1 YEAR
WARRANTY

User's Guide

Shop online at

omega.com®

ΩOMEGA®

omega.com
e-mail: info@omega.com
For latest product manuals:
omegamanual.info

ISO 9001 CERTIFIED CORPORATE QUALITY
STAMFORD, CT

ISO 9001 CERTIFIED CORPORATE QUALITY
MANCHESTER, UK

PX2310 SERIES
M-5260/0213

omega.com®
OMEGA®

OMEGAnet® Online Service omega.com	Internet e-mail info@omega.com

Servicing North America:

U.S.A:
ISO 9001 Certified
Omega Engineering, Inc., One Omega Drive, P.O. Box 4047
Stamford, CT 06907-0047 USA
Toll Free: 1-800-826-6342 TEL: (203) 359-1660
FAX: (203) 359-7700 email: info@omega.com

Canada:
976 Bergar
Laval (Quebec), Canada H7L 5A1
Toll Free: 1-800-826-6342 (514) 856-6928
FAX: (514) 856-6886 email: info@omega.com

For immediate technical or application assistance:

U.S.A 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®

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

Servicing Europe:

Benelux:
Managed by the United Kingdom Office
Toll-Free: 0800 099 3344 TEL: +31 20 347 21 21
FAX: +31 20 643 46 43 e-mail: sales@omega.nl

France:
Managed by the United Kingdom Office
Toll-Free: 0800 466 342 TEL: +33 (0) 161 37 29 00
FAX: +33 (0) 130 57 54 27 e-mail: sales@omega.fr

Germany/Austria:
Daimlerstrasse 26
D-75392 Deckenpfronn, Germany
Toll-Free: 0 800 6397678 TEL: +49 (0) 7059 9398-0
FAX: +49 (0) 7056 9398-29 e-mail: info@omega.de

United Kingdom:
ISO 9001 Certified
OMEGA Engineering Ltd.
One Omega Drive, River Bend Technology Centre, Northbank
Irlam, Manchester M44 5BD England
Toll-Free: 0800-488-488 TEL: +44 (0)161 777-6611
FAX: +44 (0)161 777-6622 e-mail: sales@omega.co.uk

Contents

Installation Guide
Multi-Sense PX2310 Series
Wet-to-Wet Differential Pressure Transducers

1.0 GENERAL INFORMATION

Every PX2310 has been calibrated and tested before shipment to guarantee performance of all pressure ranges.

The PX2310 has field selectable unidirectional and bidirectional pressure ranges, configurable 0 to 5 VDC, 0 to 10 VDC, and 1 to 5 VDC output, true two wire 4 to 20 mA, and auto-zero capability. The PX2310 is factory calibrated to the highest pressure range. The range label on the side of the unit indicates the factory calibrated range.

Omega PX2310 pressure transducers sense differential pressure and convert difference in overpressure to a proportional high level analog output for unidirectional and bidirectional pressure ranges.

Your PX2310 Multi-Sense pressure transducer has been ordered in one of the following versions:

Version	Unidirectional	Bidirectional
PX2310 050 DX	5, 10, 20, 50 psid	±5, ±10, ±20, ±50 psid
PX2310 100 DX	10, 20, 50, 100 psid	±10, ±20, ±50, ±100 psid
PX2310 250 DX	25, 50, 125, 250 psid	±25, ±50, ±125, ±250 psid

2.0 MECHANICAL INSTALLATION

2.1 Media Compatibility

PX2310 transducers are designed to be used with any gas or liquid compatible with 17-4 PH stainless steel. The optional 3-valve manifold assembly is designed to be used with gases or liquids compatible with 360 Brass, Acetal plug valves and Nitrile O-Rings. Never totally submerge the unit in any liquid.

2.2 Environment

The operating temperature limits of the PX2310 are as follows:

Compensated Temperature Range °F (°C)	+32 to +130 (0 to +54)
Operating Temperature Range °F (°C)	-4 to +185 (-20 to +85)
Storage Temperature Range °F (°C)	-4 to +185 (-20 to +85)

2.3 Pressure Fittings
Typically standard pipe fittings and installation procedures should be used.

The PX2310 has 1/8" -NPTF internal fittings. The high pressure port and low pressure port are located on the bottom of the unit, labeled "HI" and "LO", respectively The optional 3-valve manifold assembly with the 1/4" -18NPT internal fittings.

Moisture Precautions
The PX2310 is provided with a 0.875 DIA. conduit opening for electrical termination, intended for a 1/2" I.D. conduit connection. The opening must be sealed according to standard industry practices in order to prevent moisture ingress into the PX2310.

2.4 Mounting
The PX2310 can be easily mounted using the two mounting screws located on the side of the unit.

2.5 Installation Procedures
If the PX2310 is supplied with an optional 3-valve Manifold assembly, refer to section 3.0, Optional 3-Valve Manifold Assembly Procedure, for further installation procedures. If the PX2310 is not supplied with a Omega 3-Valve manifold, the following installation procedure is recommended.

For differential pressure measurements at high line pressure, 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.

Important: Do not exceed maximum range pressure with the total of differential pressure and line pressure.

FIGURE 1:

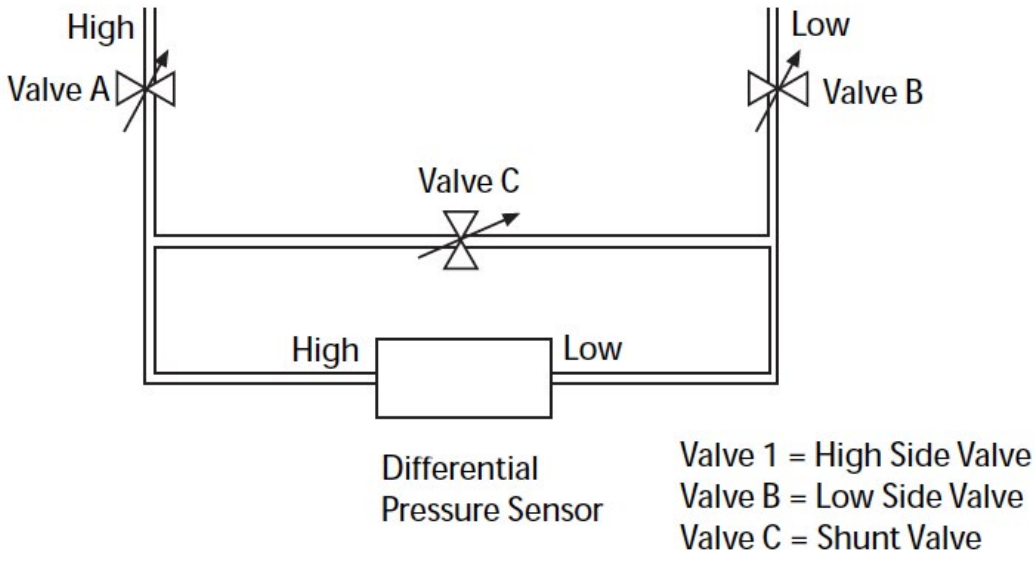
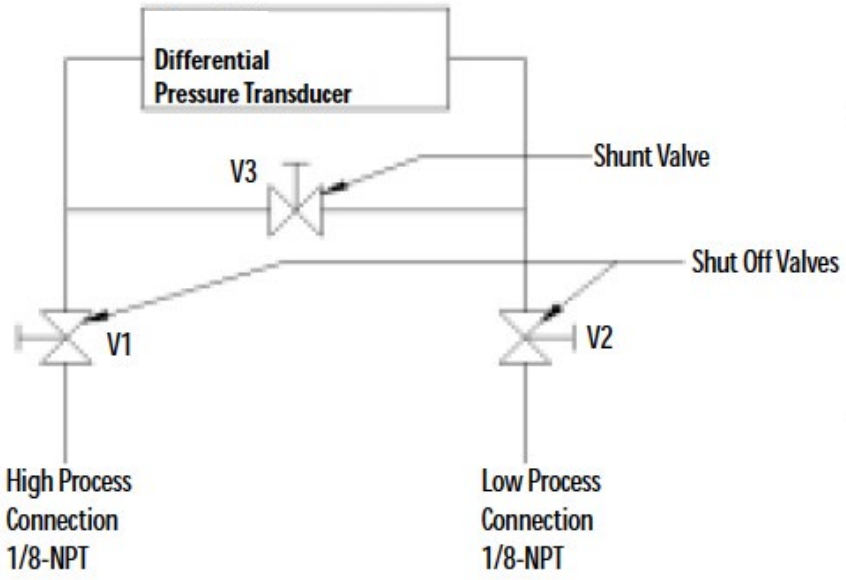


FIGURE 2:



3-Valve Manifold Description

Manifold Block	Brass
Valves (3)	V1 for connection to + port
	V2 for connection to - port
	V3 for equalizing pressure
Valve Type	90 degree On/Off
Process Connections	1/4-18NPT Internal Thread

3.0 OPTIONAL 3-VALVE MANIFOLD PROCEDURE

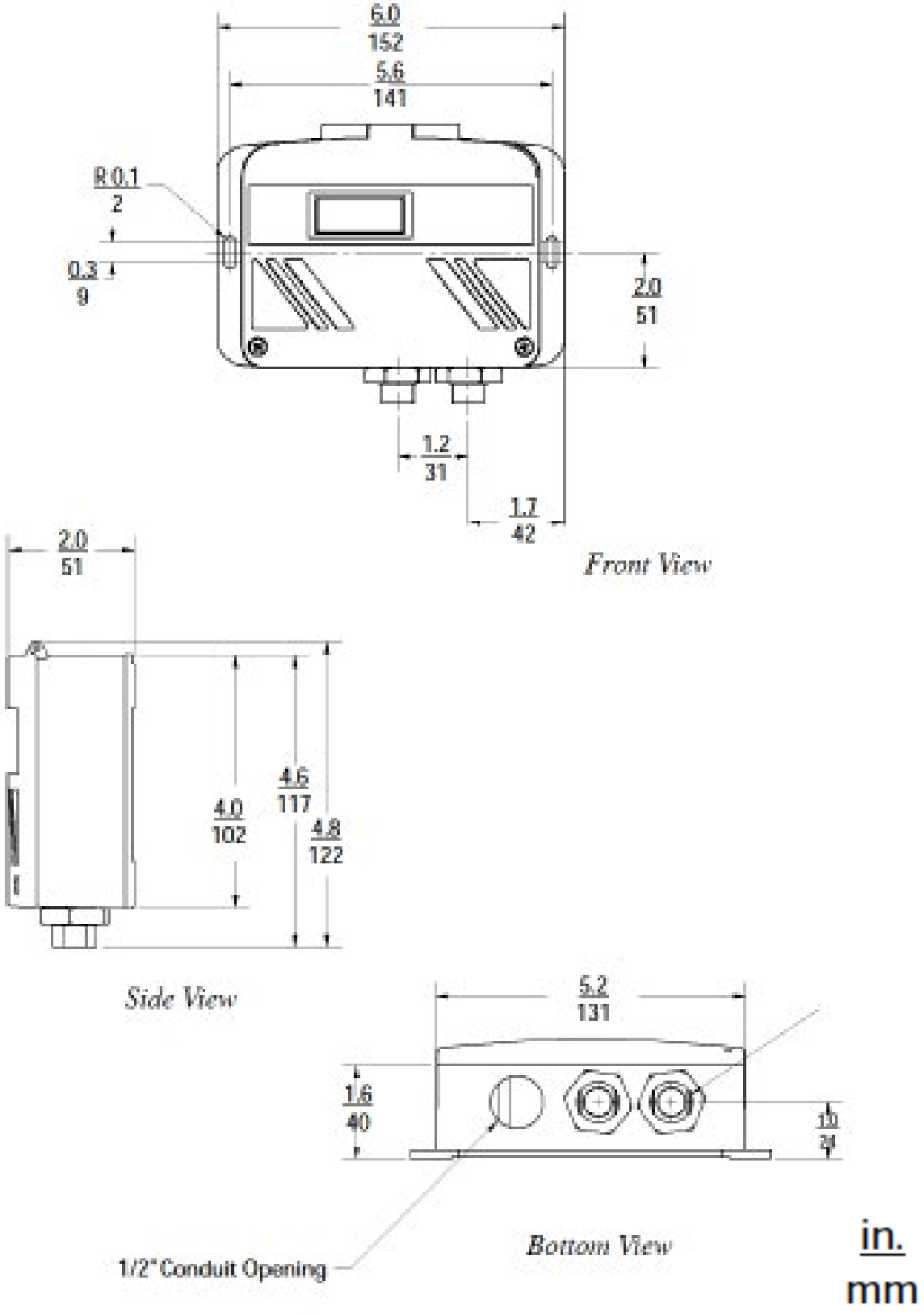
The 3-Valve Manifold Assembly is normally shipped with valves V1 and V2 closed and V3 open.

To Place the PX2310 into service:
1. Confirm valves V1 and V2 are closed and valve V3 is open
2. Mount the manifold and install process connections
3. Slowly open V2, then V1
4. Close the V3 valve.

To Take the PX2310 out of service:
1. Open V3 to equalize the pressure at the PX2310
2. Close the V2 and V2 valves.

PX2310 - Outline Drawing

FIGURE 3:



4.0 ELECTRICAL INSTALLATION

To access the electrical connections, turn the screws on the top of the case counter clockwise until the hinged cover can be flipped up. The screws are captured and secured in the cover. Wiring is through the 1/2" conduit opening. Both current and voltage outputs are reverse wiring protected.

Note: *The Zero terminals, connected to digital output, provide a contact closure relay for automatic reset to zero pressure by the monitoring system.* ***CAUTION: ZERO input is for dry contact, do not apply voltage to ZERO Terminals.***

4.1 Electrical Termination

Wiring: 2-Wire - 4 to mA (Current Output) and Remote Zero

PX2310 when configured as a current output transducer is a true 2-wire, 4-20 mA current output device and delivers rated current into any external load of 0-1000 ohms.

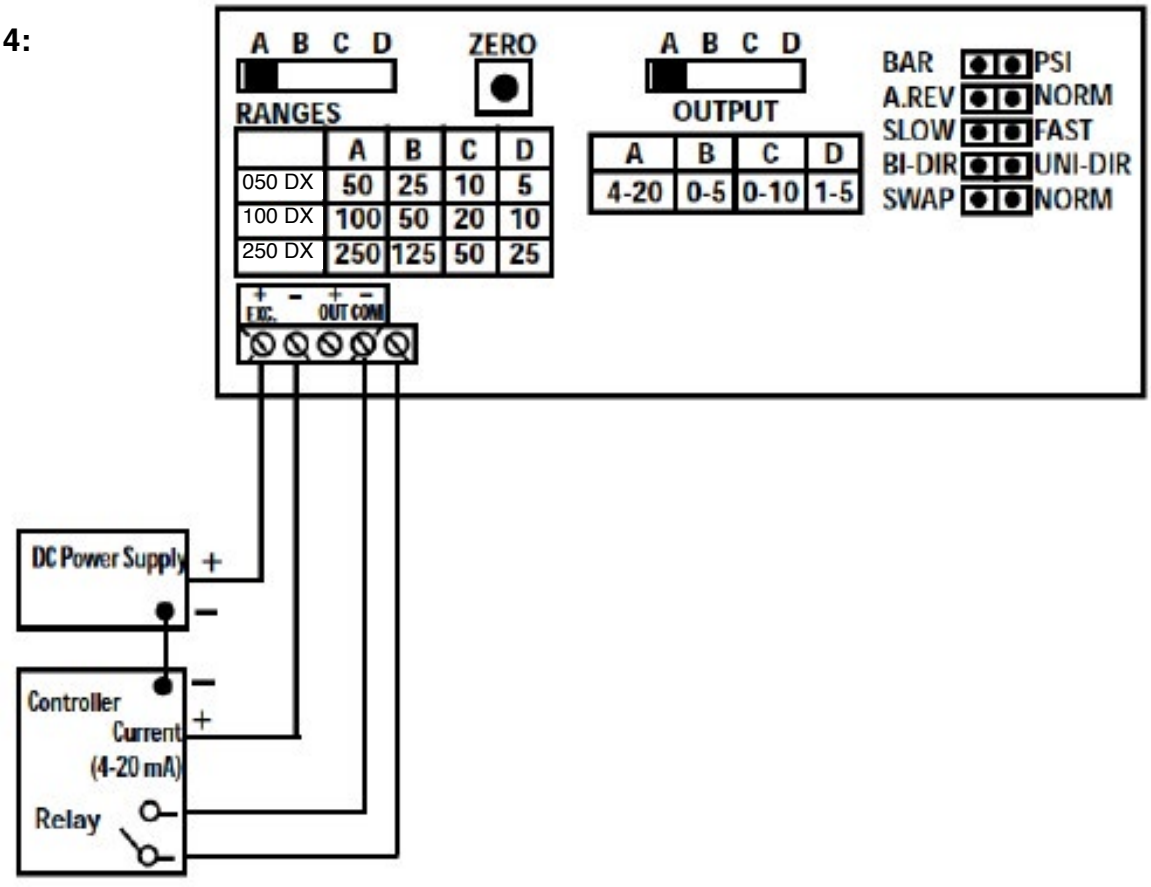
When configured as a 4-20 mA current output device the current flow is in one direction only.
PLEASE OBSERVE POLARITY.

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

Min. Supply Voltage:	12 + .02 x (Resistance of receiver plus line)
Max Supply Voltage:	30 + .004 x (Resistance of receiver plus line)

The optional remote zero is normally open relay wired between COM and REMOTE ZERO terminals. In order to initiate ZERO function the relay contact shall be closed.

FIGURE 4:



4.2 Electrical Termination
Wiring: 3-Wire, 0 to 5, 0 to 10, 1-5 VDC and Remote Zero

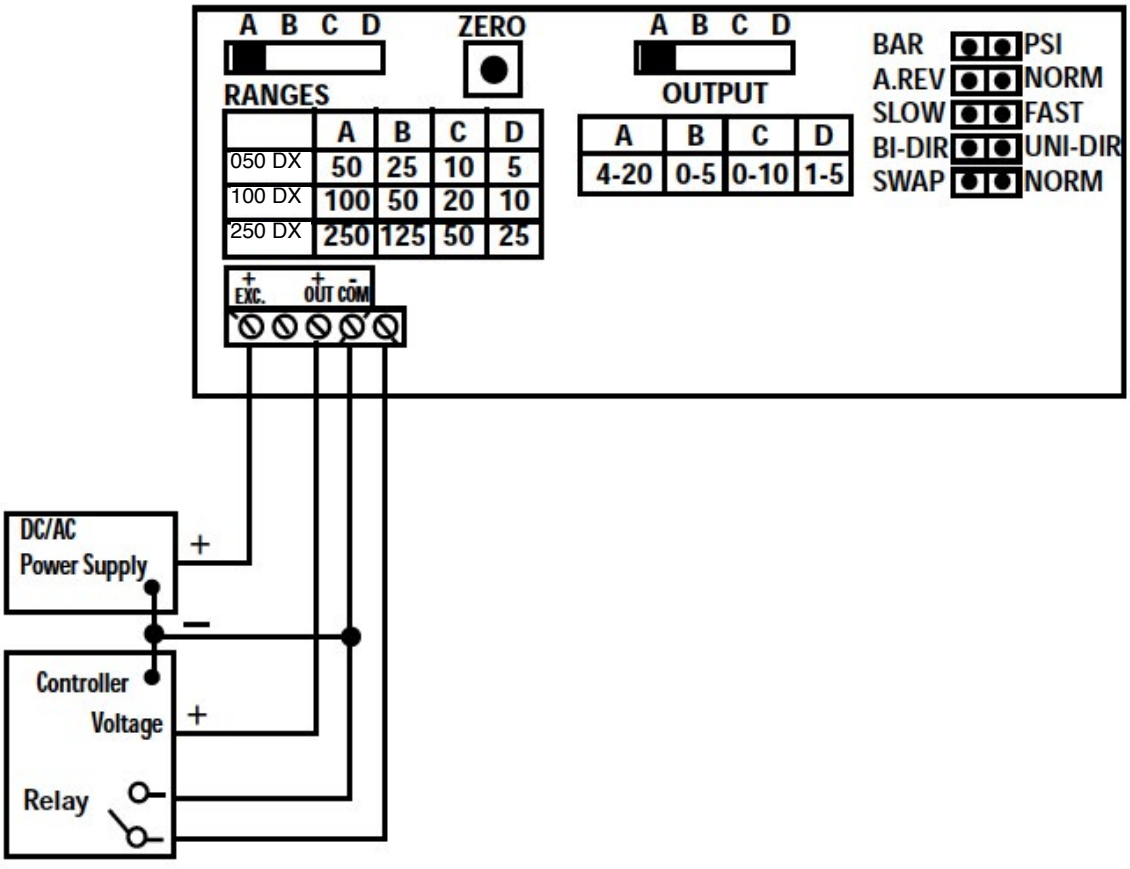
The PX2310 when configured for voltage output is a 3-wire circuit device with three terminals available for wiring. The -Excitation and -Output are commoned on the circuit.

The PX2310 can operate from 12-30 VDC (18-28 VAC) nominal output power supply.

Note: *The Zero terminals, connected to digital output, provide a contact closure relay for automatic reset to zero pressure by the monitoring system.* ***CAUTION: ZERO input is for dry contact, do not apply voltage to ZERO Terminals.***

The optional remote zero is a normally open relay wired between COM and REMOTE ZERO terminals. In order to initiate ZERO function in the relay contact shall be closed.

FIGURE 5:



	A	B	C	D
050 DX	50	25	10	5
100 DX	100	50	20	10
250 DX	250	125	50	25

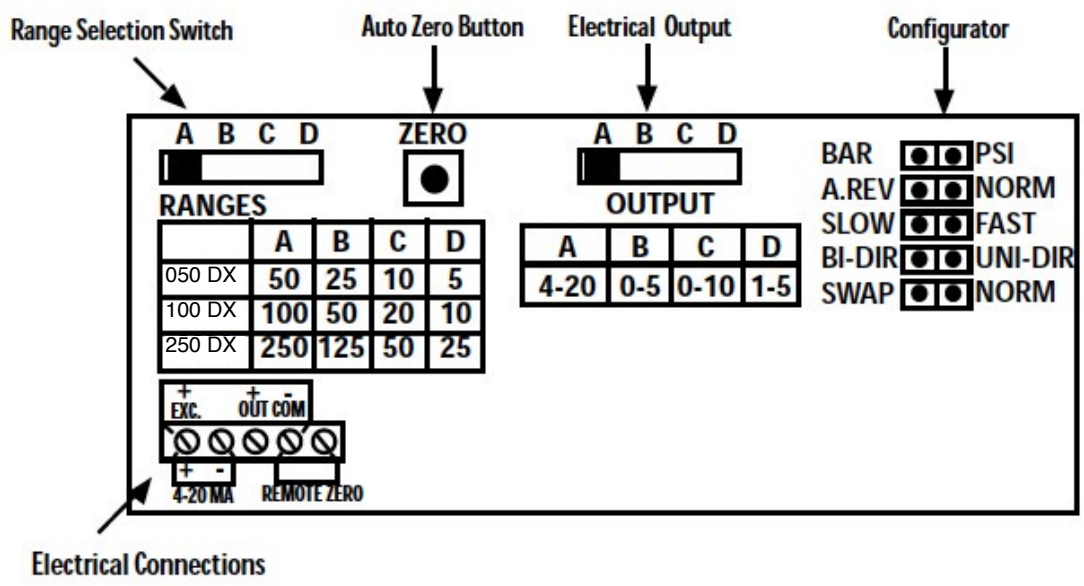
A	B	C	D
4-20	0-5	0-10	1-5

Installation of the PX2310 is not complete.

> Important: Prior to putting the unit into service, press the “Zero” button, then use the “Range Selection Switch” to select a range. After selecting a range, press the “Zero” button again. For instructions regarding operation of the PX2310, please refer to Section 5.

5.0 OPERATION

FIGURE 6:



Range Selection Switch: The unit is set to the highest range when calibrated at the factory. To select the other ranges, slide the switch to the right. ***Important: Push "zero" button after installing the PX2310, and after changing range.***

Auto Zero Button: Press and hold the "ZERO" push-button for 2 seconds to automatically reset zero or provide contact closure on "Remote Zero, see figure 4 and figure 5.

Electrical Output: The unit is set at the factory to 4-20 mA. To select another output, move the slide switch to the right.

Electrical Connections: Electrical termination for power supply, 3-wire voltage output and 2-wire true 4-20 mA current output, and remote zero wiring.

A.REV/NORM:
A.REV: Analog Revers: When in reverse mode, the output increases when the differential pressure decreases and decreases as pressure increases.
NORM: When in Normal mode output increases as pressure increases and decreases as pressure decreases.

SLOW/FAST: When Slow mode is selected, 5-second averaging is provided for surge daming.

BI-DIR/UNI-DIR: Select UNI-Directional or BI-Directional mode.
Unidirectional mode measures from 0 to full scale differential pressure.
Bidirectional mode measures pressure from minus 1/2 of full scale to plus 1/2 of full scale to differential pressure. Output with read 1/2 full scale when differential pressure is zero.

SWAP/NORM: Jumper selectable Port Swap feature eliminates costly replumbing when incorrectly installed or replaced. Go from NORMAL to SWAP and the jumper makes the "HI" and the "LO" port "HI"

6.0 RETURNING PRODUCTS FOR REPAIR

Please contact Omega at 1-800-826-6342 or 1-203-359-1660 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 Omega, the material should be carefully packaged and shipped prepaid to:

Omega Engineering, Inc
One Omega Drive
P.O. Box 4047
Stamford, CT 06907-0047

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

1. Name and phone number of person to contact.
2. Shipping and billing instruction.
3. Full description of the malfunction.
4. Identify any hazardous material used with 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 Omega for the repair and return of the unit. Non-warranty repairs will not be made without customer approval and a purchase order to cover the repair charges.

Calibration Services

Omega maintains a complete calibration facility that is traceable to the National Institute of Standards & Technology (NIST). If you would like to recalibrate or re-certify your Omega pressure transducers or transmitters, please call our Sales Department at 1-800-826-6342 or 1-203-359-1660 for scheduling, cost and turnaround estimates.

Thank you,
Omega Engineering, Inc.

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:
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.

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

Shop online at omega.com℠

TEMPERATURE

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

PRESSURE, STAIN AND FORCE

☑ Transducers & Strain Gages
☑ Load Cells & Pressure Gages
☑ Displacement Transducers
☑ Instrumentation & Accessories

FLOW/LEVEL

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

pH/CONDUCTIVITY

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

DATA ACQUISITION

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

HEATERS

☑ Heating Cable
☑ Cartridge & Strip Heaters
☑ Immersion & Band Heaters
☑ Flexible Heaters
☑ Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

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