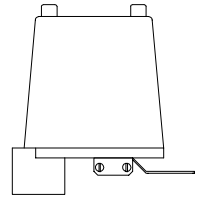


Model PX-3.1 Position Transmitter

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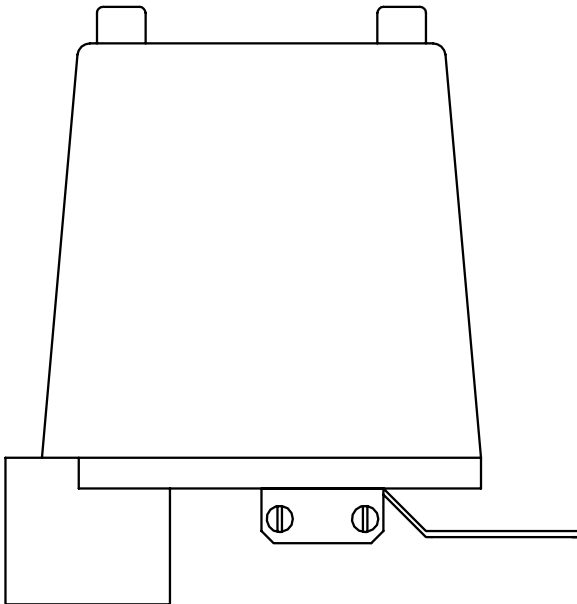


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Model PX-3.1 Position Transmitter

Description



Side view, Model PX-3.1

The PX-3.1 is a rotary position transmitter that outputs a linear 4-20 mA DC instrument signal based on the resistance change of a rotary potentiometer.

The PX-3.1 electronics are housed in an explosion proof enclosure that can be mounted to an adaptor designed for your device.

There are a variety of feedback shaft options available.

Included with the Model PX-3.1 are two end of travel adjustable limit switches.

The Model PX-3.1 can be directly coupled to rotational devices such as ball or butterfly valves or lever driven for position measurement of linear devices such as globe or gate valves.

The Model PX-3.1 replaces the Model PX-3 & is field upgradable through circuit card replacement. Calibration procedures are simplified and do differ.

Specifications

Supply voltage: 18-40 VDC

Output: 4-20 mA DC, proportional to travel

Loop Load: 1000 Ohms @ 18 VDC, 1200 Ohms @ 24 VDC

Operating Temperature Range: -40 deg. F to 180 deg. F

Field Adjustable Travel Range (+/- 15 deg.): 60 deg., 90 deg., 120 deg.

Housing: Explosion Proof for NEC Class 1, DIV. 1, Group D. Designed for Nema 4, 4X, 7, & 9

Adaptors: A variety of input shaft arrangements are available

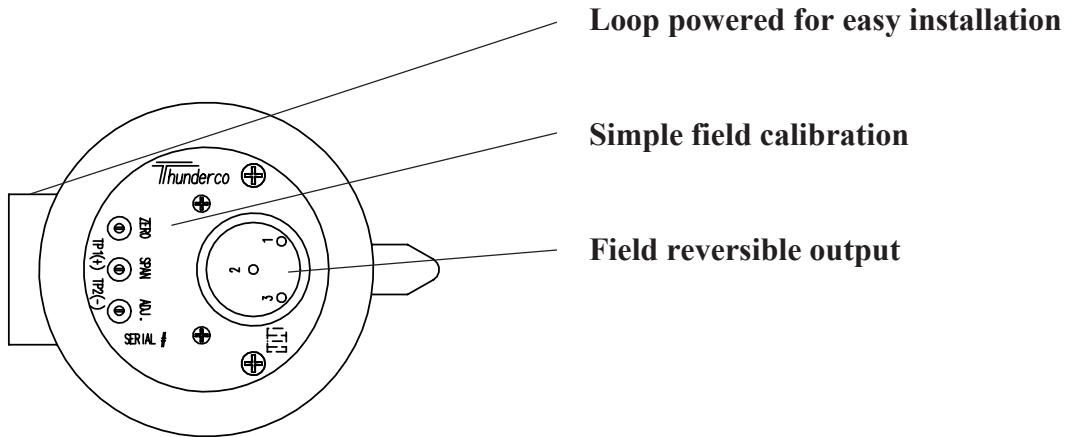
Limit Switches: Standard Mechanical Limit Switch 2 SPDT, 10 Amp AC/DC

Optional Proximity Limit Switch 2 SPST, 100 mA max @ 10-30 VDC

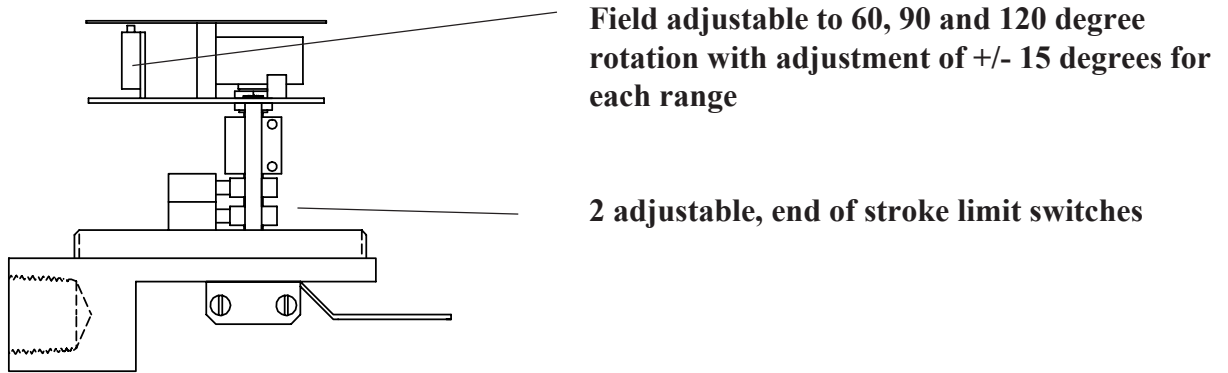
cam adjustable

Model PX-3.1 Position Transmitter

Features



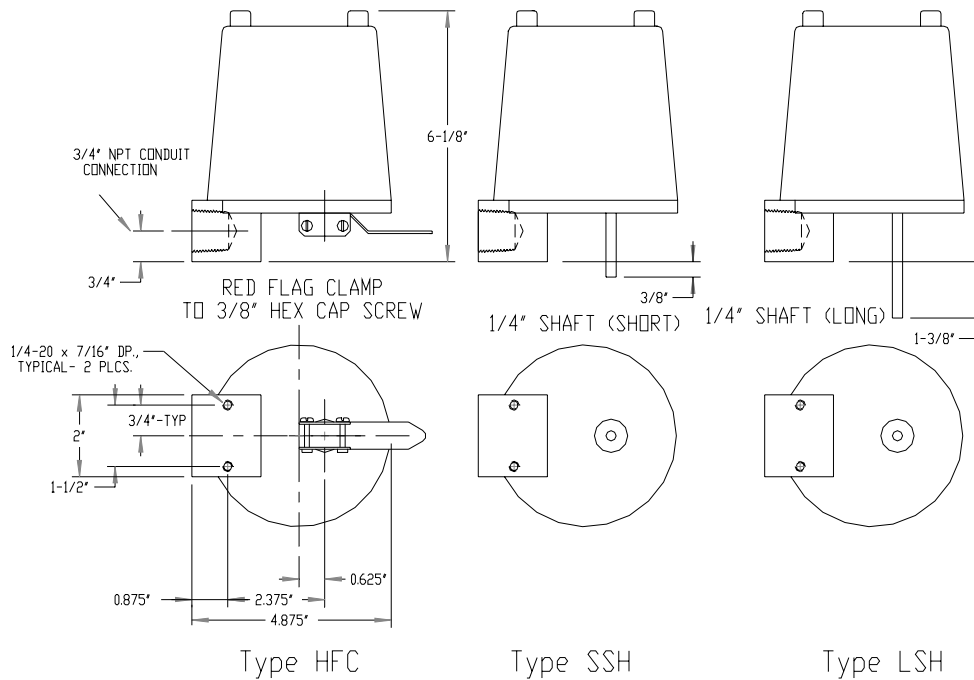
Top view, Model PX-3



Side view, Model PX-3

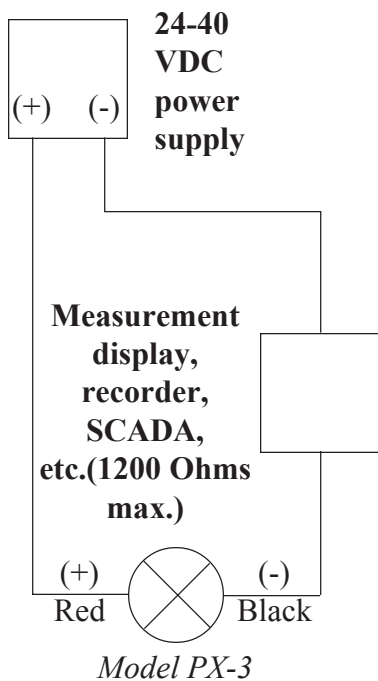
Model PX-3.1 Position Transmitter

Mounting Dimensions



Model PX-3 Position Transmitter showing various output shaft configurations with side & bottom views

Wiring Diagram

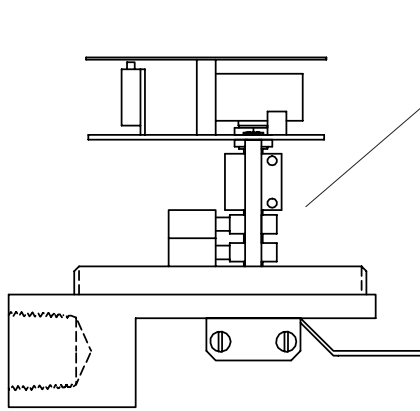


The Model PX-3.1 is a loop powered transmitter that requires a 24-40 VDC power supply and current loop display or measurement device such as a Thunderco Model LPD-3.5 loop powered display, SCADA system, programmable controller or feedback electronics such as the Thunderco Model 5591 or 9020 I/H Controller Interface

Note: Loop position does not matter.
Limit switches require 2 wires each if used.
Limit switch wiring not shown.

Model PX-3.1 Position Transmitter

Calibration &/or Changing Measurement Range

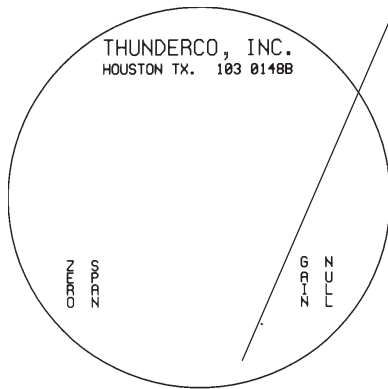


Side view, Model PX-3

Loosen the lower two set screws on the flexible coupling that is attached to the blue feedback potentiometer. This will allow adjustment of the feedback potentiometer during calibration.

Remove the jumper on the bottom side of board 103-0148 at the location shown. This will break the current loop. Place a current meter across the two pins. This procedure will place your meter in series with the current loop and allow you to read the 4-20 mA measurement signal from the PX-3.1.

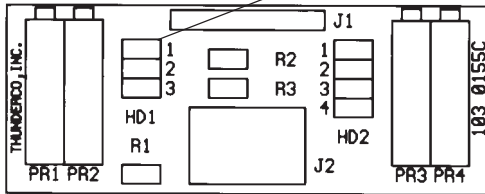
Note: When calibration is completed this jumper must be put back in place after the current meter is removed or the current loop will be open.



*Top view,
Circuit Board 103-0148*

Model PX-3.1 Position Transmitter

Calibration & / or Changing Measurement Range (con't)



Circuit Board 103-0155

Special
PX-3.1-30

Rotation +/- 5 Degrees	Shunt
0-25	1
0-30	2
0-35	3

Standard
PX-3.1

Rotation +/- 15 Degrees	Shunt
0-60	1
0-90	2
0-120	3

Move the programming shunt on the daughter board #103-0155 to the position corresponding to the desired measurement range.

Power up the transmitter observing the current meter in series with the current loop.

Caution: For early models only: Disconnect the power immediately if the current in the current loop is above 50 mA and rotate potentiometer to decrease the current and try again. Calibrate transmitter. Do not hook up backwards or damage to the circuit card may result. On newer models a diode protects against reverse polarity installation and no current is seen if unit is hooked up backwards.

-Rotate the feedback potentiometer until a minimum current value is seen before it goes into the dead zone of the 330 degree potentiometer (the dead zone will generate current above 25 mA). Adjust the zero potentiometer until approximately 3.6-3.8 mA is read on the current meter. Make a slight movement of the feedback potentiometer in the current increasing direction and verify current change. It is possible to install incorrectly so that no current change occurs for the first few degrees of movement due to the dead zone of the potentiometer. Rotate the potentiometer until 4.0 mA is output. Tighten set screws. This is a coarse adjust only.

-Fine adjust the "ZERO" potentiometer to 4.00 mA output.

-Rotate the measured device to its full span position.

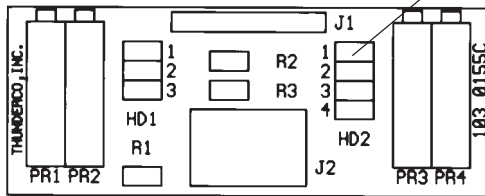
-Adjust the "SPAN" potentiometer to 20 mA output.

-Repeat "ZERO" and "SPAN" adjustment. They are interactive.

-Remove the current meter and replace the jumper at the test pins.

Model PX-3.1 Position Transmitter

Reversing the Output



Circuit Board 103-0155

To reverse the output, move the shunts on header shown.

Normal output (4 mA @ close, current increases in a counter-clockwise direction looking at the cover of the enclosure)

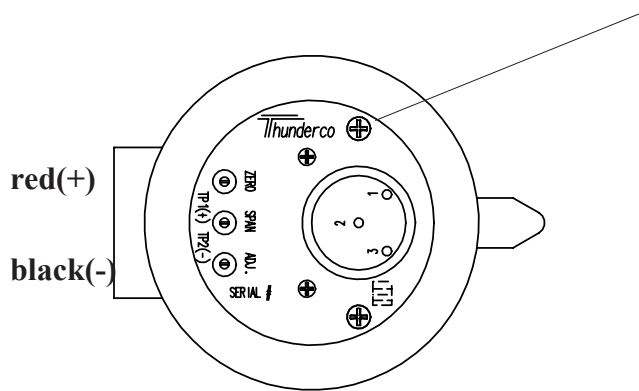
Shunt at pin locations 1 & 3

Reversed output (4 mA @ open, current increases in a clockwise direction)

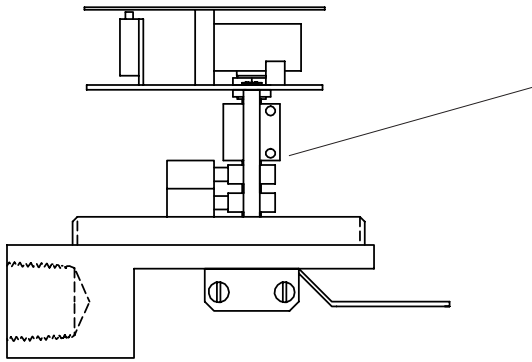
Shunt at pin locations 2 & 4

Model PX-3.1 Position Transmitter

Circuit Card Replacement



Top view, Model PX-3



Side view, Model PX-3

Remove screws holding the circuit card in place.

Loosen lower 2 setscrews on flexible coupling and remove circuit card. Loosen upper 2 setscrews on flexible coupling and move the coupling to the new circuit card, re-tighten upper setscrews.

Re-assemble the transmitter using the new circuit card. If you are upgrading from a Model PX-3 to a PX-3.1, an additional pair of standoffs is required and should be included in the upgrade card package.

Follow calibration procedures outlined in previous section.