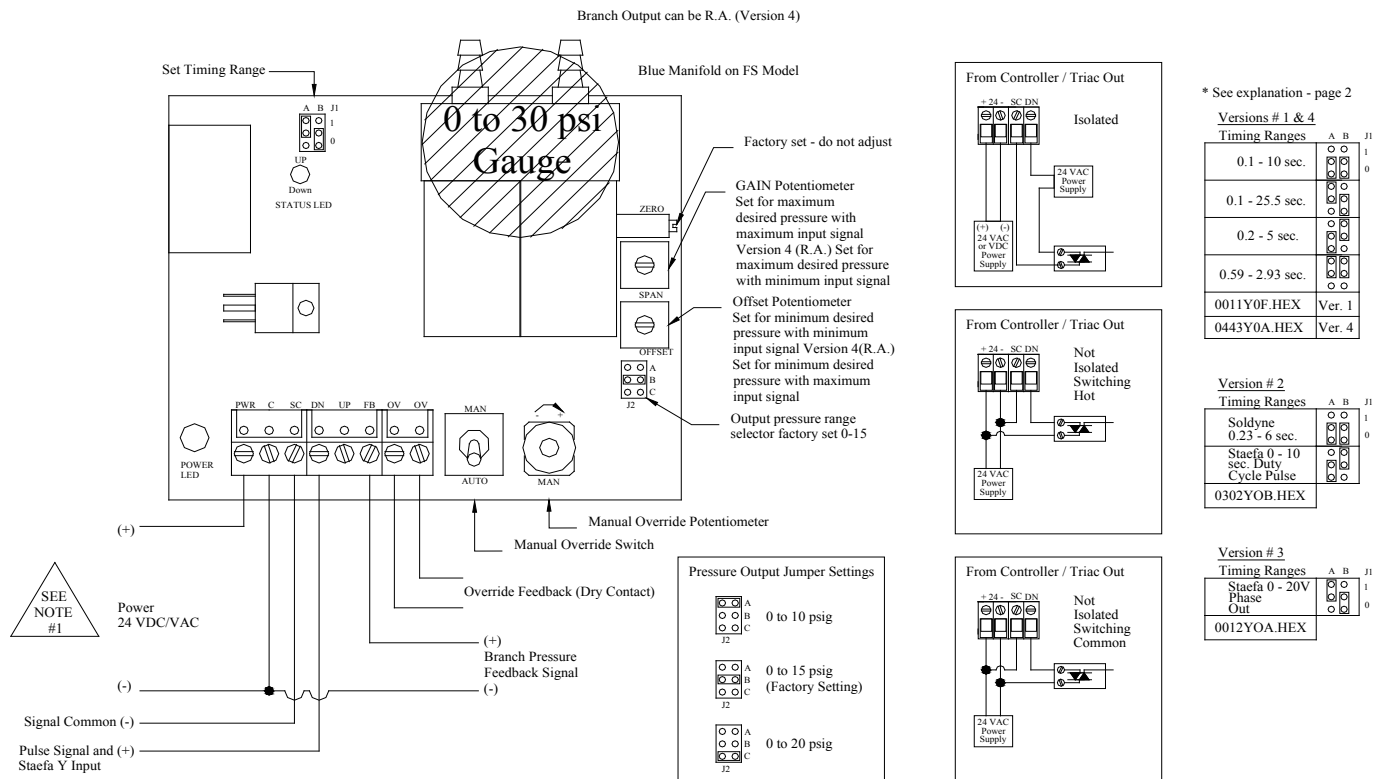




# Installation and Operation Instructions EPW2/EPW2FS

## Pulse Width Modulated Input to Modulated Pressure Output Standard and Fail Safe



### INSTALLATION

#### READ THESE INSTRUCTIONS BEFORE YOU BEGIN INSTALLATION.

Ground yourself before touching board. Some components are static sensitive.

#### Mounting:

Circuit board may be mounted in any position. If circuit board slides out of snap track, a non-conductive "stop" may be required. Use only fingers to remove board from snap track. Slide out of snap track or push against side of snap track and lift that side of the circuit board to remove. Do not flex board or use tools.

#### POWER CONNECTIONS – THIS PRODUCT ACCEPTS 24 VDC OR 24 VAC POWER.

Be sure to follow all local electrical codes. Refer to wiring diagram for connection information. Make all connections with the power off.

1. If required by BAS or controller specification, the 24 VAC neutral can be earth grounded at the transformer. Analog input, digital input, and analog output circuits should not be earth grounded at two points. Any field device connected to this transformer must use the same common. If you are not sure of other field device configuration, use separate transformers for isolation.
2. If the 24VAC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, AC Tranzorb, or other spike snubbing device across each of the shared coils. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.
3. If the 24VDC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC Tranzorb, or diode placed across the coil or inductor. The cathode, or banded side of the DC Tranzorb or diode, connects to the positive side of the power supply.
4. You should measure the actual voltage output of the secondary. If the output is not fully loaded you may read a higher voltage than the circuit board can handle.

The gauge port will accept a miniature 1/8"-27 FNPT back-ported pressure gauge to allow direct reading of branch line pressure. The gauge should be sealed by Teflon sealing tape, and should be tightened just snug, using a backup wrench to hold the manifold.

Warranty does not include malfunction due to clogged valve. Main air port is filtered with the supplied 80-100 micron integral-in-barb filter. Periodically check the filter for contamination and flow reduction, and clean with a brush or replace if needed (Part # PN004).

The surface between the manifold and pressure transducer is a pressure seal. DO NOT stress the circuit board or allow the manifold to move. Hold the manifold in one hand while installing pneumatic tubing onto the barbed fittings and use care when removing tubing to avoid damaging fittings or moving manifold.

**GAUGE POSITION ADJUSTMENT.** If installation requires adjustment of the gauge for proper reading of the face, turn the gauge counter clockwise. O rings in the bottom of the gauge port will allow this without leakage.

For optimum performance and reduced noise, the EPW2 unit requires a branch air line capacity equal to at least 25' of ¼" O.D. polyethylene tubing to operate without oscillation, and the EPW2FS unit requires a branch air line capacity equal to at least 15' of ¼" O.D. polyethylene tubing to operate without oscillation.

The input signal will not cause "wrap around" or start over if the upper range limit is exceeded.

## CHECKOUT

### SIGNAL INPUTS:

**Version #1 & 4:** See jumper positions, page 1. Connect the pulse input positive (+) to the down (DN) terminal, and common to the signal common (SC) terminal.

**Version #2:** Solidyne PWM signal and 0-10 second Duty Cycle Pulse of Barber Colman™, Robershaw™ or Staefa™. No pulse within 10 seconds = minimum output. Pulse equal or exceeding 10 seconds = maximum output.

**Version #3:** For Staefa Smart II™ 0-20 Volt Phase cut, 0-100% input connect Y to DN terminal, and common to SC (-) terminal. Trigger level above approx. 5% and below 95% of phase cut waveform (i.e. 5-95% min./max. or 5% lower and upper detection dead band).

**Version #4:** is reverse acting and will output minimum pressure at maximum signal, and maximum pressure at minimum signal.

**The EPW2 is factory calibrated at 0 psig minimum and 15 psig maximum output.**

The output can be re-calibrated to match the pressure range of the actuator using the GAIN and OFFSET potentiometer as follows: (**Note: The ZERO potentiometer is factory set. Do not adjust.**)

1. **Setting the input timing range:** With power removed, place jumpers in the configuration that most closely matches the timing range from the controller.
2. **Setting the output pressure range:** Apply power. Choose a pressure range on the EPW2 that matches or is just above maximum range of device being controlled. Example: 8-13 psi choose B (15 psi setting).
3. **Setting the maximum pressure:** With all pneumatic and power connections made, place the Manual override switch in the "MAN" position. Turn the override pot full clockwise. Adjust the "SPAN" pot until the desired maximum output is achieved.
4. **Setting the offset:** Confirm no pulse has been sent, or remove power to reset output to minimum. Place the Manual override switch in the "AUTO" position. Turn the "OFFSET" pot until the desired minimum pressure is achieved.
5. Calibration can also be made by sending the appropriate timing pulse and adjusting the "OFFSET" and "SPAN" pots to the desired pressure output.

Without power, the power and the status LED will not be illuminated. Apply power and the "STATUS" LED will blink slowly (twice per second), and the EPW2 will be at the lowest signal input state, or 0 psig. Apply minimum and maximum input signals and measure the response. **Version #1 & 4 Operation:** "STATUS" LED will flash quickly when the EPW2 is receiving an input pulse, at the rate of the minimum resolution of the selected pulse range, (i.e. 0.1 to 25.5 second range, the LED will flash 0.1 second on, 0.1 second off). Exception: 0.59 to 2.93 sec. range – LED remains constant. **Version #2 & 3 Operation:** 0.023 – 6 seconds – 1 flash, then pause. Staefa Phase Cut – 2 flashes, then pause. 0 -10 second duty cycle – 3 flashes, then pause. **Version #4 Operation:** Same as Version #1 except output is reverse acting.

The input signal will NOT cause "wrap around" or start over if the upper range limit is exceeded. The pneumatic output changes when the input pulse has been completed. Pressure output between the minimum and maximum values will be linear, therefore software algorithms should be easy to derive. The feedback signal range on all selections is 0 to 5 VDC and is proportional to the output pressure range (Factory calibrated 0-15 psig).

The EPW2 incorporates two valves and is not a constant bleed interface. Its branch exhaust flow and response time is not limited by an internal restrictor and is similar to its load rate. If power is lost, the EPW2 will not exhaust any air from the branch line. The EPW2 is ideal for long branch line runs, multiple actuators, and outside air dampers because of its 750 scim capacity. The **FAIL SAFE** model, **EPW2FS**, will exhaust its branch line pressure to 0 psig on a power failure. **Manual override:** Switch the AUTO/MAN toggle switch to the MAN position. Turn the shaft on the MAN pot to vary the pneumatic output. Return AUTO/MAN switch to AUTO position when finished. **Override terminals (OV):** When manual override switch is in manual position, contact between terminals is closed. When manual override switch is in auto position, contact between terminals is open.

EU Commission Directive 2002/95/EC (RoHS) Compliant

#### Power Supply Voltage:

24 VDC or 24 VAC (±10%)  
at EPW2 terminals

#### Supply Current:

150 mA maximum (200 mA maximum FS model)

#### Feedback Signal Output:

Factory Calibrated  
0 – 5 VDC = selected span

#### Air Supply:

Main: Maximum 25 psig, minimum 20 main air supply  
factory calibrated at 0 – 15 psig Output  
Air Flow @ 20 psig main/15 psig Out, Supply valve 750 scim

#### Exhaust Rate:

EPW2 & EPW2FS - 750 scim

#### Accuracy:

2% at room temperature,  
3% full scale temperature