



INTERFACE SERIES

Installation & Operation Instructions
EFP2, EFP2FS

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GENERAL INFORMATION

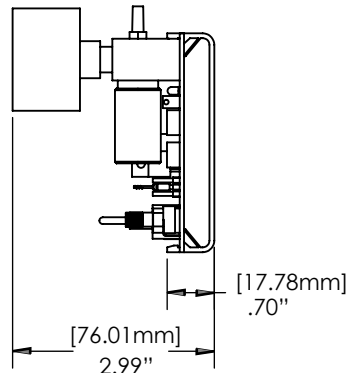
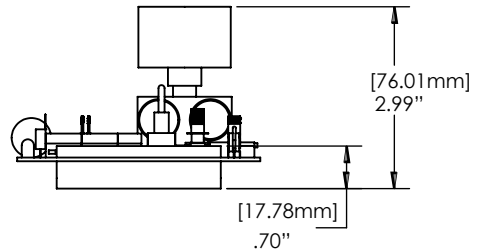
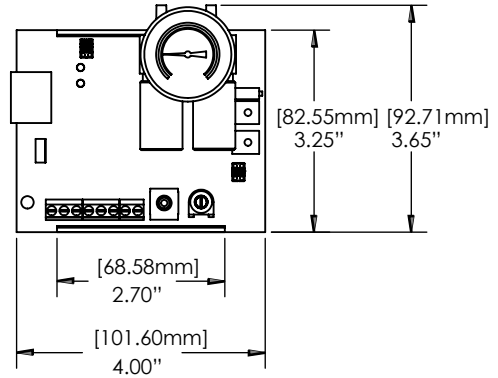
The EFP2 converts a floating point signal into a proportional pneumatic signal ranging from 0-20 psig. The pneumatic output is proportional to the signal input. The EFP2 has a manual override switch with terminal strip contacts to indicate its status and a potentiometer to vary the pneumatic output. Two LEDs indicate UP or DOWN excursions, with an additional one for power indication. The EFP2 offers four jumper selectable rates of change in the output pressure. Output pressure ranges are jumper shunt selectable for 0 to 10, 0 to 15 and 0 to 20 psig, and adjustable in all ranges. A 0-5 VDC feedback signal, indicating the resultant branch line pressure, is also provided. This signal varies linearly with the branch pressure range selected. It 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 EFP2 incorporates two valves (one controls exhaust) and does not bleed air at set point. Its branch exhaust flow and response time are not limited by an internal restrictor and are similar to its load rate. If power fails to the EFP2, branch line pressure remains constant if the branch line does not leak air. The EFP2FS is a two valve fail safe model. Its three-way branch exhaust valve allows exhaust of branch line air on a power failure.

MOUNTING INSTRUCTIONS

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.**

FIGURE 1: DIMENSIONS

EFP2

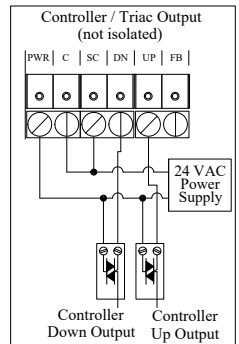
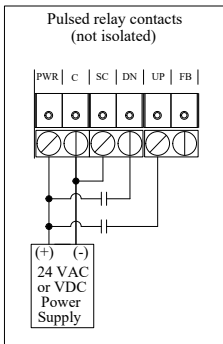
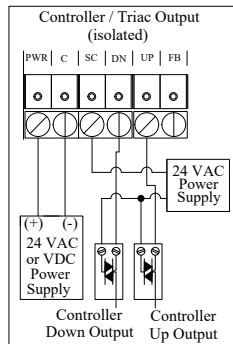
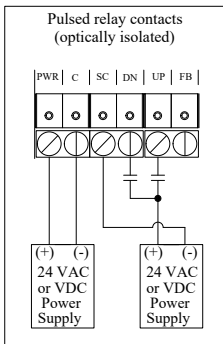
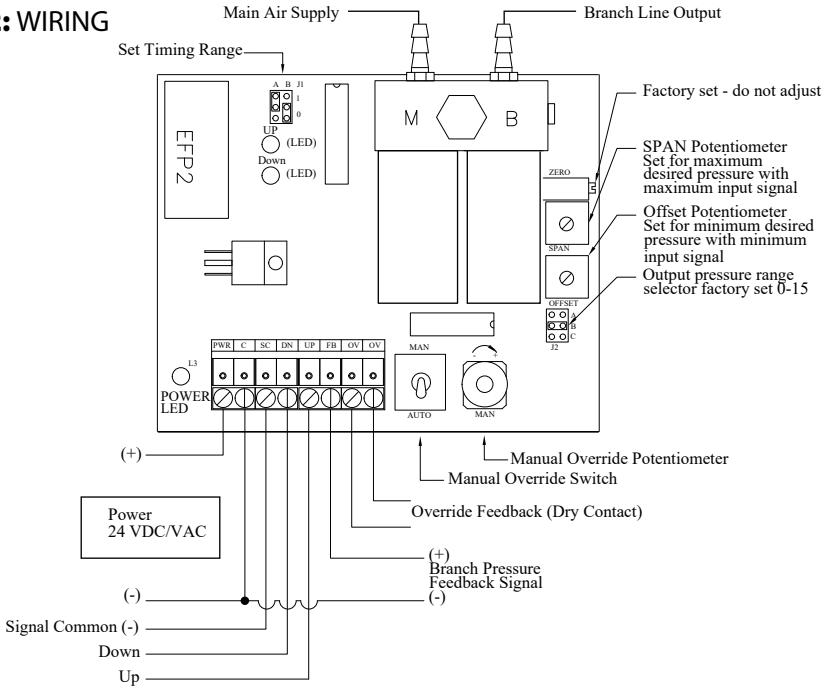


WIRING INSTRUCTIONS

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 Transorb, 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,

FIGURE 2: WIRING



coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.

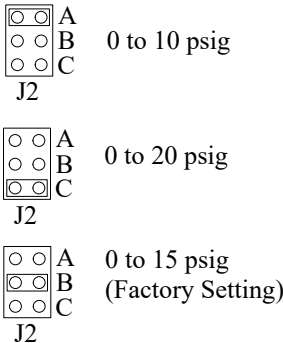
- **All wiring must comply with all local and National Electric Codes.**

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. **ADJUSTMENT OF INSTALLED GAUGES.** If installation requires adjustment of the gauge for proper reading of the face, turn the gauge no more than 1/2 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. 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).

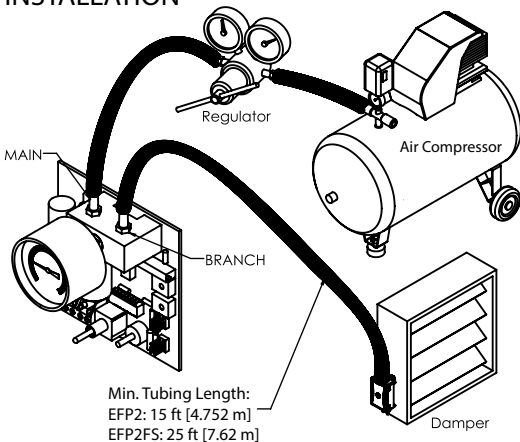
The surface between the manifold and pressure transducer is a pressure seal: do NOT stress the circuit board or allow the manifold to move. Hold the manifold in one hand while installing pneumatic tubing onto the barbed fittings, and use care when removing tubing to avoid damaging fittings or moving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

FIGURE 3: JUMPER SETTINGS



Version #1	Version #2	A	B	J1
45 Seconds	30 Seconds	<input type="checkbox"/>	<input type="checkbox"/>	1 0
60 Seconds	3 Minutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
90 Seconds	6 Minutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
120 Seconds	8 Minutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0186Y1A.HEX	0206Y0B.HEX			

FIGURE 4: PNEUMATIC TUBING INSTALLATION



For optimum performance and reduced noise, the EFP2FS unit requires a branch air line capacity equal to at least 25 feet of 1/4" O.D. polyethylene tubing to operate without oscillation, and the EFP2 unit requires a branch air line capacity equal to at least 15 feet of 1/4" O.D. polyethylene tubing to operate without oscillation.

FIELD CALIBRATION

The default jumper setting from the factory for the EFP2/EFP2FS is B (15 psi) for the output range and A0, B0 for the input timing range. There are four (4) input timing ranges available per version and three (3) selectable output pressure ranges. **NOTE:** The ZERO potentiometer is factory calibrated. 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 EFP2/EFP2FS 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 the green "DN" LED is blinking only, this indicates the output is at 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.

LED INDICATIONS

POWER LED: LED lit indicates power is received by the board.

UP and DOWN LED's: Solid lit LED indicates the EFP2 is receiving an Up or Down command. Single blinking LED indicates that the EFP is at the minimum or maximum of the timing range selected. Both LED's blinking indicates the EFP2/EFP2FS is at set-point.

Connect the normally open (NO) terminals of two separate relays, triac outputs, or the normally open terminals of a tri-state relay to the "DN" and "UP" inputs. Connect the common terminal of the relay(s) to terminal SC (signal common) on the EFP2 or EFP2FS. A signal to both up and down inputs for 3 seconds will cause branch line pressure to drop to 0 psi (see **Table 1**).

Table 1: LED INDICATIONS

UP LED	DOWN LED	INDICATION
On	Off	Ramping Up
Off	On	Ramping Down
Fast Blink	Off	Maximum Output
Off	Fast Blink	Minimum Output
Slow Blink	Slow Blink	Output Holding

The branch exhaust response time is determined by the combined exhaust air flow as well as pressure differentials. If power to the EFP2 is lost, it will continue to hold branch pressure if no branch line leaks. If power to the EFP2FS is lost, the branch line will bleed to 0 psi.

Manual override

Move 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.

WARRANTY

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

W.E.E.E. DIRECTIVE

At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with household waste. Do not burn.

PRODUCT SPECIFICATIONS

NON-SPECIFIC INFORMATION	
Supply Voltage:	24 VAC (+/-10%), 50 or 60Hz, 24 VDC (+10%/- 5%)
Supply Current:	50 mA, 150 mA (3.6 VA) on pressure excursions, 180 mA (4.3 VA) on pressure excursions (FS model)
Digital Input Signal Source:	Relay Contact Closure, Transistor or Triac
Digital Input Signal Level (@ Impedance):	9-24 VAC/VDC @ 750Ω
Digital Input Rates of Change:	FFP2: 45s, 90s, 1 min, 2 min FFP2 Version 2: 30s, 3min, 6 min, 8 min
Manual / Auto Override Switch:	MAN function = output can be varied AUTO function = output is controlled from input signal
Manual / Auto Override Feedback Output:	24 VDC/VAC @ 1A maximum, N.O. in AUTO operation (Optional: N.O. in MAN operation)
Feedback Output Signal Range:	0-5 VDC = Output Span
Air Supply Pressure:	Maximum 28 psig (193.06 kPa), minimum 22 psig (151.69 kPa)
Air Supply Consumption:	750 SCIM (12.29 liters)
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)
Output Pressure Accuracy:	2% full scale at room temperature (above 1 psig or 6.895 kPa) 3% full scale across operating temperature range (above 1 psig)
Air Flow:	Supply valves @ 20 psig (138 kPa) main/15 psig (103 kPa) out, 750 scim. Branch Line requires 2 in ³ or 33.78 cm ³ (minimum) Min. 25 ft of 1/4" O.D. poly branch tubing
Filtering:	Furnished with integral-in-barb 80-100 micron filter (Part # PN004) Optional standard barb (PN002) with external 5 micron in-line filter (PN021)
Connections Wire Size:	90° Pluggable Screw Terminal Blocks 16 (1.31 mm ²) to 26 AWG (0.129 mm ²)
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 machined manifold, Plugged 1/8-27-FNPT gauge port
Gauge Pressure Range (Gauge Models):	0-30 psig (0-200 kPa)
Gauge Pressure Accuracy (Gauge Models):	± 2.5% Midscale (± 3.5% Full Scale)
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)



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