JOHNSON CONTROLS

EPP-1000 Series Electro-Pneumatic Positioners

The EPP-1000 Series Electro-Pneumatic Positioners provide accurate electronic positioning control and position feedback for pneumatic valve and damper actuators. They accept analog control signals provided by function modules, System 350™ components, and many other generic controllers.

Figure 1: EPP-1000 Series Electro-Pneumatic Positioners

Features and Benefits

❑ **Quick-release Mounting Band, Terminal Block Wiring, and a Conduit-friendly Enclosure**	Allows quick, easy installation and wiring directly to the actuator—saving time and money
❑ **Potentiometers for Adjustment of Offset, Span, Home, and Stroke**	Allows for tailoring offset and span to the application and setting of minimum and maximum limits on actuator travel; makes actuator sequencing off one signal easy
❑ **Accepts 0 to 10 VDC, 4 to 20 mA, and 135 ohm Slidewire Input Control Signals**	Offers input signal compatibility with a wide variety of controllers
❑ **Optional Separate 10k ohm Feedback Potentiometer**	Provides a separate output for position feedback to the controller or other devices
❑ **Uses an Analog Control Signal Direct from a Controller or FM-OAE Function Module when Actuator Mounted**	Reduces panel or function module kit slots used by output devices, and eliminates the need to use a FM-OAP function module
❑ **Supply and Exhaust Light-Emitting Diodes (LEDs) Indicators**	Assists in setting home and stroke; reduces time spent on commissioning
❑ **Power Off, Return-to-Normal**	Allows actuator to return to the normal position (based on spring return) upon power failure

Product Overview

The EPP-1000 requires 20 to 30 VAC and 20 psig supplies and accepts voltage, current, or resistance (slidewire) control signals. The output is a pneumatic signal to the actuator, selectable as Direct Acting (DA) or Reverse Acting (RA). Additional models are available with a separate 10,000 ohm potentiometer, used to provide position feedback to a controller or other devices. The EPP-1000 is a non-bleed type device, which may allow for smaller compressors in some applications.

The EPP-1000 is factory calibrated for a 1 volt offset and an 8 volt span, and is field adjustable for applications that require different settings. Home and stroke settings, which define minimum and maximum limits on actuator travel, are easily adjustable and can be established without input signals from the controller. Upon loss of power, the EPP-1000 will default to its zero pressure position, allowing the actuator to return to its normal state.

The EPP-1000 is designed for direct mounting to Johnson Controls pneumatic damper and valve actuators, and is available in seven different models depending on mounting configuration and feedback requirements. Refer to the *Ordering Information* section for specific code numbers and model descriptions.

Dimensions

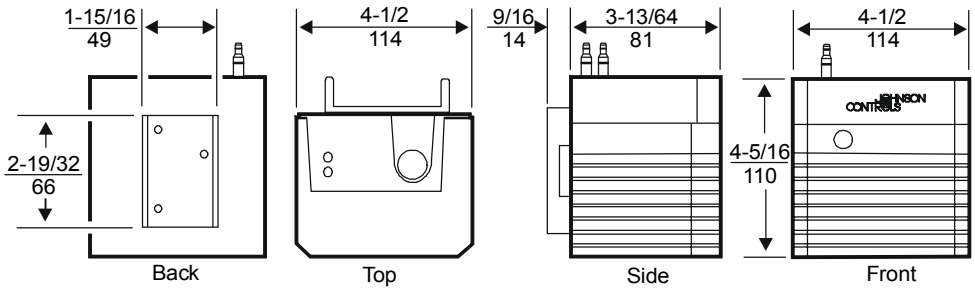

Figure 2: EPP-1000 Dimensions, in. (mm)

Theory of Operation

The EPP-1000 operates by comparing two signals: the analog input control signal (provided by the controller) and the actuator position signal (generated from the feedback arm and cable assembly connected to the actuator shaft). These two signals are conditioned and fed into a comparator. If the signals do not match (the position of the shaft does not match the input control signal), the comparator energizes a solenoid air valve to either supply additional air to or exhaust air from the pneumatic actuator.

As the air supply to the actuator is varied, movement occurs in the actuator shaft, thereby changing the actuator position signal fed into the comparator. This continues until the position signal corresponds to the input signal. At that time, the comparator will close the solenoid air valve, locking the actuator into position. For models with an additional feedback potentiometer, the potentiometer provides a resistance signal directly proportional to the position of the actuator shaft as indicated by the feedback cable assembly.

Ordering Information

Table 1: Positioners and Accessories Available

Product Code Number	Description
EPP-1000-8	Electro-Pneumatic Positioner for MP8000 Series Valve Actuators (MP8000-6003 Electro-Pneumatic Valve Actuator Positioners Mounting Kit must be ordered separately.)
EPP-1000-11	Electro-Pneumatic Positioner with 5R or 8R Valve Actuator Mounting Kit
EPP-1000-12	Electro-Pneumatic Positioner with 4R Valve Actuator Mounting Kit
EPP-1000-13	Electro-Pneumatic Positioner with Damper Actuator Mounting Kit
EPP-1000-21	Electro-Pneumatic Positioner with Feedback and 5R or 8R Valve Actuator Mounting Kit
EPP-1000-22	Electro-Pneumatic Positioner with Feedback and 4R Valve Actuator Mounting Kit
EPP-1000-23	Electro-Pneumatic Positioner with Feedback and Damper Actuator Mounting Kit
EPP-1000-601	Cable Replacement Kit

Specifications

Product	EPP-1000 Series Electro-Pneumatic Positioners	
Power Requirements:		
Pneumatic Air Supply	25 psig (172 kPa) maximum	
Electrical	20 to 30 VAC; 50/60 Hz (Product can also be powered with 22 to 30 VDC by connecting the power supply positive to AC and the power supply negative to COM.)	
Wiring Connections	Screw terminals	
Pneumatic Connections	Barbed fittings for 5/32 or 1/4 in. O.D. polytubing	
Input Signal	IN:	30 VDC maximum
	AUX IN:	Voltage configuration = 3 VDC maximum Current configuration = 30 mA maximum Slidewire control = 135 to 1000 ohms
Impedance	IN:	27,000 ohms
	AUX IN:	Voltage configuration = 3,000 ohms (current configuration = 100 ohms)
Adjustments:		
Home	Allows the minimum position of the actuator to be adjusted between 0 and 33% of full stroke.	
Stroke	Allows full stroke adjustment between 33 and 100% of the total feedback potentiometer stroke.	
Offset	Allows adjustment of the input signal level at which the actuator starts to move from the home position.	
Span	Allows adjustment of the input signal level at which the actuator reaches its full stroke.	
Range of Adjustments:	**Home, Stroke, Offset**	**Span**
IN	0 to 22.5 VDC	1 to 18 VDC
AUX IN	(Voltage) 0 to 2.5 VDC (Current) 0 to 25 mA (Slidewire) 0 to 100%	0.1 to 2 VDC 1 to 20 mA 10 to 100% of slidewire
Feedback Potentiometer	(EPP-1000-21, 22, 23 only) 10,000 ohm linear taper potentiometer	
Ambient Operating Temperature Limits	-20 to 150°F (-29 to 65°C)	
Ambient Storage Temperature Limits	-20 to 167°F (-29 to 75°C)	
Humidity	Maximum 95% RH, limited to 85°F maximum dew point	
Hysteresis	3% of span	
Linearity	5% of span	
Flow Characteristics	20 psig, 476 scim (138 kPa, 130 mL/s)	
Shipping Weight	1.6 lb (0.73 kg)	
Dimensions (H x W x D)	4-5/16 x 4-1/2 x 3-13/64 in. (110 x 114 x 81 mm)	
Agency Compliance	UL 916 Listed, File E107041 CSA C22.2 No. 205 Certified, File LR68965	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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