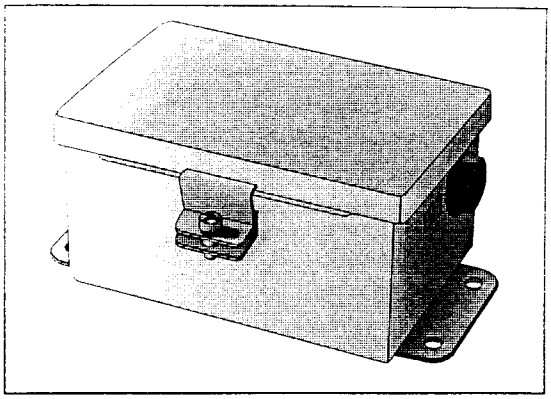
OMEGA®
An OMEGA Technologies Company

PX157 Series

Wet or Dry Differential Pressure Transmitter



Operator's Manual

M1997/1294

Unpacking Instructions

Remove the Packing List and verify that you have received all equipment, including the following (quantities in parentheses):

PX157 Transmitter (1)
Operator's Manual (1)

If you have any questions about the shipment, please call the OMEGA Customer Service Department.

When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

Description

The OMEGA® PX157 Pressure Transmitter utilizes a solid-state piezoresistive sensing element which is electro-statically bonded to a glass pedestal which avoids effects of induced stress and vibration. The sensing element has a computer-controlled laser-trimmed custom hybrid circuit.

The laser trimming standardizes output and provides precise temperature and pressure compensation of the sensing element over a range of -25° to 75°C. The laser trimming allows the PX157 transmitter to be used in temperature range of 0° to 50°C when mounting the sensing element remote from the signal conditioning electronics.

Pressure sensing wetted surface is 316 stainless steel. Pressure port fittings are also available in 316 stainless steel allowing for expanded media compatibility.

The low level output voltage of the sensing element is amplified, temperature compensated and conditioned to supply current or dc voltage analog signal outputs, which are linear with the specified pressure span, with the micro-processor compatibility.

Zero and span thermal effects are maintained at minimum values over typical industrial operating temperature ambients.

Applications

The PX157 transmitters provide an accurate, reliable means for monitoring differential pressures in HVAC automation, pneumatic systems and process control. The output can be easily interfaced with chart recorders, data loggers, and computerized monitoring and control systems.

Applications include:

- Liquid flow rates across an orifice plate or venturi
- Differential liquid level head pressure
- Pressure difference between two gaseous or liquid lines
- Variable speed drives controlling chilled water flow
- Absolute vacuum differential pressure sensing
- Automotive, industrial monitoring

Features

- Liquids can be applied to both ports
- Zero and Span Adjustments for field calibration
- Rugged Steel NEMA-4 enclosure
- Available with square root output

Available Models

Part Number	Range
PX157-005DI	0 to 5 PSID
PX157-010DI	0 to 10 PSID
PX157-015DI	0 to 15 PSID
PX157-015BDI	-15 to 15 PSID
PX157-030DI	0 to 30 PSID
PX157-15/45BDI	-15 to 45 PSID
PX157-060DI	0 to 60 PSID
PX157-100DI	0 to 100 PSID
PX157-150DI	0 to 150 PSID
PX157-200DI	0 to 200 PSID
PX157-300DI	0 to 300 PSID
PX157-500DI	0 to 500 PSID
PX157-750DI	0 to 750 PSID
PX157-1KDI	0 to 1000 PSID

Installation

Wiring

Figure 1 shows the location of the three terminals inside the transmitter and the location of the High and Low port connections.

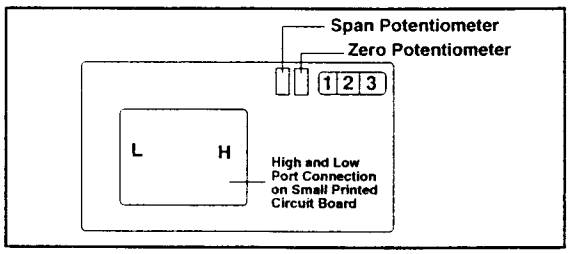


Figure 1.
Terminal Locations and Potentiometers Locations

The PX157 transmitter can be wired in two different configurations:

- 24Vdc power, 4-20mA, 2-wire loop signal or
- 4-20mA, 2-wire, field conversion to 1-5Vdc signal.

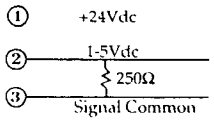
If wiring to 24Vdc use the following hookup:

① +24Vdc

② 4-20mA signal out

③ No connection

If wiring to 4-20mA, with field conversion to 1-5Vdc signal, use the following hookup:



Media Compatibility

Liquids and gases compatible with brass and 17-4 PH stainless steel

Pressure Sensing

Gauge (Positive) Pressure Sensing:

Connect media pressure to port labeled "HIGH", with port labeled "LOW" vented to atmosphere.

Vacuum (Negative) Pressure Sensing:

Connect media pressure to port labeled "LOW", with port labeled "HIGH" vented to atmosphere.

Differential Pressure Sensing:

Connect the higher of the two media pressures to port labeled "HIGH" and the lower of the two pressures to port labeled "LOW".

Port Connection

1/8" NPT female. It is always recommended to use a second wrench to hold the port hex nut thereby eliminating the possibility of rotating the port fitting.

Mounting

The transmitter can be operating in any position; however, be alert to moisture passing through non-waterproof electrical connectors.

Calibration

The zero and span potentiometers may be adjusted if necessary or desired; however, the requested full scale range as shipped is established with fixed resistors minimizing the range of the adjustment potentiometers.

The average full scale adjustability is approximately ±10% of the range shipped.

Adjustments

The transducers are adjusted for the specified range at the factory and should require no further adjustments.

"Z" - zero control is adjusted for 4-20mA output (or 1 volt) signal at 0 PSI, or minimum pressure.

"S" - span control is adjusted to change the full scale range of the transmitter.

Due to resistor values required to compensate for the null offset of the sensing module, evidence of zero and span interaction may be experienced in re-adjusting.

Specifications

Proof Pressure: (max. over-pressure)	30 PSI or 2x FS (whichever is greater)
Burst Pressure:	3 x FS
Temperature Range	
Sensing Module:	
Operating:	-55° to 110°C (-67° to 230°F)
Compensated:	-25° to 75°C (-13° to 167°F)
Transmitter:	0° to 50°C (32° to 122°F)
Accuracy (Includes Repeatability, Linearity and Hysteresis)	±0.75% FS ±0.25% FS (optional)
Thermal Stability	
Zero:	±0.02%/°C
Span:	±0.02%/°C
Response Time: (to filter 60 cycle pickup)	100 milliseconds
Humidity Effects:	5 to 99% non-compensating
Shock:	50g, 11 sec., half sine
Vibration:	0 to 2 kHz, 20g sine wave
Media Compatibility:	liquids or gases compatible with brass and 17-4PH stainless steel
Stability 1 year: (with existing zero/span potentiometers)	±0.3% span/year
Current/Resistance Data:	
(2-wire loop - max. loop resistance):	400 ohms @ 18V; 700 ohms @ 24V 1000 ohms @ 30V
Quiescent current draw = output current	
(4-wire):	output sources: 20mA
Quiescent draw = 30mA @ 24V	
Excitation:	24Vdc (2-wire) unregulated
Output:	4-20mA
Zero and Span Adjustment:	±10%
Enclosure:	Gasketed steel epoxy painted with NEMA-4 rating
Pressure Port:	1/8 NPTF
Weight:	3.5 lbs (1.58 kg)
Dimensions:	See Figure 2

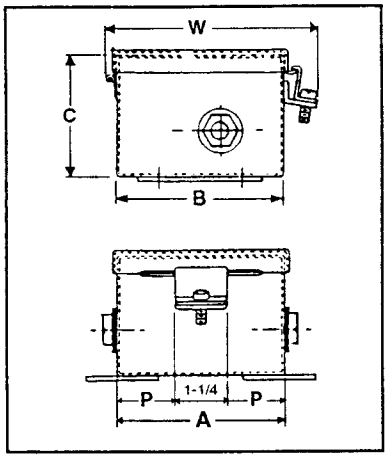


Figure 2. Dimensions

Gauge	Box Size (AxBxC)	Mounting 5/16 Dia., 4 holes Center Line Dim.	Overall Dimensions Length/Width	P
16	6" x 4" x 3"	6-3/4" x 2"	7-1/2" x 4-15/16"	2-3/8"

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Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN℠
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MADE IN USA

WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA 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 should malfunction, 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. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being 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 or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

OMEGA is glad to offer suggestions on the use of its various products. Nevertheless, OMEGA only warrants 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, 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.

Every precaution for accuracy has been taken in the preparation of this manual; however, OMEGA ENGINEERING, INC. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITION: Should this equipment be used in or with any nuclear installation or activity, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING 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.

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

1. P.O. 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 OR **CALIBRATION**, consult OMEGA for current repair/calibration charges. Have the following information available BEFORE contacting OMEGA:

1. P.O. number to cover the COST of the repair/calibration,
2. Model and serial number of 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.

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