

# MONARCH INSTRUMENT

## *Instruction Manual*

### **PX Series of Pressure Transmitters**



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## SAFEGUARDS AND PRECAUTIONS



1. Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the specifications stated. Doing so could result in a failure, possibly causing injury or damage.
2. Pressure spikes exceeding the rated overpressure capability of the transmitter may cause **irreversible electrical and/or mechanical damage**.
3. Avoid fluid hammer (an extreme and swift change in pressure) and surges. Install a pressure snubber to eliminate damaging hammer effects. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. Install a surge chamber to avoid damage from both fluid hammer and surges.
4. This instrument is not user serviceable. For technical assistance, contact the sales organization from which you purchased the product.
5. Avoid damage to the transmitter from static electrical charges by following standard ESD (electrostatic discharge) procedures.
6. Switch off the supply voltage before connecting the device.
7. Apply torque only to the hex flat located at the process end of the transmitter. Do not apply torque to the transmitter body or electrical connection - severe damage could result.
8. Properly tighten process connections before applying pressure.



**In order to comply with EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE):** This product may contain material which could be hazardous to human health and the environment. **DO NOT**  **DISPOSE** of this product as unsorted municipal waste. This product needs to be **RECYCLED** in accordance with local regulations; contact your local authorities for more information. This product may be returnable to your distributor for recycling; contact the distributor for details.

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Monarch Instrument's Limited Warranty applies. See [www.monarchinstrument.com](http://www.monarchinstrument.com) for details.

Warranty Registration and Extended Warranty Coverage information is available online at [www.monarchinstrument.com](http://www.monarchinstrument.com).

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## 1.0 OVERVIEW

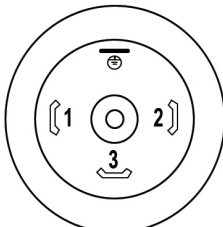
Monarch Instrument's PX Series of Universal Pressure Transmitters use a diffused silicon pressure sensor to sense an applied pressure. Through internal application-specific integrated circuits (ASIC), a millivolt signal is converted and transmitted into a standardized electrical output signal, such as 4-20 mA or 0-5 V. This output can be directly used by control systems or data acquisition equipment (such as Monarch Instrument's DataChart™ DC1250). The compact, lightweight design is easy to install. Simply connect the PX Pressure Transmitter directly to a computer interface card, control instrument, smart meter, or PLC. Long-distance transmission can use current output.

The PX Pressure Transmitters can be ordered in various pressure ranges, reference types, and output measurement, and multiple IP65 rated electrical connections are available. The 316L stainless steel enclosure is ideal for harsh, corrosive environments and comes standard with a threaded ¼" NPT pressure connection. The PX Pressure Transmitters provide high anti-vibration and anti-impact performance, and are widely used in process control, aviation, aerospace, automotive, medical equipment, HVAC, and other fields.

## 2.0 WIRING CONNECTIONS

The various electrical terminations and wiring connections for the PX Pressure Transmitters are shown below. (Some may be special order.)

DIN 43650 Form C		
Output	Pinout	Power Supply
Current (2 wires)	Pin1: V+ Pin2: Iout	12 to 30 V
Voltage* (3 wires) <small>*Special order</small>	Pin1: V+ Pin2: V- Pin3: Vout	12 to 30 V



The diagram shows a circular connector with three pins. Pin 1 is on the left, Pin 2 is on the right, and Pin 3 is at the bottom. There is a ground symbol at the top of the connector.

M12		
Output	Pinout	Power Supply
Current (2 wires)	Pin1: V+ Pin2: lout	12 to 30 V
Voltage* (3 wires) <small>*Special order</small>	Pin1: V+ Pin2: V- Pin3: Vout	12 to 30 V

Cable Wires*		
Output	Pinout	Power Supply
Current (2 wires)	Red: V+ Green: lout	12 to 30 V
Voltage* (3 wires)	Red: V+ Green: V- Yellow: Vout	12 to 30 V

\*Special order (Current or Voltage)



**CAUTION**

Strictly follow the wiring method for electrical connection. Wrong wiring will cause damage to the amplification circuit.

### 3.0 CONNECTING CABLE TO HIRSCHMANN DIN 43650

If the Hirschmann DIN 43650 electrical connection was ordered, make sure to connect appropriate wiring prior to use (see Figure 1).

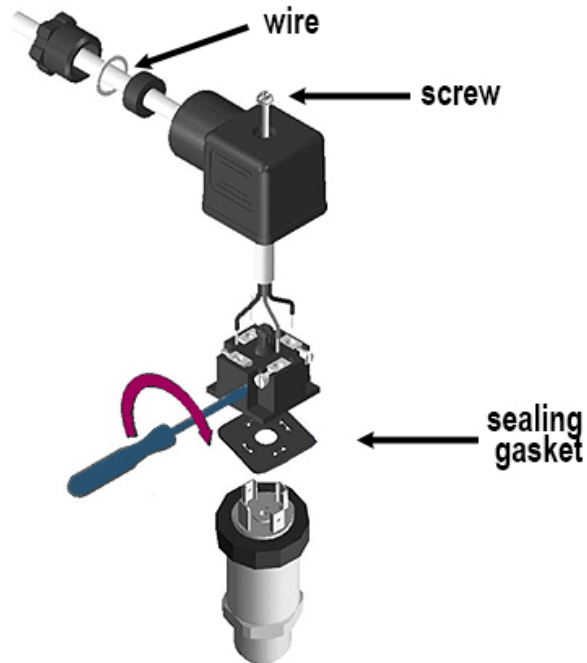


Figure 1

Disassemble the connector. Feed the cable through and connect the wires to the corresponding pins of the terminal block. Reassemble connector making sure sealing gasket is in place. Tighten center screw and cable nut securely.



#### CAUTION

**DO NOT** directly rotate the Hirschmann DIN 43650 connector (see Figure 2); this could lead to an internal short circuit of the product.



Figure 2

## 4.0 INSTALLATION

When installing the Transmitter, choose a location that allows for easy access for operation and maintenance of the device. It is best to maintain as much distance as possible from a vibration and/or heat source. Use shielded cables if there is a close proximity to power equipment. Connection with the measuring pipeline through a valve close to the process is the best.

Install the Transmitter in a location where liquid process does not freeze. Otherwise, take measures to keep the process fluid from freezing.

Apply sealing tape or an equivalent sealant to the NPT threads before installing.

To install, use a 27 mm [1 1/16"] wrench around the hex nut flats on the Transmitter as shown in Figure 3 below. **DO NOT** tighten using a pipe wrench on the housing.

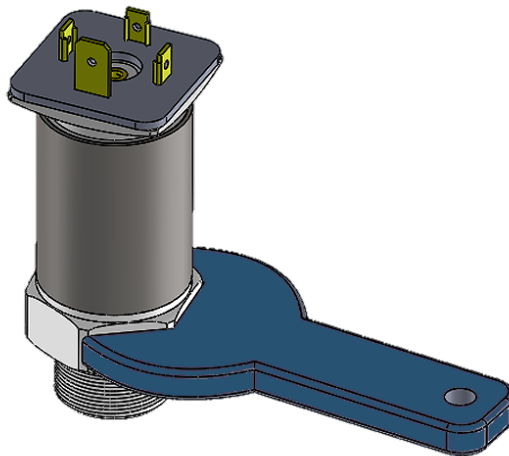


Figure 3



### CAUTION

Be careful when moving and installing the Transmitter to avoid damage to components caused by impact, which could affect the performance of the circuit.



### CAUTION

There is an isolation diaphragm in the pressure port of the transmitter. **DO NOT touch it with non-measured medium.** See Figure 4.

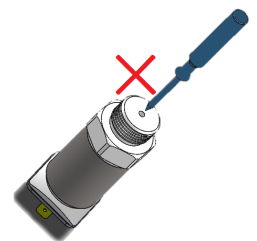


Figure 4

## 5.0 PIPELINE LOCATION GUIDELINES

The layout of the power supply and signal lines should prevent moisture from reaching the Transmitter. Installation location rules differ depending on the media/service.

**Gas:** For gas measurements on pipelines, the Transmitter should be mounted above the process. Place the tap at the top or side of the line. Mount the Transmitter beside or above the tap. Connect the Transmitter to the pipe. This allows any condensate that may accumulate to flow back into the process without impairing the measurements.

**Liquid:** For liquid measurements on pipelines, the Transmitter should be mounted below the process. Place the tap at the side of the line. Mount the Transmitter below the tap. If there is any risk that the process fluid in the Transmitter pressure-sensing assembly could freeze, use a steam jacket or heater to maintain the temperature of the fluid. Fill the section of the connecting line to the tap with a compatible liquid through the dedicated filling tee. It is important to install and connect the Transmitter in such a way as to allow air bubbles to rise to the conduit pipes.

**Steam:** For steam measurements on pipelines, the Transmitter should be mounted below the process. Place the tap at the side of the line. Mount the Transmitter below the tap. Protect the pressure sensor from high temperature by using a condensate pot.



## 6.0 SPECIFICATIONS

Specifications*	PX Series of Pressure Transmitters
<b>Measurement:</b>	
Pressure Range	0-35, 0-150, 0-350, 0-850 PSI (additional ranges available)
Pressure Reference	Gauge or Sealed Gauge (depending on pressure range) Absolute also available
Accuracy	0.5% FS
Hysteresis	0.1% FS
Repeatability	0.1% FS
Temperature Drift	±1.5% FS (-20 °C to 85 °C)
Response Time	≤1ms (up to 90%F S)
Overload Pressure	200% FS
Port Connection	¼" Male NPT
<b>Temperature:</b>	
Ambient	-20 to 85 °C / -4 to 185 °F
Medium	-30 to 105 °C / -22 to 221 °F
Storage	-40 to 125 °C / -40 to 257 °F
<b>General:</b>	
Power Requirement	12 to 30 V dc
Output	4-20 mA (additional outputs available)
Electrical Connections	4-Pin DIN 43650 Form C or M12 (tinned cable wires also available)
Enclosure	316L stainless steel body with HEX27 and IP5 connectors
Medium Compatibility	All medium compatibility with stainless steel 304
Weight	150 to 180 g
<b>Safety/Environment: CE Compliant</b>	
EMC	Immunity: IEC 61000-6-2 Radiation: IEC 6100-6-3
Insulation Resistance	≥100M Ω/500 V dc (200M Ω/250 V dc)
Vibration Resistance	Sine curve: 20 g, 25 Hz to 2 kHz - IEC 60068-2-6 Random: 7.5 g, 5 Hz to 1 kHz - IEC 60068-2-64
Shock Resistance	Shock: 200g/1ms; IEC 60068-2-27 Free falling body: 1m; IEC 60068-2-32
Surge	IEC 61000-4-5 3 level
Voltage Resistance	Current output: 500 V ac 1 min Voltage output: 250 V ac 1 min
Static	IEC 61000-4-2 4 level
Ex-proof Grade	Intrinsically safe explosion-proof; Exia IIC T6 (only for 4 to 20 mA)

\*Specifications are subject to change without notice.

# The Professional's Choice

Monarch Instrument is committed to excellence and quality in manufacturing, sales, and service.



Portable Tachometers



Track-It™ Data Loggers



Panel Tachometers



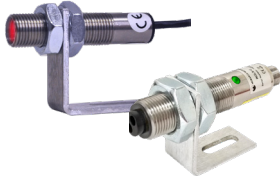
Fixed Mounted Strobes



Portable Strobes



Frequency Converters



Speed Sensors



DataChart™ Paperless Recorders



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