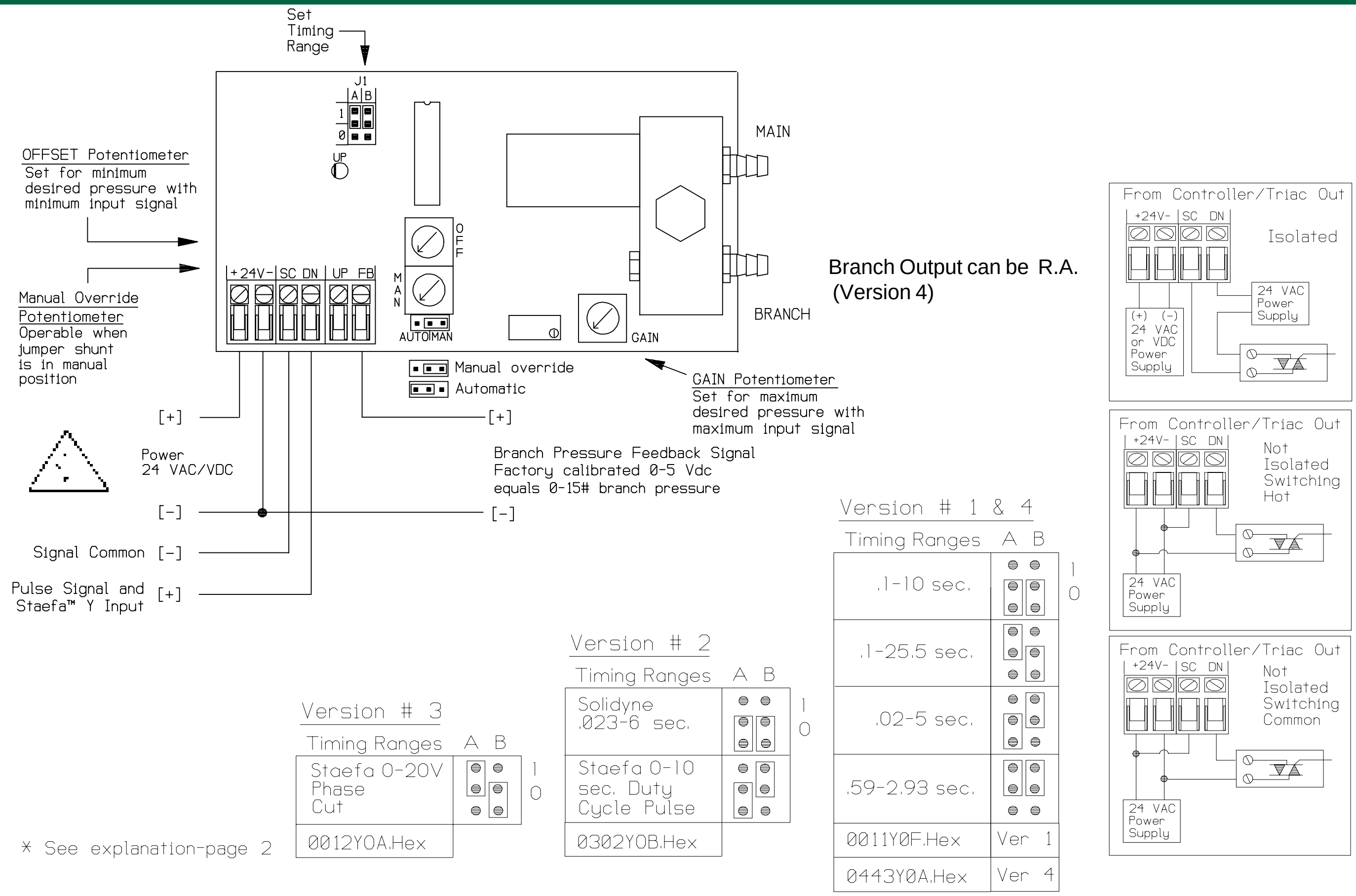
PWP0/1/5/7.3

Pulse Width Modulated Input to Pneumatic Output with Bleed Orifice



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 VOLTS AC OR DC POWER

Be sure to follow all local and electrical codes. Refer to wiring diagram for connection information.

1) **The secondary supply voltage to the interface should be isolated from earth ground, chassis ground, and neutral leg of the primary winding. 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. If you do not observe this, proper operation including feedback may not function**
2) **If the 24 volt AC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, AC Transorb, 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 24 volt DC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC Transorb, or a diode placed across the coil or inductor. The cathode or banded side of the diode (or DC Transorb) connects to the positive side of the power supply. Do not power without main air supply provided.**
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" 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 just snug. **A backup wrench should be used 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-

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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.

The bleed orifice can be unscrewed with a 1/4' hex nut driver for cleaning or inspection. Do not lose the sealing gasket or insert anything into the precision orifice. Clean by swabbing with a degreaser and blowing clean air through the orifice from the opposite direction. The color of the hex nut indicates orifice size: brass = .007"; silver = .010"; copper = .005"

This unit requires at least two cubic inches of branch air line capacity to operate without valve oscillation, and main air must be minimum of 2 psig above highest desired branch output pressure.

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

CHECKOUT

SIGNAL INPUTS: Version #1. 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™, Robertshaw™ 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 deadband).

The PWP0, 1, 5, 7.3 is factory calibrated at 0 psig minimum and 15 psig maximum output. This 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 minimum pressure. Make sure the signal input is disconnected. Place the OVERRIDE shunt to the AUTO position. Drive the PWP0, 1, 5, 7.3 to the minimum position by removing the 24V power connection for 3 seconds, then re-connect. Adjust the OFFset pot to the desired pressure output, or until the actuator just starts to move. The adjustment range of the OFFset pot is 0-10 psig.

2. Setting the maximum pressure. Now place the OVERRIDE shunt to the MAN position. Turn the OVERRIDE pot to produce the maximum branch line pressure available. Turn the GAIN pot for the maximum desired output pressure, or until the actuator just stops. The range of the GAIN pot is 10.5 to 20.0 psig. Note: Be sure the MAIN air pressure is at least 2 psig greater than the desired maximum branch output pressure.

3. Repeat. Because the OFFset and GAIN pots are slightly interactive, steps 1 and 2 must be repeated until the desired minimum and maximum pressures are repeatable. Since the OVERRIDE pot is set for maximum pressure, it is only required that you move the manual override jumper shunt back and forth from MAN to AUTO when repeating steps 1 and 2. Calibration is usually accomplished in less than 3 iterations. Now, select one of the four input timing ranges with the shunt as shown in Figure A.

Without power, the status LED will not be illuminated. Apply power and the “STATUS” LED will blink slowly (twice per second), and the PWP0, 1 ,5 ,7.3 will be at the lowest signal input state, or 0 psig. Apply minimum and maximum input signals and measure the response. **Version #1**: The “STATUS” LED will flash quickly when the PWP0, 1, 5, 7.3 is receiving an input pulse, at the rate of the minimum resolution of the selected pulse range, (i.e. .1 to 25.5 second range, the LED will flash .1 second on, .1 second off). Exception: .59 to 2.93s range - LED remains constant. **Version #2 & 3**: .023-6 seconds - 1 flash, then pause. 0-10 second Duty Cycle - 3 flashes, then pause. Staefa Phase Cut - 2 flashes, then pause. The input signal will NOT cause “wrap around” or start over if the upper range limit is exceeded. **Version 4:** Same as Version #1 except output is reverse acting.

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 PWP1, 5, 7.3 are a constant bleed controller and utilize a precision orifice to maintain a measured flow of air across the valve. The PWP0.3 does not have a bleed orifice and depends on a downstream pneumatic branch bleed of 14 to 73 scim. Use the PWP0.3 only when the downstream pneumatic system components continually exhaust air. For proper operation, combined exhaust air flow (PWP orifice loss and branch system loss) must be between 14 and 73 scim.

To use the manual override, place the AUTO/MAN jumper shunt in the MAN position. Using a small bladed screwdriver, turn the top adjust pot to increase or decrease the pneumatic output. Return AUTO/MAN to AUTO position when finished.

Power Supply Voltage:	24 VDC (+/- 10%) 24 VAC (22 V min, 28 V max.)	Air Supply:	Maximum 25 psig, minimum 20 main air supply
Supply Current:	150mA		0-15 psig output , 0-20 output optional
Feedback Signal Output:	Factory Calibrated 0-5 VDC = 0-15 psig or 0-5 VDC= 0-20 psig optional		
Accuracy:	1% @room temperature, 3% full scale		

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ACCURACY BY DESIGN

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