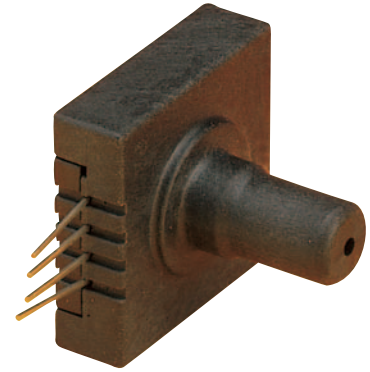


PX170

Pressure Transducers



INSTRUCTION SHEET

M0562/1008

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GENERAL INFORMATION

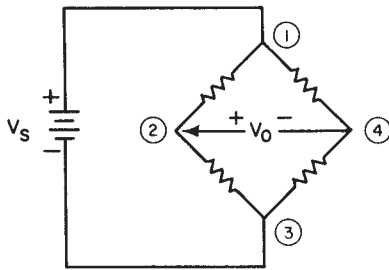
The OMEGA[®] PX170 Series Pressure Transducers are four-active-element piezoresistive bridges. When pressure is applied, a differential output voltage, proportional to that pressure, is produced. The PX170 Transducers have laser trimmed resistors and a thermistor to provide low sensitivity shift with temperature.

Gage pressure is measured with respect to atmospheric (room) pressure reference. The gage device produces an output which increases for pressure above atmospheric and decreases for pressure below atmospheric.

Differential pressure sensors apply P1 and measurand to the active (connection) side of the chip, and P2 to the passive side.

ELECTRICAL CONNECTION

Voltage Excitation



NOTES:

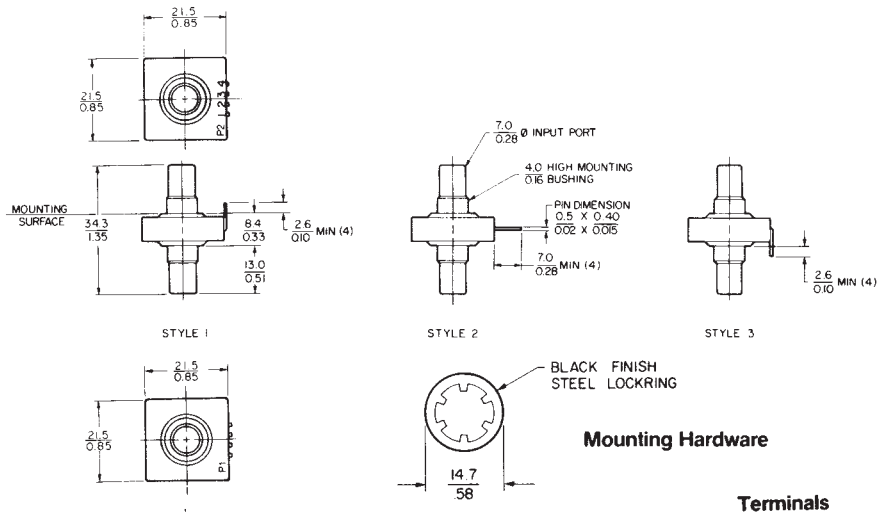
1. Circled numbers refer to sensor terminals (interface pins).
2. V_0 increases with pressure difference.
3. $V_0 = V_2 - V_4$ (referenced to pin 3).

MEASURAND

P1: Dry gases only
P2: Materials in contact with media are polyester, epoxy adhesive and silicon bonded to borosilicate glass with an electrostatic process.

MOUNTING DIMENSIONS

DIFFERENTIAL

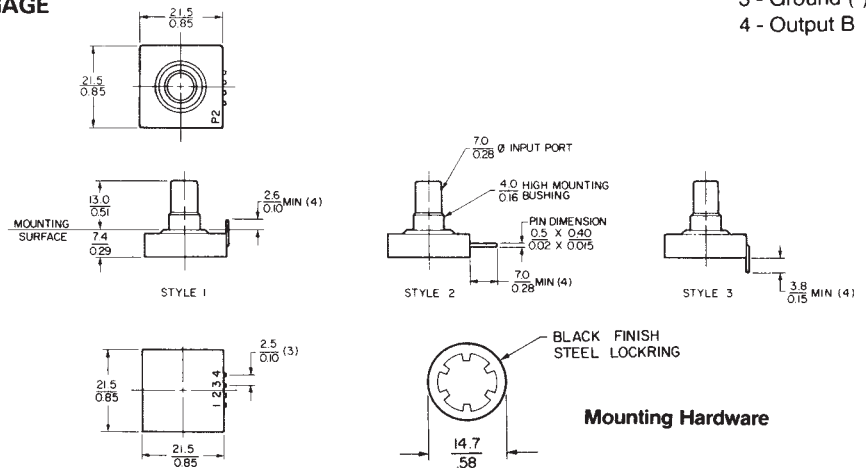


Mounting Hardware

Terminals

- 1 - V_s (+)
- 2 - Output (A)
- 3 - Ground (-)
- 4 - Output B

GAGE



Mounting Hardware

MOUNTING AND INTERFACE

Each sensor is furnished with an unassembled locking. When sensor is mounted through the panel hole, the locking is forced onto the mounting bushing, and locks the sensor to the panel. Pin orientations are shown (style 1, 2, 3) in the mounting dimensions diagram. Pins are .020" wide and .014" thick with .100" mounting centers.

SOLDERING

Limit soldering to 315°C (600°F), 10 seconds duration, maximum.

CLEANING

Select proper cleaning fluids, based on contaminants to be removed. OMEGA recommends alcohols or fluorinated solvents.

PX170 SERIES SPECIFICATIONS @ 10.0 ±0.01 VDC EXCITATION, 25°C

GENERAL

RESPONSE TIME:	1 msec max.
EXCITATION:	10 Vdc typical; 12 Vdc max.
NULL OFFSET:	0 ±2 mV
SENSITIVITY:	14" H ₂ O, ±4.0% F.S.O. max; 28" H ₂ O, ±3.5% F.S.O. max
OUTPUT:	0-14" H ₂ O, 35 mV ±2 mV; 0-28" H ₂ O, 42 mV ±2 mV
INPUT IMPEDANCE:	6.6 kilohm
LINEARITY (BEST FIT STRAIGHT LINE):	P1 < P2 ±3.00% F.S.O. P2 > P1 ±1.5% F.S.O.
HYSTERESIS & REPEATABILITY:	.25% F.S.O. typical
ZERO BALANCE:	±2 mV
OPERATING TEMPERATURE:	-40° to 185°F (-40° to +85°C)
COMPENSATED TEMPERATURE RANGE:	32° to 122°F (0° to 50°C)
THERMAL ZERO EFFECT:	±3 mV
THERMAL SPAN EFFECT:	±3.5% F.S.O.
OPERABLE OVERPRESSURE:	140" H ₂ O (5 psi)
STABILITY OVER 1 YEAR:	±1.5% F.S.O.
SHOCK:	Qualification tested to 150 g
VIBRATION:	Qualification tested to 0 to 3 kHz at 20 g sine
CONSTRUCTION	
GAGE TYPE:	Solid State Piezoresistive
DIAPHRAGM MATERIAL:	.175 inch square silicon sensor chip
PRESSURE PORT:	Tube fitting
ELECTRICAL CONNECTION:	CX-136-4
TERMINATION:	0.025" nominal printed circuit board terminals
WEIGHT:	7 grams nominal

WARNING!

READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transducer and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects.

Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.

Liquid surges are particularly damaging to pressure transducers if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed, and a pressure snubber should be installed on every transducer.

Symptoms of fluid hammer and surge's damaging effects:

- Pressure transducer exhibits an output at zero pressure (large zero offset). If zero offset is less than 10% FS, user can usually re-zero meter, install proper snubber and continue monitoring pressures.
- Pressure transducer output remains constant regardless of pressure.
- In severe cases, there will be no output.



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omega.com

Internet e-mail
info@omega.com



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 in which wear is not warranted, include but are 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 the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED 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:

- Purchase Order number under which the product was PURCHASED,
- Model and serial number of the product under warranty, and
- 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:

- Purchase Order number to cover the COST of the repair,
- Model and serial number of the product, and
- 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.

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U.S.A.:
ISO 9001 Certified
One Omega Drive, 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, Canada
Tel: (514) 856-6928
FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

U.S.A. and Canada: Sales Service: 1-800-826-6342/1-800-TC-OMEGA
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Mexico: En Español: (001) 203-359-7803
FAX: (001) 203-359-7807
e-mail: espanol@omega.com
info@omega.com.mx

Servicing Europe:

Czech Republic: Frystatska 184, 733 01 Karvina, Czech Republic
Tel: +420 (0)59 6311899
FAX: +420 (0)59 6311114
Toll Free: 0800-1-66342
e-mail: info@omegashop.cz

Germany/Austria: Daimlerstrasse 26, D-75392 Deckenpfromm, Germany
Tel: +49 (0)7056 9398-0
FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom:
ISO 9001 Certified
One Omega Drive, River Bend Technology Centre
Northbank, Irlam, Manchester
M44 5BD 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

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