 777 6622
 Toll Free in United Kingdom: 0800 488 488
 e-mail: sales@omega.co.uk

**Where Do I Find Everything I Need for
 Process Measurement and Control?
 OMEGA...Of Course!**

TEMPERATURE

- e Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- e Wire: Thermocouple, RTD & Thermistor
- e Calibrators & Ice Point References
- e Recorders, Controllers & Process Monitors
- e Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- e Transducers & Strain Gages
- e Load Cells & Pressure Gages
- e Displacement Transducers
- e Instrumentation & Accessories

FLOW/LEVEL

- e Rotameters, Gas Mass Flowmeters & Flow Computers
- e Air Velocity Indicators
- e Turbine/Paddlewheel Systems
- e Totalizers & Batch Controllers

pH/CONDUCTIVITY

- e pH Electrodes, Testers & Accessories
- e Benchtop/Laboratory Meters
- e Controllers, Calibrators, Simulators & Pumps
- e Industrial pH & Conductivity Equipment

DATA ACQUISITION

- e Data Acquisition & Engineering Software
- e Communications-Based Acquisition Systems
- e Plug-in Cards for Apple, IBM & Compatibles
- e Datalogging Systems
- e Recorders, Printers & Plotters

HEATERS

- e Heating Cable
- e Cartridge & Strip Heaters
- e Immersion & Band Heaters
- e Flexible Heaters
- e Laboratory Heaters

**ENVIRONMENTAL
 MONITORING AND CONTROL**

- e Metering & Control Instrumentation
- e Refractometers
- e Pumps & Tubing
- e Air, Soil & Water Monitors
- e Industrial Water & Wastewater Treatment
- e pH, Conductivity & Dissolved Oxygen Instruments

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification. The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, patient-connected applications.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY / DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED.
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering. OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 1999 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

Installation

CAUTION:

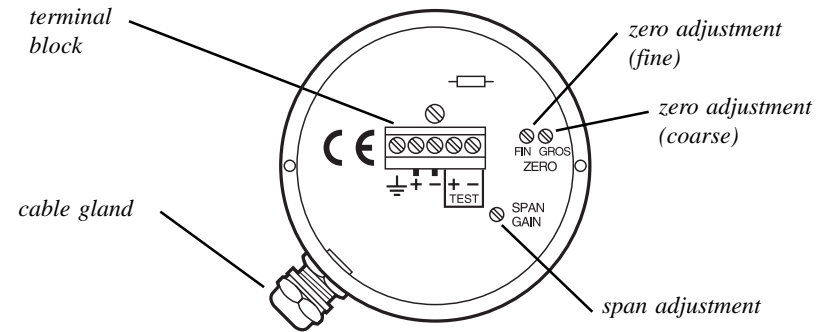
1. **INCORRECT ELECTRICAL CONNECTIONS CAN, IN CERTAIN CIRCUMSTANCES, DESTROY THE ELECTRONIC OUTPUT CIRCUIT.**
2. **BEFORE APPLYING ELECTRICAL POWER, MAKE SURE THE SUPPLY VOLTAGE IS TO THE CORRECT RATING.**
3. **THIS IS A VERY SENSITIVE SENSOR. ONLY APPLY PRESSURE WITHIN THE PRESSURE RANGE.**

Mounting

Two M4 threaded holes in the base of the sensor provide mounting points.

Note: The screws must not enter the holes more than 0.35" into the sensor body.

The installed position of the sensor should be away from sudden temperature variations, shocks and vibrations and should not be close to strong electromagnetic fields (transformers, motors etc.). The sensor can be mounted in any position, but mounting at an angle may require zero adjustment. For very low pressure sensors (less than 0.75 psia) the recommended mounting is vertical.



Internal detail

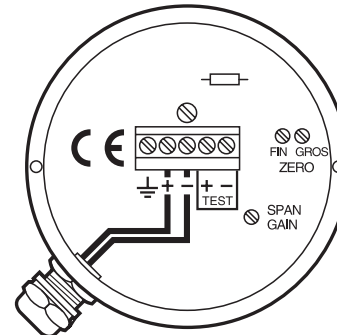
Connections

Electromagnetic Interference

To avoid electrical interference, use shielded cable with the shield connected to the earth ground at both ends. The ground of the sensor can be the casing or the ground terminal screw.

PX238 Series (current output)

Connect the load resistance between the wires corresponding to signal and 0V at a point furthest from the sensor; this produces a circulating current. Connecting an ammeter to the test terminals enables the output current to be measured and adjusted in situ.



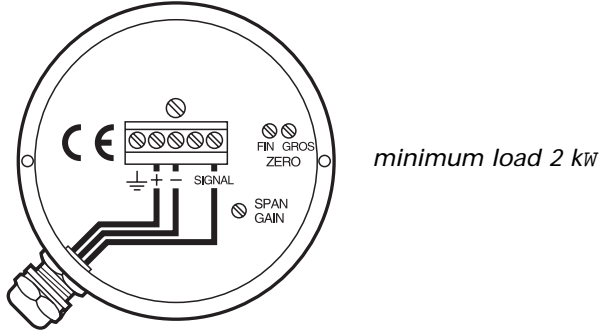
The maximum load resistance should be calculated using the following formula:

$$R \text{ Max} = 0.05 (V \text{ supply} - 10) \text{ kW}$$

Where: $R \text{ Max}$ in kW and V in Volts

PX238 Series (voltage output)

If the output cable passes through an area of electrical disturbance, use a load impedance between 2 kW and 10 kW. Connect the load between the wires corresponding to - and signal at a point furthest from the sensor; the output is measured between - and signal.

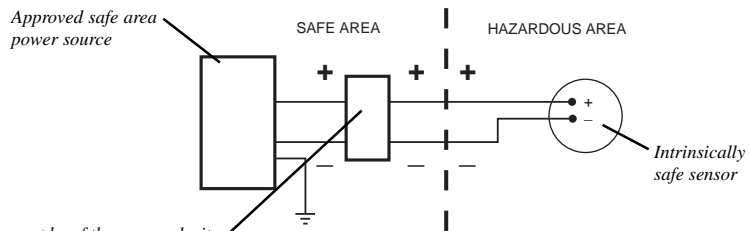
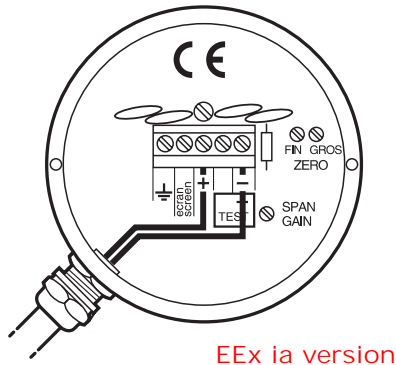


WARNING: CONNECTION MUST ONLY BE CARRIED OUT WITH ALL POWER SUPPLIES ISOLATED.

The wiring used must meet the requirements of inductance and, the inductance resistance ratio.

To avoid electrical interference use shielded cable with the screen connected to the ground of the non-hazardous area.

DO NOT CONNECT the screen to the ground at both ends - this does not comply with the requirements of intrinsically safe installations.



Barriers must be of the same polarity (i.e. both +ve or both -ve) and must be approved

Adjustments

The following equipment is required to carry out the adjustments:

- Power supply
- Voltmeter
- Milli-ammeter
- Pressure standard

Note: Using the wrong equipment for these procedures may void the calibration warranty.

◆ Connect the sensor as shown in Installation. The sensor should be put in its normal operating position (vertical or horizontal). Remove the cover to gain access to the zero and span adjustment potentiometers.

Note: For absolute sensors, zero adjustment must be carried out using a high quality vacuum pump.

Zero adjustment

◆ Zero adjustment is carried out with vacuum applied. Depending on the model, set the zero adjustment for 4.00 mA or 0.000 V.

Span adjustment

◆ Span adjustment is carried out with the required span pressure applied. Depending on the model, set the span adjustment for 20.00 mA, 10.000 V or 5.000 V.

◆ Release the pressure.

Completion

Check the output at zero pressure and if necessary, repeat the zero and span adjustments.

- Release the pressure and disconnect the equipment.
- Refit the cover.

Specification

Pressure ranges 0 to 0.03 psi absolute to 0 to 150 psi absolute

Pressure media:

All fluids compatible with stainless steel (316L), X750 Inconel and 600 Inconel

Accuracy: ±0.2% BSL

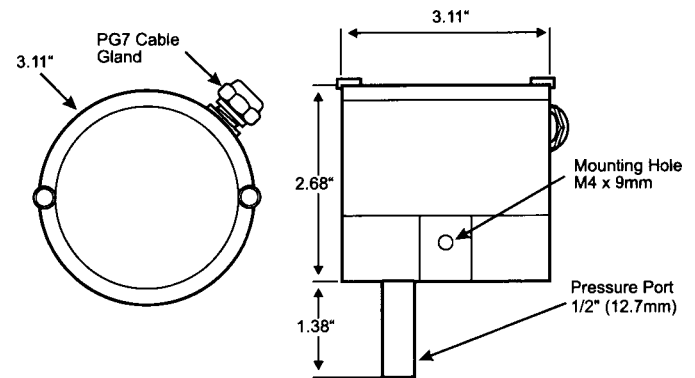
Weight (approximate) 2.9 lbs

Dimensions see below

Power supply

PX238 (0-5 V d.c. output) 10 to 30 V d.c.

(0-10 V d.c. output) 15 to 30 V d.c.



Dimensions