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PX831 and PX832

Electronic Pressure Transmitters

OMEGA®
An OMEGA Technologies Company

Operator's Manual
M3807/0502

REV A

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** (PX831) or **13 months** (PX832) from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal product warranty to cover handling and shipping time. This ensures that our customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. Our 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.

We are glad to offer suggestions on the use of our 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 buyer 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.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and-Canada: 1-800-622-2378, FAX: 203-359-781 1; International: 203359-1660, FAX: 203-359-7807.

BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER. FROM OUR 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 you are having with the product.

FOR NON-WARRANTY REPAIRS OR CALIBRATION consult OMEGA for current repair/calibration charges. Have the following information available BEFORE contacting OMEGA:

1. Your P.O. number to cover the COST of the repair/calibration,
2. Model and serial number of product,
3. Repair instructions and/or specific problems you are having with the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. That way our customers get the latest in technology and engineering.

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SECTION III — *OPERATION*

OPERATION

PRINCIPLE OF OPERATION

The Model PX831 and PX832 Pressure Transmitter series are designed to continuously measure process pressure. The heart of the transmitter is a silicon piezoresistive sensing chip. This miniature microetched semiconductor gives an output proportional to the applied pressure. This chip is isolated from the process media by a stainless steel diaphragm. A silicone oil or other specified fill fluid is used to transmit the process pressure to the sensor.

A surface mount amplifier board, enclosed in a sealed chamber, is used to convert the millivolt signal from the sensor to a calibrated transmitter output. Transmitter electronics are completely surge protected.

Each transmitter is tested over both pressure and temperature ranges. A thick film compensator circuit is used to bring the output of the sensor into specification. After compensation, every transmitter is tested a second time for pressure and temperature effects to ensure that it meets performance specifications.

WIRING

CAUTION - Power must be off while connections are made to wires.

NOTE - In order to avoid “Ground Loop” conditions, there should be only one ground in a loop. The shield / drain can be used to provide optional noise rejection if required.

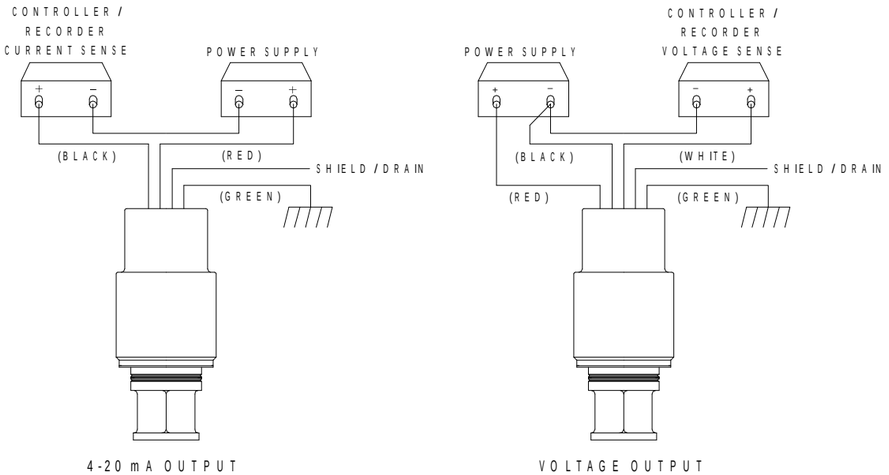


FIGURE 2-2
WIRING

INTRODUCTION

The Model PX831 and PX832 pressure transmitters provide fixed range performance and all 316 stainless steel construction in a durable, accurate and cost effective package. The transmitters provide 4-20 mA or Voltage output, ±0.30% accuracy and are designed to meet FM & CSA approvals for explosion proof apparatus for use in hazardous locations.

Model PX831 and PX832 provid as standard a 1/2" NPT female process connection for direct mounting to existing piping systems. They are provided with a 3/4" NPT female conduit connection and a 24-inch, 22AWG, cable.

SAFETY SUMMARY

These instruments are designed to prevent an accidental shock to the operator when properly used. However, no design can ensure the safety of an instrument improperly installed or used negligently. Read this manual carefully and completely before operating the instrument. Failure to read this manual in its entirety could result in damage to the instrument or injury to the operator. Standard safety precautions must be used during installation and operation. Important messages located throughout this manual are as follows:

WARNING - Denotes a hazardous procedure or condition which, if ignored, could result in injury or death to the operator.

CAUTION - Denotes a hazardous procedure or condition which, if ignored, could result in damage or destruction to the instrument.

IMPORTANT - Denotes a procedure or condition that is essential to the correct operation of the instrument.

NOTE - Specifies supplementary and perhaps essential information in relation to a particular procedure or condition.

MODEL PX831 and PX832 PIPING

Transmitter mounting is shown in Figure 1A and 1B of Figure 2-1, below.

Conduit drain should be provided to prevent moisture buildup in the conduit compartment.

Figure 1C shows a transmitter mounting with an elbow to prevent sediment in the process from clogging the line.

Figure 1D shows a transmitter mounting with an elbow to eliminate trapped vapor.

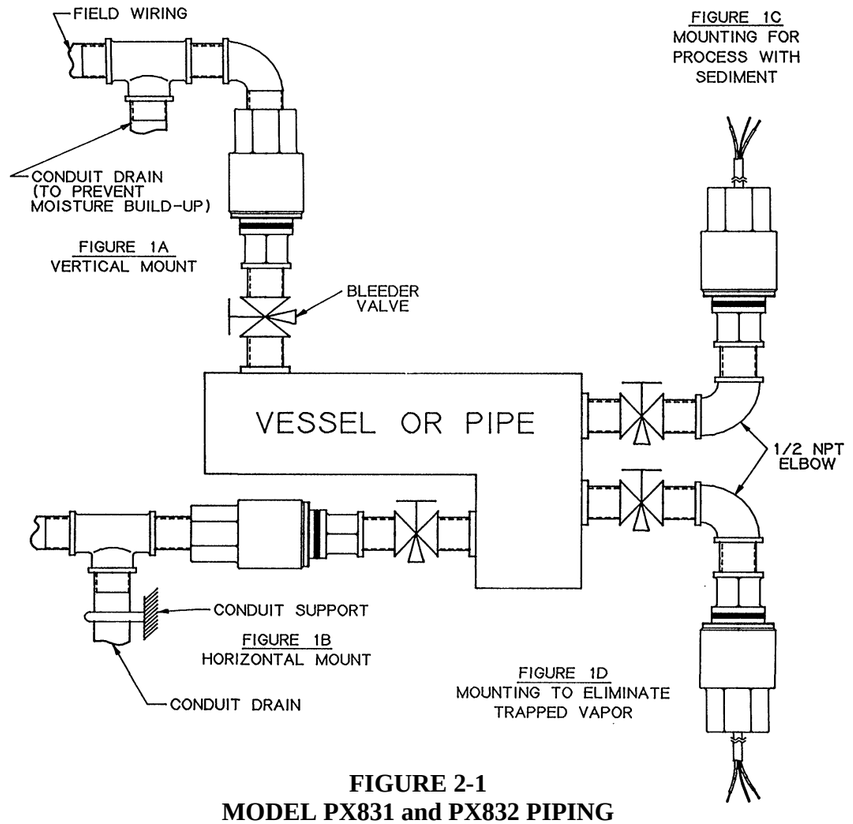
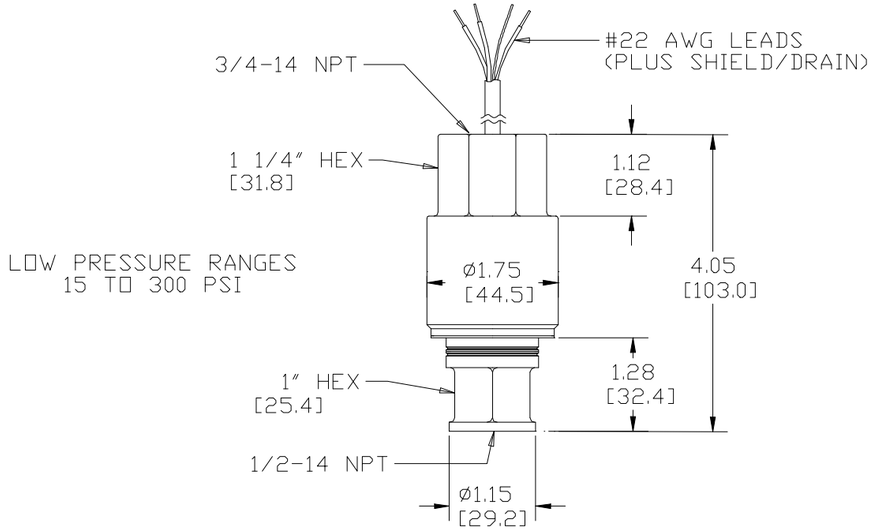


FIGURE 2-1
MODEL PX831 and PX832 PIPING



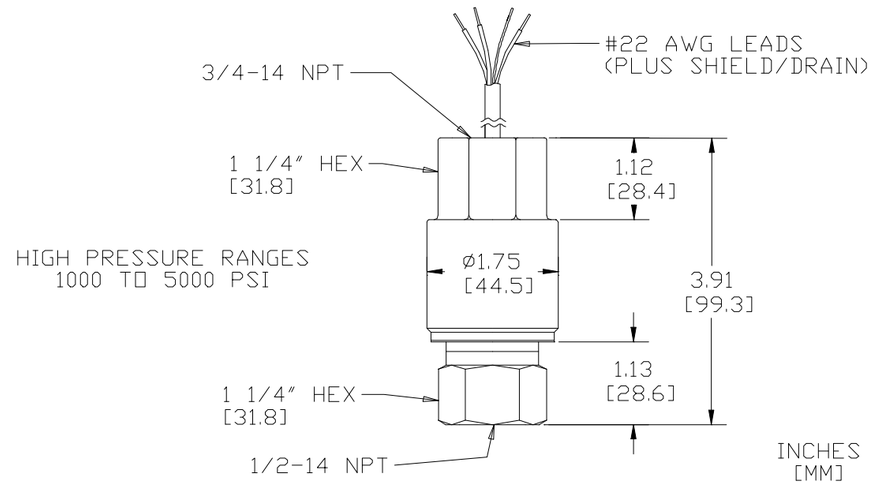


FIGURE 1-1
OUTLINE DIMENSIONS (MODEL PX831 and PX832)

MODEL PX831 TRANSMITTER MODEL NUMBER CODE

PX831 ELECTRONIC PRESSURE TRANSMITTER

PRESSURE RANGE

	PSI	BAR
015G	0-15 psig	0-1.0 bar
030G	0-30 psig	0-2.0 bar
100G	0-100 psig	0-7.0 bar
300G	0-300 psig	0-20 bar
1KG	0-1000 psig	0-70 bar
3KG	0-3000 psig	0-200 bar
5KG	0-5000 psig	0-350 bar
30VAC	0-30 in HG Vacuum	0 to -1.0 bar
30V15G	30 in HG Vac to 15 psig	-1.0 to 1.0 bar
30V30G	30 in HG Vac to 30 psig	-1.0 to 2.0 bar
30V60G	30 in Hg Vac to 60 psig	-1.0 to 4.0 bar
015A	0-15 psia	0-1.0 bar absolute
030A	0-30 psia	0-2.0 bar absolute
100A	0-100 psia	0– 7.0 bar absolute

OUTPUT
I = 4-20 mADC

MATERIAL

BASE	DIAPHRAGM	FILL	PROCESS CONN.
316L SS	316L SS	SILICONE	1/2"NPT FEMALE

PX831 100G I EXAMPLE
Model PX831 Pressure Transmitter, 0 to 100 psig range, 316L SS base and diaphragm, silicone oil fill, 1/2" female NPT, output at 4-20 mADC,approved by FM an CSA.

MODEL PX832 TRANSMITTER MODEL NUMBER CODE

PX832 ELECTRONIC PRESSURE TRANSMITTER

PRESSURE RANGE

	PSI	BAR
015G	0-15 psig	0-1.0 bar
030G	0-30 psig	0-2.0 bar
100G	0-100 psig	0-7.0 bar
300G	0-300 psig	0-20 bar
1KG	0-1000 psig	0-70 bar
3KG	0-3000 psig	0-200 bar
5KG	0-5000 psig	0-350 bar

OUTPUT
5V = 1-5 VDC

MATERIAL

BASE	DIAPHRAGM	FILL	PROCESS CONN.
316 SS	316L SS	SILICONE	1/2”NPT FEMALE

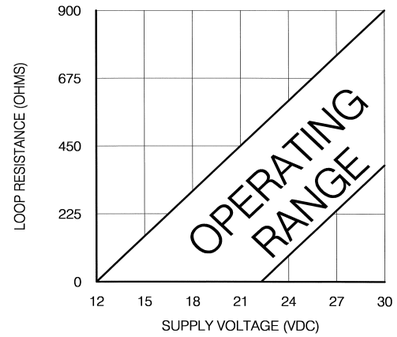
PX832 100G 5V EXAMPLE
Model PX832 Pressure Transmitter, 0 to 100 psig range, 316L SS base and diaphragm, silicone oil fill, 1/2” female NPT, output at 1-5 VDC,approved by FM an CSA.

DESCRIPTION

The Model PX831 and PX832 are the most durable and cost effective pressure transmitters presently available. Fixed range, all stainless steel transmitters, are designed to continuously measure process pressure for years with stable performance in even the toughest environmental and media conditions. The silicon piezoresistive sensing element consists of four ion implanted strain gauges forming a Wheatstone bridge circuit which will vary its resistance when subjected to process pressure. The Model PX831 and PX832 meet FM & CSA approval for explosion-proof rating in hazardous locations. They also meet NACE standards for offshore applications.

The small size and light weight of these transmitters eliminates the need for complicated mounting hardware and mechanical supports, thereby reducing installation time substantially. The inline connection permits simple field wiring without the need for additional hardware, adding to the speed and ease of installation. Its profile allows for mounting in places too tight for other transmitters.

With all 316 stainless steel welded construction, the Model PX831 and PX832 are compatible with corrosive media and hazardous environments. The transmitters are weather proof and capable of withstanding direct spray.



SPECIFICATIONS

FUNCTIONAL SPECIFICATIONS
Service: Liquid, Gas or Vapor
Pressure Range Limits:
-14.7 to 5000 PSI (-1.0 to 345 BAR)
Input (Power Supply) / Output:
PX831 = 12-30 VDC / 4-20 mADC,
*Limited to 30 mADC
PX832 = 8-14 VDC / 1-5 VDC

Offset
PX831 = 4.0 mA ±2% Span
PX832 = 1.0 VDC ±2% Span

Span
PX831 = 16.0 mA ±l % Span
PX832 = 4.0 VDC ±1% Span

Loop Resistance: 900 ohms max @ 30 VDC
(PX831Only)

Temperature RANGE:
Ambient Operating: -40^{0}F to 140^{0}F (-40^{0}C to 60^{0}C)
Process Interface: -40^{0}F to 212^{0}F (-40^{0}C to 100^{0}C)
Storage: –40^{0}F to 212^{0}F (-40^{0}C to 100^{0}C)
Overpressure: 300% Span
Humidity Limits: 0-100%RH

PERFORMANCE SPECIFICATIONS
Accuracy: ±0.30% of Span (BFSL) including linearity, Hysteresis and repeatability at 25^{0}C and 12 VDC supply voltage
Stability: ±0.50 Span for six months
Temperature Effect: (includes zero & span)
Compensated: -20 to 140^{0}F (-29 to 60^{0}C)
±2.0% / 50^{0}F (28^{0}C)
Vibration Effect: ±0.1% for 3g to 200 Hz

PHYSICAL SPECIFICATONS
Materials of Construction
Process Wetted Parts: 316L SS
Non Wetted Parts: 316 SS
Fill Fluid: Silicone (DC200)
Process Connection: 1/2" NPT-Female
Electrical Connection: 3/4" NPT-Female / Cable
Weight 0.83 lb. (374 grams)
Cable: 24 inches (61 cm), 22 AWG

CLASSIFICATIONS
Factory Mutual
Explosion-proof for Class I, Division 1, Groups B, C & D Class II Groups E, F & G; and Class III Hazardous Locations and Indoor and Outdoor NEMA Type 4 Enclosure.

Canadian Standards Association
Explosion-proof for Class I, Division 1, Groups B, C & D, Class II, E, F & G and Class III Hazardous Locations and meets CSA requirements for Enclosure 4.