PX831 and PX832
Electronic Pressure Transmitters

Operator’s Manual
M3807/0502

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3. Repair instructions and/or specific problems you are having with the product.

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2. Model and serial number of product,
3. Repair instructions and/or specific problems you are having with the product.

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SECTION III

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.
SECTION II  INSTALLATION

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

CONTROLLER / RECORDER
CURRENT SENSE

POWER SUPPLY

(RED)

(BLACK)

(GREEN)

SHIELD / DRAIN

4-20 mA OUTPUT

VOLTAGE OUTPUT

CONTROLLER / RECORDER
VOLTAGE SENSE

POWER SUPPLY

(RED)

(BLACK)

(WHITE)

(GREEN)

SHIELD / DRAIN

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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 provide a standard 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.

SECTION II

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.
SECTION I

SPECIFICATIONS

MODEL PX831 TRANSMITTER MODEL NUMBER CODE

PX831 ELECTRONIC PRESSURE TRANSMITTER

<table>
<thead>
<tr>
<th>PRESSURE RANGE</th>
<th>PSI</th>
<th>BAR</th>
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<tbody>
<tr>
<td>015G</td>
<td>0-15 psig</td>
<td>0-1.0 bar</td>
</tr>
<tr>
<td>030G</td>
<td>0-30 psig</td>
<td>0-2.0 bar</td>
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<tr>
<td>100G</td>
<td>0-100 psig</td>
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<td>300G</td>
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<td>1KG</td>
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<td>3KG</td>
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<td>5KG</td>
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<td>0-350 bar</td>
</tr>
<tr>
<td>30VAC</td>
<td>0-30 in HG Vacuum</td>
<td>0 to -1.0 bar</td>
</tr>
<tr>
<td>30V15G</td>
<td>30 in HG Vac to 15 psig</td>
<td>-1.0 to 1.0 bar</td>
</tr>
<tr>
<td>30V30G</td>
<td>30 in HG Vac to 30 psig</td>
<td>-1.0 to 2.0 bar</td>
</tr>
<tr>
<td>30V60G</td>
<td>30 in HG Vac to 60 psig</td>
<td>-1.0 to 4.0 bar</td>
</tr>
<tr>
<td>015A</td>
<td>0-15 psia</td>
<td>0-1.0 bar absolute</td>
</tr>
<tr>
<td>030A</td>
<td>0-30 psia</td>
<td>0-2.0 bar absolute</td>
</tr>
<tr>
<td>100A</td>
<td>0-100 psia</td>
<td>0-7.0 bar absolute</td>
</tr>
</tbody>
</table>

OUTPUT

\[ I = 4-20 \text{ mADC} \]

MATERIAL

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

PX831 100G 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.
**SECTION I  SPECIFICATIONS**

**MODEL PX832 TRANSMITTER MODEL NUMBER CODE**

<table>
<thead>
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<td>0-3000</td>
<td>0-200</td>
</tr>
<tr>
<td>0-5000</td>
<td>0-350</td>
</tr>
</tbody>
</table>

**PRESSURE RANGE**

**MODEL PX832 ELECTRONIC PRESSURE TRANSMITTER**

- **Output:** 5V = 1-5 VDC
- **Material:** Base 316 SS, Diaphragm 316L SS, Fill Fluid Silicone, Process Conn. 1/2" NPT Female

**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 mA DC
  - 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 ± 1% Span
  - PX832 = 4.0 VDC ± 1% Span
- **Loop Resistance:** 900 ohms max @ 30 VDC (PX831 Only)

**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.

**PERFORMANCE SPECIFICATIONS**

- **Accuracy:** ± 0.30% of Span (BFSL) including linearity, hysteresis and repeatability at 25°C and 12 VDC supply voltage
- **Stability:** ± 0.50 Span for six months
- **Temperature Effect:** (includes zero & span)
  - Compensated: 20 to 140°F (-29 to 60°C)
  - ± 2.0%/°F (± 1.0°C)
- **Vibration Effect:** ± 0.1% for 3g to 200 Hz

**PHYSICAL SPECIFICATIONS**

- **Materials of Construction**
  - Process Wetted Parts: 316L SS
  - Non Wetted Parts: 316 SS
  - Fill Fluid: Silicone (DC200)
  - 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 I, Groups B, C & D
  - Class II Groups E, F & G
- **Canadian Standards Association**
  - Explosion-proof for Class I, Division I, Groups B, C & D
  - Class II, E, F & G and Class III Hazardous Locations and meets CSA requirements for Enclosure 4.