ACI EPC2 Series Interface Devices Pulse Width Modulation Owner's Manual

INTERFACE SERIES
Installation & Operation Instructions
EPC2, EPC2LG, EPC2FS
Phone: 1-888-967-5224
Website: workaci.com

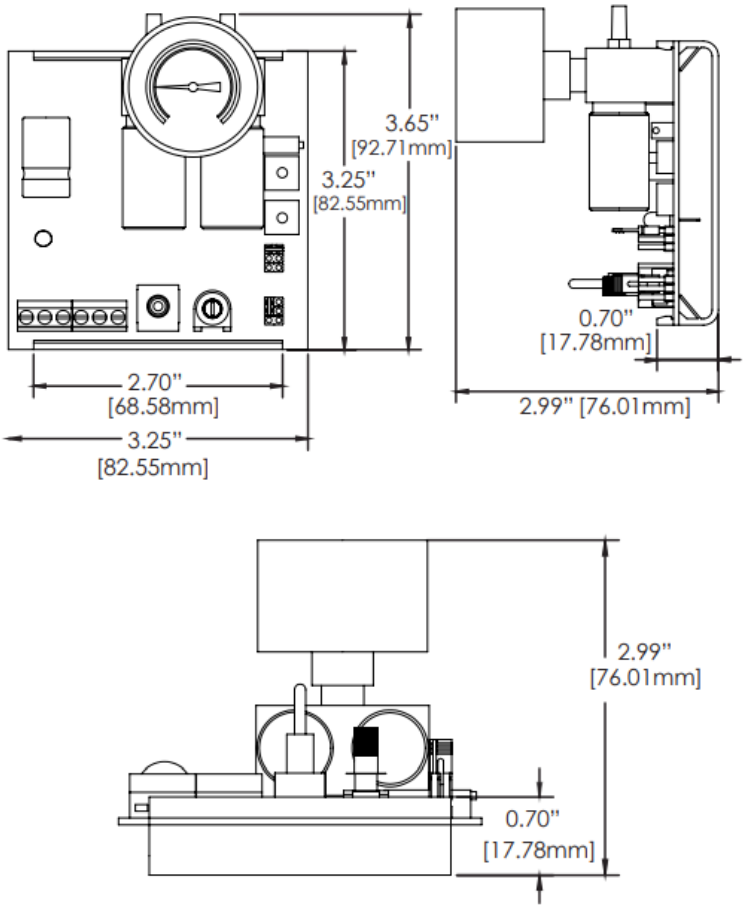
Contents

GENERAL INFORMATION

The EPC2 Series are electric to pneumatic transducers which convert an analog input signal to a proportional pneumatic output, modulating its control valve(s) to regulate the branch line pressure to the set point determined by the input signal. The EPC2 series offers four selectable input ranges. Output pressure ranges are jumper shunt selectable and adjustable in all ranges. A feedback signal indicating the resultant branch line pressure is also

provided. EPC2 Series is designed with electrical terminals on one end and pneumatic connections on the other, allowing for maximum convenience in wiring and tubing installation when panel mounted. The EPC2 incorporates two valves (one controls exhaust), does not bleed air at set point, and has a 2300 cm supply and exhaust. Its branch exhaust flow and response time are not limited by an internal restrictor and are similar to its load rate. EPC2LG operates as the EPC2, but has an external 5micron filter, and includes a 0-30 psi gauge. If power fails to the EPC2 or EPC2LG, branch line pressure remains constant if the branch line does not leak air. The EPC2FS shares the same specifications as the EPC2 except its 3-way branch valve will exhaust branch line air upon power failure.

FIGURE 1: DIMENSIONS



MOUNTING INSTRUCTIONS

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

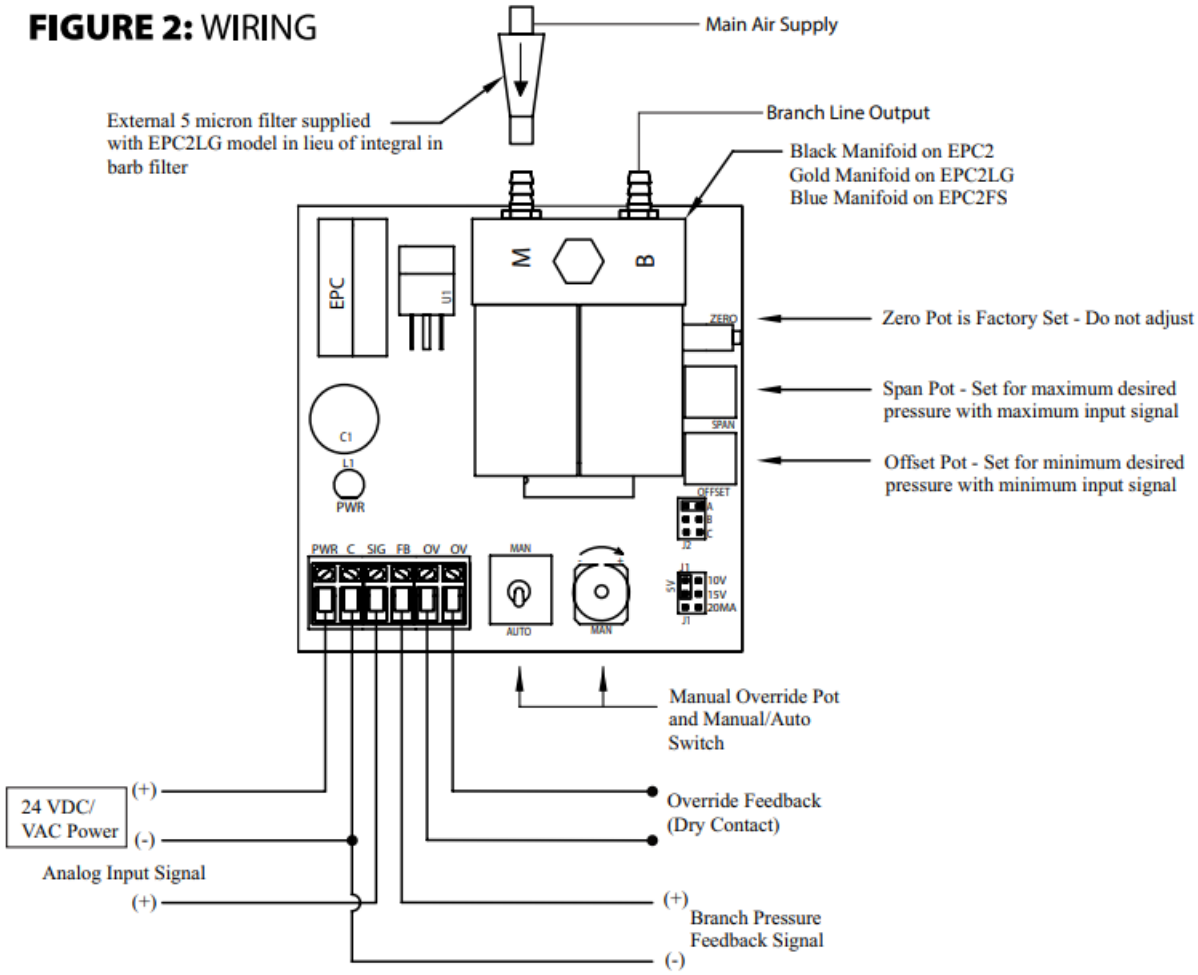
WIRING INSTRUCTIONS

PRECAUTIONS

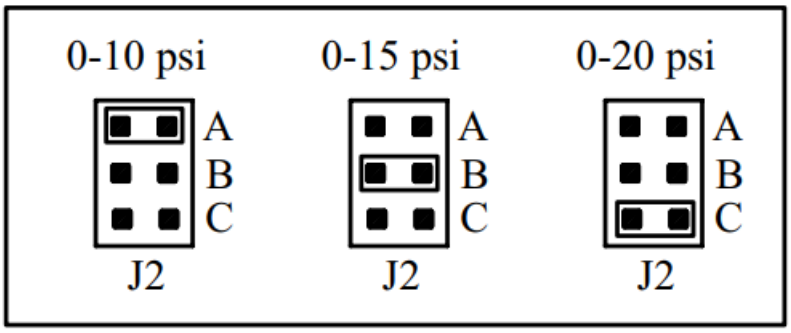
- Remove power before wiring. Never connect or disconnect wiring with power applied.
- When using a shielded cable, ground the shield only at the controller end. Grounding both ends can cause a ground loop.
- It is recommended you use an isolated UL-listed class 2 transformer when powering the unit with 24 VAC. Failure to wire the devices with the correct polarity when sharing transformers may result in damage to any

device powered by the shared transformer.

- If the 24 VDC or 24VAC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC/AC Transport, Transient Voltage Suppressor (ACI Part: 142583), or diode placed across the coil or inductor. The cathode, or banded side of the DC Transorb or diode connects to the positive side of the power supply. Without these snubbers, coils produce very large voltage spikes when de-energizing which can cause malfunction or destruction of electronic circuits.
- All wiring must comply with all local and National Electric Codes.



Pressure Output Range Selector



Signal Input Range Selector

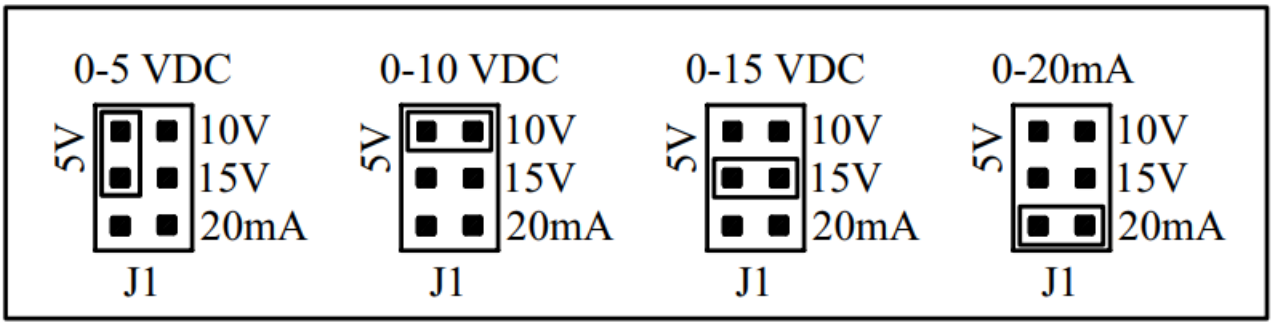
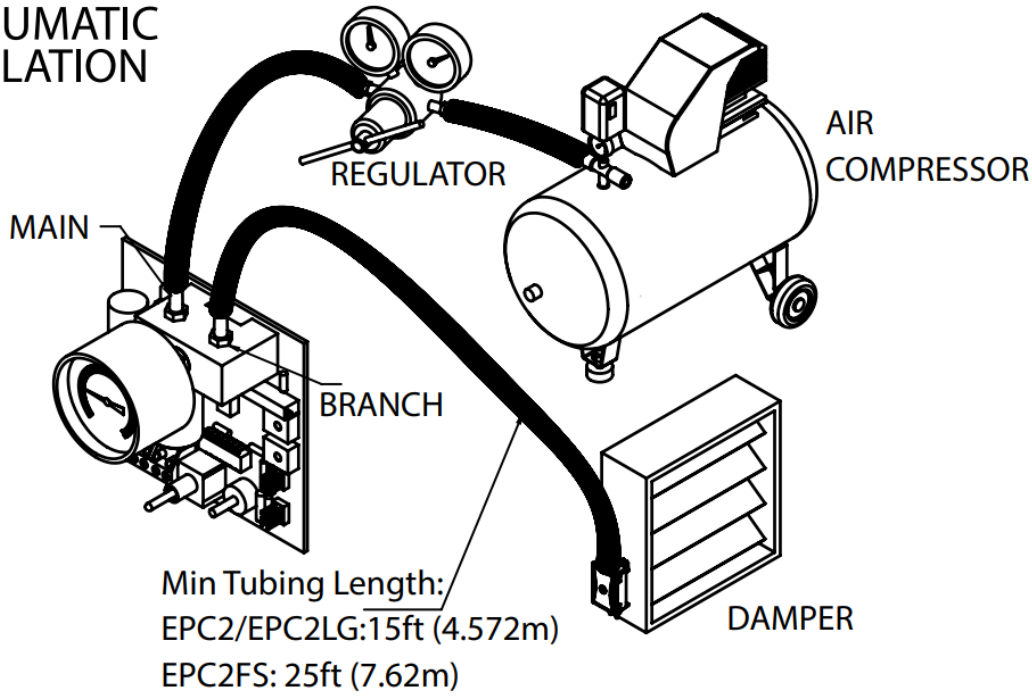


FIGURE 3: PNEUMATIC TUBING INSTALLATION



ADJUSTMENT OF GAUGES

If the installation requires adjustment of the gauge for proper reading of the face, turn the gauge no more than ½ turn in either direction. O-rings in the bottom of the gauge port will allow this without leakage.

Warranty does not include malfunction due to clogged valve. The main airport on EPC is filtered with the supplied 80 – 100 micron integral-in-barb filter (Part # PN004). Periodically check the filter for contamination and flow reduction. Replace if needed (Part # PN004).

The surface between the manifold and the pressure transducer is a pressure seal. Minimize stress between the circuit board and the manifold by holding the manifold in one hand while installing pneumatic tubing onto the fittings, and use care when removing tubing to avoid damaging fittings or moving manifolds.

For optimum performance and reduced noise, the EPC2FS unit requires a branch airline capacity equal to at least 25 feet of 1/4″ O.D. polyethylene tubing to operate without oscillation, and the EPC2 and EPC2LG unit requires a branch airline capacity equal to at least 15 feet 1/4″ O.D. polyethylene tubing to operate without oscillation.

CHECKOUT

With power off, select one of the four input signal combinations by moving the jumper shunt J1 identified as “Input Signal Range Selector”. Select a preset pressure output range by moving jumper shunt J2 identified as “Pressure Output Range Selector”, or set a custom range as described below.

SETTING CUSTOM OUTPUT PRESSURE RANGE

Verify the MAN/AUTO switch is in the AUTO position. In AUTO, the manual override pot is inactive, the override contacts are open, and the analog input signal is supplying the set point. The offset pot may be adjusted to any desired offset between 0 and 14 psig. When in the MANUAL position, the override contacts are closed, the offset pot is inactive and the manual override pot is supplying the set point (the analog input signal is locked out). Supply power and the LED power indicator will light, but only measurement will verify proper voltage.

1. **Setting the minimum pressure.** Make sure the signal connections are made and input is at minimum. Place the manual override switch to the AUTO position. 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 to 9 psig (62.05 kPa), 0 to 14 psig (96.53 kPa), or 0 to 19 psig (131 kPa) depending on the range selected. Zero pot is factory set – DO NOT ADJUST.
2. **Setting the maximum pressure.** Now place the manual override switch to the MANUAL position. Turn the MANUAL pot to produce the maximum branch line pressure available. Turn the SPAN pot for the maximum desired output pressure, or until the actuator just stops. 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 SPAN pots are slightly interactive, steps 1 and 2 must be repeated until the desired minimum and maximum pressures are repeatable. Since the MANUAL pot is set for maximum pressure, it is only required that you switch the manual override switch back and forth from MANUAL to AUTO when repeating steps 1 and 2. Calibration is usually accomplished in less than 3 iterations. Apply minimum and maximum input signals and measure response. Response between the minimum and maximum values will be linear, therefore software algorithms are easy to derive.

The feedback signal range on all selections is 0 to 5 VDC and is proportional to the output pressure range selected. The output and feedback signal will continue to vary proportionally if the input signal is increased beyond its upper limit (if there is enough main air available). The EPC2, EPC2LG, and EPC2FSG incorporate two valves and are not constant bleed controllers. Branch exhaust flow and response time are not limited by any internal restrictor and are similar to the load rate. The EPC2 and EPC2LG are ideal for long branch line runs and multiple actuators because of their 2300 scim capacity.

If power to the EPC2FS (Fail-Safe) is lost, the branch line 3-way valve will exhaust branch line pressure to 0 psig (0 kPa).
To use the manual override, place the AUTO/MAN switch in the Man position. The potentiometer is now operable, and by turning the knob you may increase or decrease the pneumatic output. To use the manual override, place the AUTO/MAN switch in the Man position. The potentiometer is now operable, and by turning the knob you may increase or decrease the pneumatic output.

PRODUCT SPECIFICATIONS

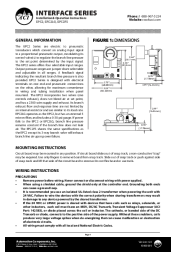
Supply Voltage:	24 VAC (+/-10%), 50 or 60Hz, 24 VDC (+10%/- 5%)
Supply Current:	500mAAC, 200mADC Maximum
Input Signal Source (@ Impedance):	0-5 VDC @ infinite Ω | 0-10 VDC @ infinite Ω | 0-15 VDC @ infinite Ω | 0-20 mA / 250Ω
Feedback Signal Output Range:	0-5 VDC = Output Span
Output Pressure Range:	Field Calibration Possible: 0 to 20 psig (0-138 kPa) maximum
Output Pressure Range-Jumper Selectable:	0-10 psig (0-68.95 kPa), 0-15 psig (0-103.43 kPa) or 0-20 psig (137.9 kPa)
Air Supply Pressure:	Maximum 25 psig (172.369 kPa), minimum 22 psig (151.69 kPa)
Air Consumption:	2300 SCIM (37.69 Liters)
Manual / Auto Override Switch:	MAN function = output can be varied | AUTO function = output is controlled from input signal
Manual / Auto Override Feedback Output:	Dry Contacts: 24 VDC/VAC @ 1A maximum, N.O. in AUTO operation (Optional: N.O. in MAN operation)
Air Flow:	Supply valves @ 25 psig (172.38 kPa) main/20 psig (137.9 kPa) out, 2300 scim Branch Line requires 2 in3 / 33.78 cm3 (min.) | Min. 25 ft of 1/4” O.D. poly branch tubing
Filtering:	Furnished with integral-in-barb 80-100 micron filter (Part # PN004)
Connections | Wire Size:	90° Pluggable Screw Terminal Blocks | 16 (1.31 mm2) to 26 AWG (0.129 mm2)
Terminal Block Torque Rating:	0.5 Nm (Minimum); 0.6 Nm (Maximum)
Connections | Pneumatic Tubing Size- Type:	1/4” O.D. nominal (1/8” I.D.) polyethylene
Pneumatic Fitting:	Removeable brass fittings for Main & Branch in the machined manifold, Plugged 1/8- 27-FNPT gauge port
Operating Temperature Range:	35 to 120°F (1.7 to 48.9°C)
Operating Humidity Range:	10 to 95% non-condensing
Storage Temperature:	-20 to 150°F (-28.9 to 65.5°C)

WARRANTY
The EPC Series is covered by ACI’s Two (2) Year Limited Warranty, which is located in front of ACI’S SENSORS & TRANSMITTERS CATALOG or can be found on ACI’s website: www.workaci.com.

Automation Components, Inc.
2305 Pleasant View Road | Middleton, WI 53562
Phone: 1-888-967-5224 | Website: workaci.com

Version: 6.0
I0000589

Documents / Resources

	ACI EPC2 Series Interface Devices Pulse Width Modulation [pdf] Owner's Manual INTERFACE Series, EPC2, EPC2LG, EPC2FS, EPC2 Series Interface Devices Pulse Width Modulation, Interface Devices Pulse Width Modulation, Pulse Width Modulation, Modulation

References

- WorkACI | Engineering a better sensor solution.
- Building Automation Sensors | Automation Components, Inc.