User's Guide

An OMEGA Technologies Company
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MODEL PX2300
Differential Pressure Transmitters

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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.

General Information

The PX2300 Series pressure transmitters have been carefully tested and calibrated before shipment. Specific performance information is listed on the specification bulletin for the transmitter. The PX2300 is designed to be used as a wet-to-wet differential pressure transmitter with a 4 to 20 mA output and is contained in a NEMA 4 housing enclosure.

Environmental Conditions

The PX2300 is designed to be operated and be stored under the following environmental conditions:

Temperature

Operating:	0 to 175^{0}F (-18 to 80^{0}C)
Storage:	-65 to 250^{0}F (-54 to 126^{0}C)

Media Compatibility

The media exposure to the wetted parts of the PX2300 Series pressure transmitter must be compatible with 17-4 stainless steel, 300 series stainless steel, and Viton (Silicone).

Induced Environments

The PX2300 Series can withstand the following environments for vibration, shock and acceleration. Keep in mind that the unit accuracy is affected during each of these conditions and, although no permanent changes to performance will occur, means should be taken to avoid these induced environments to the best extent possible to provide the most accurate measurement:

Vibration:	2g from 5 to 500 Hz
Shock:	50g operating, 1/2 sine 10 ms
Acceleration:	10g maximum

Electrical Connections

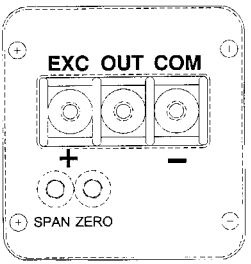
Current Output Transmitters

The current output transmitters are true 2-wire (see Figure 1A), 4-20mA current devices and deliver rated current into any external load of 0-800 ohms. The 4-20mA current output units are designed to have current flow in one direction only – please observe polarity.

We suggest that any electrical cable shield be connected to the system's loop circuit ground to improve electrical noise rejection.

To access electrical connections remove cover on top of the PX2300 Series transmitter (See Figure 1).

Figure 1



The PX2300 can operate over a voltage range of 9 to 30 VDC. It has been factory calibrated at 24VDC into a 250 ohm load. The minimum and maximum power supply must be capable of delivering these voltages to the PX2300. Thus, the minimum and maximum power supply calculation is shown below and is depicted in Figure 2.

MIN Supply Voltage:	9 + 0.02 x (resistance of receiver plus line)
MAX Supply Voltage:	30 + .004 x (resistance of receiver plus line)

The PX2300 Series comes with a 7/8" diameter port intended for a 1/2" I.D. conduit connection. Contact factory for suggested fittings.

Figure 1A

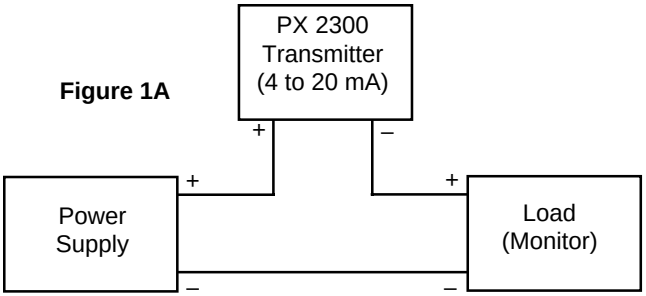
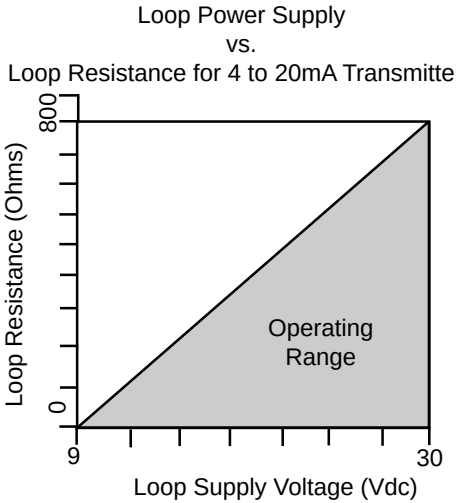


Figure 2



Mounting and Pressure Fittings

Mounting - The PX2300 Series is supplied with a mounting bracket and two (2) 6-32 x 3/8 hex head screws. First attach bracket to mounting location using holes or band clamp notches available on large section of the bracket. Next, attach the transmitter to bracket by using the two 6-32 x 3/8" hex head screws and the two tapped holes located on the underside of the transmitter.

Pressure Fittings – Typically, standard pipe fittings and procedures should be used. The PX2300 Series have 1/4"-18 NPT internal fittings. The high pressure port is labeled with the word "High".

Installation Precautions

For differential pressure measurements at high line pressure (250 psig max.) it is recommended that the pressure sensor be installed with a valve in each line, plus a shunt valve across the high and low (reference) pressure ports as shown in Figure 3.

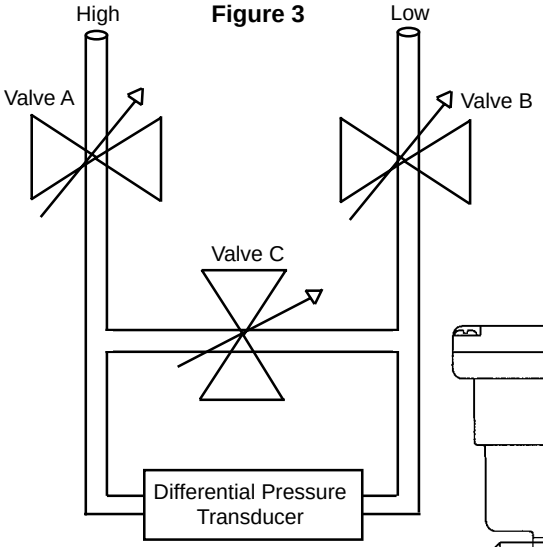


Figure 3

Valve A = High Side Valve
Valve B = Low Side Valve
Valve C = Shunt Valve

Valve C should be open and valves A and B closed whenever the system is first being wetted or pressurized. Valves A and B should be opened slowly to avoid hammering. Valve C can then be closed and the system will then be operating.

When the differential pressure sensor is to be removed, Valve C must be opened first, then Valves A and B can be closed.

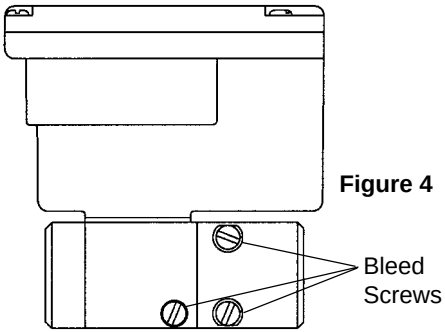


Figure 4

Bleeding the Pressure Ports

3 bleed screws are on the side of the unit (see Figure 4) 2 for low pressure port, 1 for high pressure port.

Install the transmitter in its intended location and pressurize the ports. Back off the first bleed screw mounted on the flat side of the sensor body (2 turns max) until liquid begins to flow out. After only bubble-free liquid flows out, retighten the bleed screw. Repeat same procedure for the second set of bleed screws located on the round section of the low pressure fitting.

Calibration

All PX2300 Series pressure transmitters are carefully calibrated to the specific input pressure range vs. output current at the factory so little or no field calibrating is necessary. Zero and span adjustments are made by removing the cover on the top of the PX2300 and the 6-32 seal screws in the plastic terminal block. Be sure to reinstall the seal screws after zero and/or span adjustments. Current output transmitters (4-20mA) are factory calibrated using a 250 ohm load at 24 VDC. Zero and span adjustments are approximately +/-1.0 mA, individually.

The PX2300 Series are calibrated with the diaphragm in the vertical position (pressure ports horizontal). For use in other orientations, position the unit and adjust the zero by following the calibration procedure listed in the preceding section. Optimum results will be achieved by using in the factory calibrated position. The PX2300 Series position effect is as shown in Table 1 (pressure ports in vertical plane):

TABLE 1

Range	High Pressure Port Face Up	High Pressure Port Face Down
±0.5 psid	-2% FS per g	+2%FS per g
±1.0 psid	-2% FS per g	+2%FS per g
1.0 psig	-2% FS per g	+2%FS per g
2.0 psig	-2% FS per g	+2%FS per g
All other ranges	-1% FS per g	+1%FS per g

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 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'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 WHATSO EVER, 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.

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RETURN REQUESTS/INQUIRES

Direct all warranty and repair requests/inquires 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.

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