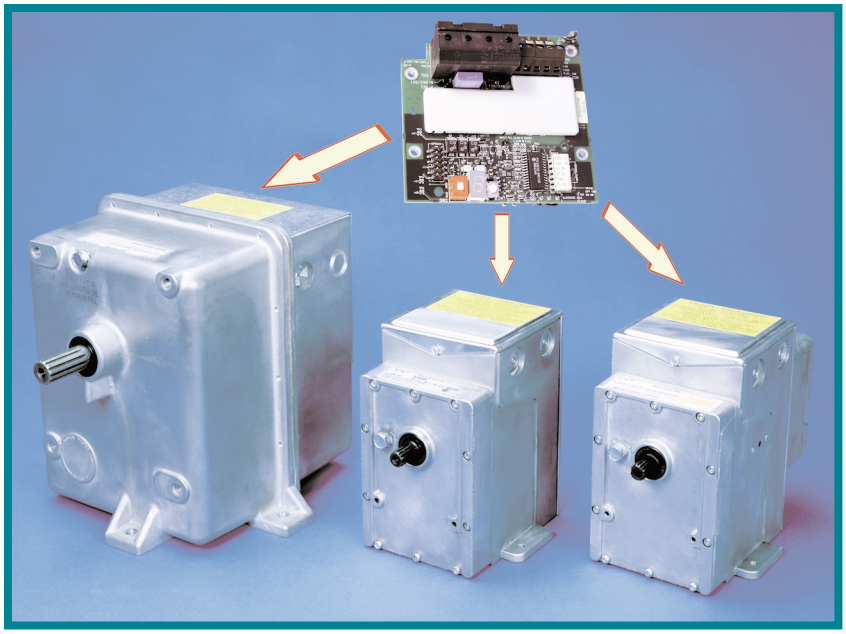
EAxx-A Series



Analog Actuators With Integrated Electronics

- **Built-in Microprocessor**
- **Switch Selectable 90° or 180° Stroke**
- **One mA and Three Vdc Input Ranges**
- **100 to 1000 Ohm Potentiometer Input**
- **Field Configurable Direction of Travel**
- **Adjustable Deadband**
- **Zero & Span Adjustments for Custom Ranges**
- **Control Overrides for Either Direction of Travel**

Engineered for Reliability

The new EAxx-A series actuators are ideal for proportional positioning of combustion air dampers, valves and similar applications. While adding the most versatile control circuit on the market, we have retained the hobbed steel gears, die cast aluminum housing and oil immersed motor and gear train that provide the acclaimed reliability of the traditional EA Series.

All components are carefully selected for reliable operation in the rugged industrial environment. The minimum rating of each component is 105°C continuous operating temperature (internal case temperature). Several critical parts have higher ratings. Conservative design practices insure that each component is operating well within its power dissipation range.

Advanced Features

All of the analog input actuators are manufactured for a 180° stroke. Flip a switch and it becomes a 90° actuator. Need a custom stroke? Pushbutton functions allow you to set any stroke length from 60° to 180°.

Need to change the direction of travel? A simple procedure in the configuration mode will do it –no wiring changes required

Reduced Inventory

The versatility of the analog circuit means that one unit can replace several of the older models. Distributors and OEM's can provide faster delivery to their customers without increasing their inventory investment. Maintenance supervisors can reduce their spares inventory.

Agency Approved

Most factory assembled standard base models are UL and cUL listed. Units converted with field retrofit kits will not be listed. Certain options may not be listed.

Three Series Available

The EA40-A Series, spring return, 50 inch-pounds of torque.

The EA50-A Series, non-spring return, 60 or 220 inch-pounds of torque. Some models have a hydraulic brake that allows up to 10:1 speed reduction.

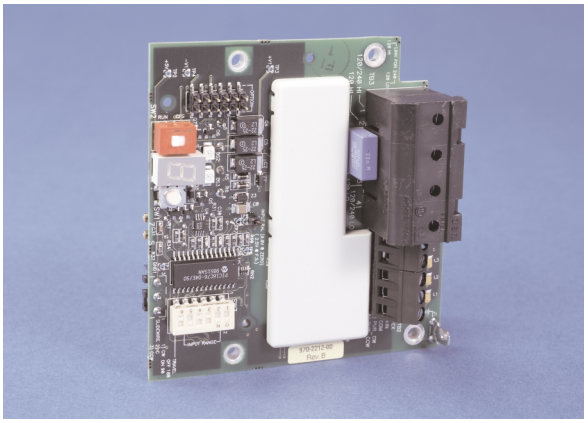
The EA70-A Series, high torque, non-spring return 550, 1100 or 1300 inch-pounds of torque.

EUROTHERM CONTROLS

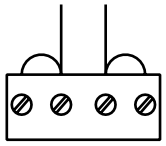
Invensys
An Invensys company

The Analog Input Module

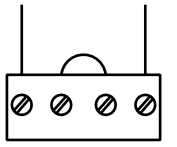
The microprocessor based integral control circuit accepts current, voltage and resistance input signals. Calibration is field adjustable. Control overrides allow forcing the actuator to either end of travel on demand. Stroke lengths of 90° or 180° are switch selectable. Other stroke lengths can be set using a simple push-button procedure. Direction of travel is also field selectable. Default calibration is 4 to 20 mA. Other ranges are switch selectable. A plug-in option board provides a 4 to 20 mA position signal and two Form C relays that can be set to activate at any position.



Wiring



120 Vac or
24 Vac Power



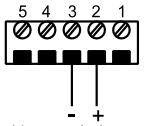
240 Vac Power

Power Connections

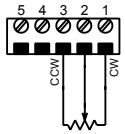
The large four-teminal strip on the circuit board is for connection of power from the mains. A plastic barrier around the terminal strip and immediate area serves as a safety shield between Class 1 and Class 2 wiring.

Power wiring is a Class 1 circuit. Route the wiring through the conduit opening on the left-rear side of the actuator, adjacent to the large terminal strip. Keep all wire within the safety barrier.

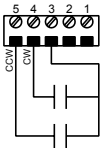
Wire the power connections as shown to the left. proper jumpers for the operating voltage are installed at the factory. Note that the operating voltage cannot be changed without physically changing the motor.



Volt or mA signal



Potentiometer Input



Control Overrides

Control Connections

Control wiring is a Class 2 circuit. Route the wiring through the conduit opening on the right-rear side of the actuator, adjacent to the smaller five-terminal strip. Keep all wire outside the safety barrier.

Input signals for mA or Vdc are connected to Terminals 2 & 3. Terminal 2 is the positive connection; Terminal 3 is the negative connection.

Input signals for potentiometers are connected to Temrinals 1, 2, and 3. Terminal 1 is the CW connection; Terminal 2 is the wiper connection; Terminal 3 is the CCW connection.

Control overrides allow forcing the actuator to end of travel on demand. They are commonly interfaced with combustion safeguard system to: (1) drive the actuator fully open during purge, (2) drive the actuator fully closed prior to ignition.

A dry contact closure between Terminal 3 and Terminal 4 will drive the actuator fully clockwise.

A dry contact closure between Terminal 3 and Terminal 5 will drive the actuator fully counterclockwise.

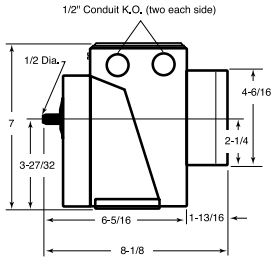
Switch Settings

Input range selection is determined using Switches 1- 5 of the 6 pole DIP switch on the circuit board. the default setting is for 4 to 20mA. Other ranges can be selected.

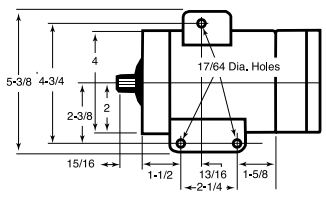
Stroke length is determined using Switch 6 of the 6 pole DIP switch.

Mounting Dimensions

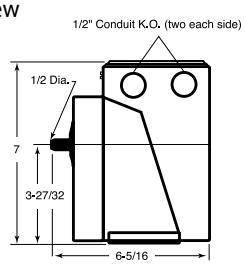
EA4x-A Spring Return
Side View



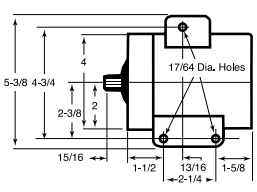
Bottom View



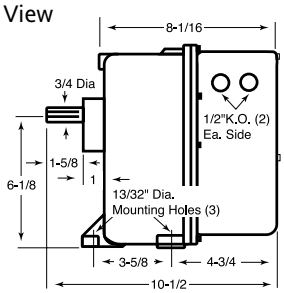
EA5x-A Non-spring Return
Side View



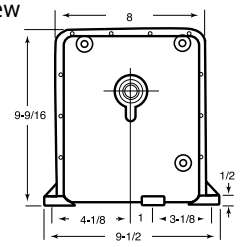
Bottom View



EA7x-A High Torque
Side View



Front View



EA40-A Series Spring Return Actuators

EA40 series actuators provide 50 in-lbs of operating torque. The output shaft is powered in both directions for full proportional control. An electrical holding circuit maintains position when at setpoint. The enclosed spring drives the actuator to the closed position on power interruption. The direction of the spring return is fixed and cannot be field changed. The direction of travel with increasing signal is field selectable as with the other analog input models. All versions are NEMA 4 rated.

Specifications

Torque:	50 in-lbs.
Dimensions:	7" H x 5-3/8" W x 8-1/8" D
Weight:	8 lbs.
Case:	Die cast aluminum with two 1/2" knockouts each side.
Ambient Operating Temperature:	-40° to 58°C
Humidity:	5 to 95% rh, non-condensing
Power Consumption:	40W
Mounting:	Damper – Upright recommended Valve – Any upright position with actuator above center line of valve body.

Ordering Codes

Model Series	Base Model		Control Input	Option Board	Options	Volts/Freq		Reserved	Feedback Slidewire		Reserved		Special
EA		–	A		37		–	00	3	–	E	–	00

Base Model

42	90 sec. stroke time, clockwise spring return
44	90 sec. stroke time, counterclockwise spring return

Control Input

A	Analog input proportional control

Option Board

0	None
1	Position signal plus 2 relays

Options

37	NEMA 4 cover (factory standard)

Voltage/Frequency

0	120Vac, 60Hz
3	240Vac, 60Hz
4	240Vac, 50Hz
5	24Vac, 60Hz

Slidewire

3	1000Ω

Specials

00	None

EA50-A Series Non-Spring Return Actuators

EA50 series actuators are available with either 60 or 220 in-lbs. of torque. EA52 and EA56 models have an adjustable hydraulic brake that provides up to a 10:1 speed reduction. A constantly powered field winding serves as an electric brake to hold the actuator in position when no movement is required. These actuators stay in position when power is removed.

Specifications

Torque:	60 or 220 in-lbs
Dimensions:	7" H x 5-3/8" W x 6-5/16" D
Weight:	8 lbs.
Case:	Die cast aluminum with two1/2" knockouts each side.
Ambient Operating Temperature:	-40° to 58°C
Humidity:	5 to 95% rh, non-condensing
Power Consumption:	45W
Mounting:	Damper – Upright recommended Valve – Any upright position with actuator above centerline of valve body except: EA52-A and EA56-A cannot be mounted shaft facing up.

Ordering Codes

Model Series	Base Model		Control Input	Option Board	Options	Volts/Freq		Reserved	Feedback Slidewire		Reserved		Special
EA		–	A				–	00	3	–	E	–	00

Base Model

52	25 sec. stroke time (adjustable), 60 in–lbs torque
54	25 sec. stroke time, 60 in–lbs torque
56	80 sec. stroke time (adjustable), 220 in–lbs torque
58	80 sec. stroke time, 220 in–lbs torque

Control Input

A	Analog input proportional control

Option Board

0	None
1	Position signal plus 2 relays

Options

Not NEMA rated		NEMA rated	
01	2 aux. SPDT switches	31	100Ω rear slidewire, weather resistant
02	4 aux. SPDT switches	32	Two 100Ω rear slidewires, weather resistant
03	Rear Shaft	33	Three 100Ω rear slidewires, weather resistant
04	100Ω rear slidewire	37	NEMA 4 cover (factory standard)
05	100Ω rear slidewire, 2 switches		
06	1000Ω rear slidewire		
07	1000Ω rear slidewire, 2 switches		

Voltage/Frequency

0	120Vac, 60Hz
1	120Vac, 50Hz
3	240Vac, 60Hz
4	240Vac, 50Hz
5	24Vac, 60Hz

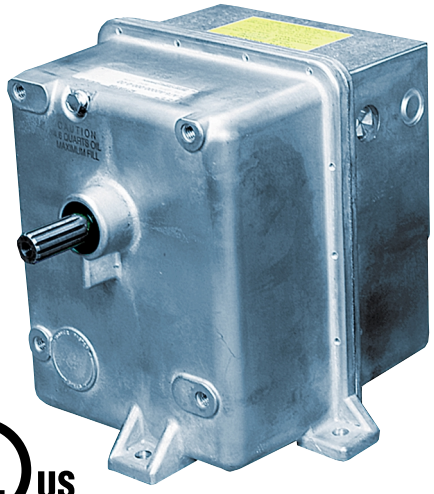
Slidewire

3	1000 Ω

Specials

00	None

EA70-A Series High Torque Actuators



EA70 series actuators are available with 550, 1100 and 1300 in-lbs of torque. These workhorses have the brute force to handle the big jobs. A solenoid brake holds the actuator in position when no movement is required. These actuators stay in position when power is removed.

Specifications

Torque:	550, 1100 or 1300 in-lbs
Dimensions:	9-9/16" H x 9-1/2" W x 10-1/2" D
Weight:	30 lbs.
Case:	Die cast aluminum with two 1/2” knockouts each side.
Ambient Operating Temperature:	-40° to 58°C
Humidity:	5 to 95% rh, non-condensing
Power Consumption:	190W
Mounting:	Damper – Upright recommended Valve – Any upright position with actuator above centerline of valve body.

Ordering Codes

Model Series	Base Model		Control Input	Option Board	Options	Volts/Freq		Reserved	Feedback Slidewire		Reserved		Special
EA		–	A				–	00	3	–	E	–	00

Base Model

72	40 sec. stroke time, 550 in–lbs torque
74	65 sec. stroke time, 1100 in–lbs torque
76	115 sec. stroke time, 1300 in–lbs torque

Control Input

A	Analog input proportional control

Option Board

0	None
1	Position signal plus 2 relays

Options

00	None
Not NEMA rated	
01	2 aux. SPDT switches
02	4 aux. SPDT switches
03	Rear Shaft
04	100Ω rear slidewire
05	100Ω rear slidewire, 2 switches
06	1000Ω rear slidewire
07	1000Ω rear slidewire, 2 switches
NEMA rated	
41	100Ω rear slidewire, weather resistant
42	Two 100Ω rear slidewires, weather resistant
43	Three 100Ω rear slidewires, weather resistant
37	NEMA 4 cover

Voltage/Frequency

0	120Vac, 60Hz

Slidewire

3	1000Ω

Specials

00	None

Other Options

Option Board for EAxx-A Analog Input Actuators

The plug-in option board works with EAxx-A series actuators that already have the integral analog input circuit installed. It provides two auxiliary relays with form C contacts rated at 3 Amps. The relays can be set to activate at any point of travel. Also included is a 4-20 mA output signal that indicates the position of the actuator.

Model A-60159: (contact factory for availability)

Other Options

All rear mounted option packs available for the standard EA series are also available with the new analog input EAxx-A series. This includes auxiliary contacts and retransmitting slidewires.

Standard EA Models

The standard EA series models, with contact closure control and position feedback potentiometers, are also available. Please refer to our catalog for the complete selection.

Retrofit Kits For Standard EA Series

Retrofit kits are available that contain all the material required to convert any EA40, EA50 or EA70 series actuator to the new analog input circuit. Each kit has a circuit board, slidewire, labels, wire harnesses and an instruction book. Field retrofit actuators are not UL or cUL listed. The functionality of the internal auxiliary switch is lost when making this conversion.

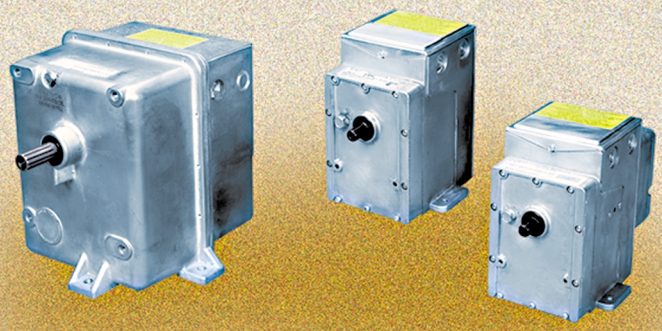
Model 71-1090-000: to convert 120 and 240 volt standard EA40 and EA50 series actuators

Model 71-1090-100: to convert 24 volt standard EA40 and EA50 series actuators

Model 71-1090-200: to convert 120 and 240 volt standard EA70 series actuators

EAxx-A Series

ANALOG ACTUATORS



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