



Spring Return Rotary Electronic Actuator Two-Position Control ES62A(-S) & ES142A(-S)



Description

The ES142 (24 VAC or 120 VAC) and the ES62A (24 VAC/VDC or 120 VAC) direct coupled two-position spring return electronic actuators are for control of building HVAC dampers or valves.

Features

- Brushless DC motor technology with stall protection
- Bidirectional fail-safe spring return
- Unique self-centering shaft coupling
- Access to all functions from either side of the actuator
- All metal housing
- Manual override
- 5° pre-load as shipped from factory
- Models with independently adjustable dual auxiliary switches available
- UL, CSA approved; CE rating for ES62

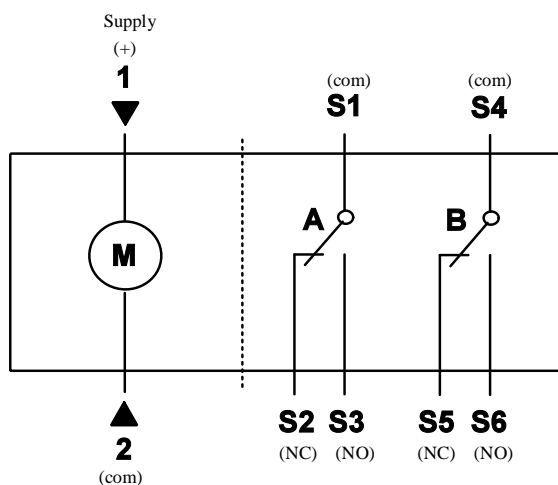
Application

This actuator is used for the control of valves or dampers requiring up to 62 in-lb (7 N-m) or 142 in-lb (16 N-m) of torque. It is designed for applications that require the valve or damper to return to its fail-safe position when there is a power failure.

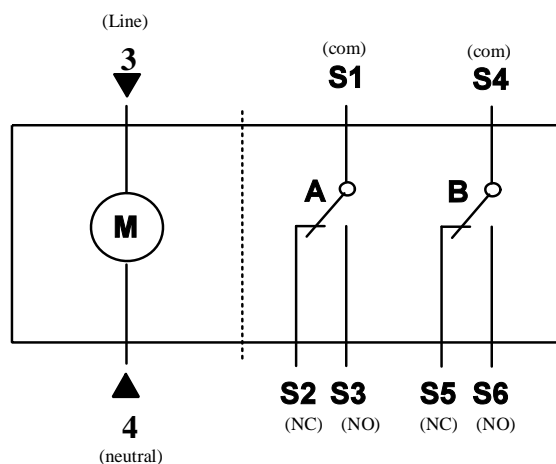
Wiring

Diagrams

Two-Position Control (24 VAC)



Two-Position Control (115 VAC)



Actuator Part Number Table

Torque	Input Signal	Cabling	Operating Voltage			
			24 VAC		115 VAC	
			Standard	Dual Auxiliary Switches	Standard	Dual Auxiliary Switches
62 in-lb (7 N-m)	Two-Position	Standard or Plenum Cable	ES62A2	ES62A 2-S	ES62A1	ES62A 1-S
142 in-lb (16 N-m)	Two-Position	Standard or Plenum Cable	ES142A2	ES142A 2-S	ES142A1	ES142A 1-S



Spring Return Rotary Electronic Actuator 24 VAC/VDC or 115 VAC Two-Position Control ES62A(-S)

Technical Data	ES62A2(-S)	ES62A1(-S)
Power supply	24 VAC \pm 20%, 24 VDC \pm 15% 50/60 Hz	120 VAC \pm 10% 50/60 Hz
Power consumption	running: 5 VA, 3.5 WDC holding: 4 VA, 3 WDC	7 VA, 5W
Transformer sizing	class 2 power source req. for UL, CSA	class 2 power source req. for UL, CSA
Electrical connection / attached cable	3 ft, 18 AWG cable, BX connector	
	plenum cable ¹	standard cable
Overload protection	Electronic throughout 0 to 95° rotation	
Angle of rotation (max.)	95°	
Minimum torque	62 in-lb (7 N-m)	
Direction of rotation	spring return: selectable when ordering valves, selectable in field for damper	
Position indication	visual indicator, -5° to 90° (-5° is spring return position)	
Manual override	3 mm hex crank (shipped with actuator)	
Shaft size	1/4" to 3/4" (6.4 mm to 20.5 mm) diameter 1/4" to 1/2" (6.4 mm to 13 mm) square	
Minimum shaft length	3/4" (20 mm)	
Auxiliary switches (-S option)	AC: 24 VAC to 250 VAC 6A resistive 2A general purpose use DC: 12 VDC to 30 VDC 2A	
Switch range (-S option)* – Switch A – Recommended range usage – Factory setting – Switching hysteresis	0° to 90° with 5° intervals	
	0° to 45°	
	5°	
	2°	
Switch range (-S option)* – Switch B – Recommended range usage – Factory setting – Switching hysteresis	0° to 90° with 5° intervals	
	45° to 90°	
	85°	
	2°	
Running time (nominal)	90 secs running spring return: 15 secs typical (<60 secs max at -25°F)	
Humidity	5 to 95% RH, noncondensing	
Ambient temperature	-25°F to 130°F (-32°C to 55°C)	
Storage temperature	-25°F to 158°F (-32°C to 70°C)	
Housing type**	NEMA type 1/IP40 according to EN60529	
Housing material	Die cast aluminum alloy	
Agency ratings	UL 60730 listed (replacing UL 873), C-UL CSA C22.2 No. 24-93	
CE conformity***	Electromagnetic Compatibility (EMC): 89/336/EEC Emissions standards: EN50081-1 Immunity Standards: EN50082-2	
Noise level	40 dBA (running)	
Servicing	maintenance free	
Quality standard	ISO 9002	
Weight	2.86 lbs (1.3 kg)	

Notes:

- ! * SWITCH WARNING: Apply only line voltage or only Class 2 voltage to the switching outputs of both auxiliary switches A and B. Mixed operation is not permissible.
- ** DEI has optional NEMA 4/4X type housings for these actuators. Call DEI for information.
- ! *** CE WARNING: All wiring of these actuators must be safety extra-low voltage (SELV/PELV) in accordance with EN60730.
- 1 "-NP" version has non-plenum cable



Spring Return Rotary Electronic Actuator 24 VAC or 115 VAC Two-Position Control ES142A(-S)

Technical Data	ES142A2(-S)	ES142A1(-S)
Power supply	24 VAC +20%, -15% 50/60 Hz	115 VAC ±15% 50/60 Hz
Power consumption	running: 8 VA holding: 3 VA	running: 9 VA holding: 9 VA
Transformer sizing	class 2 power source req. for UL	
Electrical connection	3 ft, 18 AWG plenum cable	3 ft, 18 AWG cable
	plenum cable	standard cable
Overload protection	Electronic throughout 0° to 95° rotation	
Angle of rotation (max.)	95°	
Minimum torque	142 in-lb (16 N-m)	
Direction of rotation	spring return: selectable when ordering valves, selectable in field for damper motor: selectable by dip switch	
Position indication	visual indicator, -5° to 90° (-5° is spring return position)	
Manual override	3 mm hex crank (shipped with actuator)	
Shaft size	Standard: 3/8" to 1" (8 mm to 25.6 mm) diameter 1/4" to 3/4" (6.4 mm to 20.5 mm) square Oversize: 1.05" (special adapter)	
Minimum shaft length	3/4" (20.5 mm)	
Auxiliary switches (-S option)	plenum: 4 A resistive, 24 VAC plenum: 2 A inductive, 24 VAC	standard: 6 A resistive, 24 VAC to 250 VAC standard: 2 A inductive, 24 VAC to 250 VAC
Switch range (-S option)*	0° to 90° with 5° intervals	
– Switch A	0° to 90° with 5° intervals	
– Recommended range usage	0° to 45°	
– Factory setting	5°	
– Switching hysteresis	2°	
Switch range (-S option)*	0° to 90° with 5° intervals	
– Switch B	0° to 90° with 5° intervals	
– Recommended range usage	45° to 90°	
– Factory setting	85°	
– Switching hysteresis	2°	
Running time (nominal)	90 secs constant, independent of load, spring return: 15 secs typical (30 secs max.)	
Humidity	5 to 95% RH, noncondensing	
Ambient temperature	-25°F to 130°F (-32°C to 55°C)	
Storage temperature	-25°F to 158°F (-32°C to 70°C)	
Housing type**	NEMA type 1/IP40 according to EN60529	
Housing material	Die cast aluminum alloy	
Agency ratings	UL 873 listed, CE-UL certified to CSA C22.2 No. 24-93	
CE conformity***	Electromagnetic Compatibility (EMC): 89/336/EEC Emissions standards: EN50081-1 Immunity Standards: EN50082-2	
Noise level	<45 dBA max	
Servicing	maintenance free	
Quality standard	ISO 9002	
Weight	4.85 lbs (2.2 kg)	

Notes:

! * SWITCH WARNING: Apply only main voltage or only safety extra-low voltage (SELV) to switching outputs of auxiliary switches A and B. Mixed operation is not permissible.

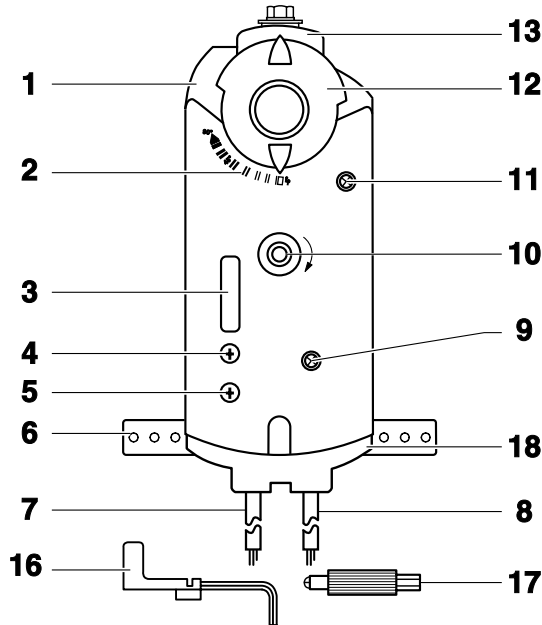
** DEI has optional NEMA 4/4X type housings for these actuators. Call DEI for information.

! *** CE WARNING: All wiring of these actuators must be safety extra-low voltage (SELV/PELV) in accordance with EN60730.



Spring Return Rotary Electronic Actuator 24 VAC/VDC or 115 VAC Two-Position Control ES62A(-S)

Actuator Components



Legend

1. Actuator housing
2. Positioning scale for angle of rotation
3. DIP switches and cover
4. Span adjustment
5. Offset (start point) adjustment
6. Mounting bracket
7. Connection cables for power and positioning signal
8. Connection cables for auxiliary switches or feedback potentiometer
9. Gear train lock pin
10. Manual override wrench opening and direction of rotation arrow
11. Locking shaft for auxiliary switches A and B
12. Position indicator
13. Self-centering shaft adapter
14. Shaft adapter locking clip
15. Position indicator adapter
16. Key for manual adjustment
17. Adjustment tool for: auxiliary switches (11), potentiometers (4 and 5), and locking shaft (9)

Operation

When power is applied, the actuator coupling moves toward the “90°” position. In the event of a power failure, or when operating voltage is turned off, the actuator returns to the “0” position.

Life expectancy

An improperly-tuned control loop will cause excessive repositioning that will shorten the life of the actuator.

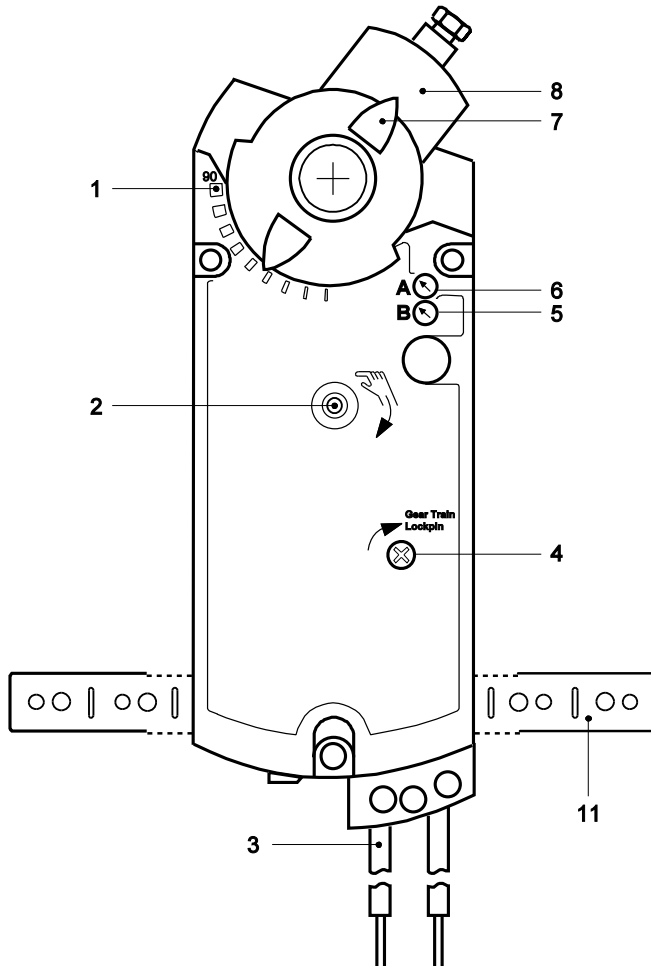
Notes:

- For installation, option (-S) and accessory information, see Engineering, Application and Installation guide.
- * Self-centering shaft adapter shown.



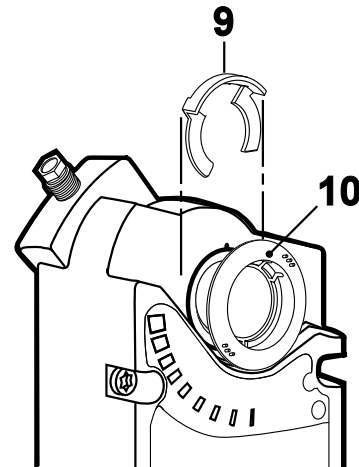
Spring Return Rotary Electronic Actuator 24 VAC or 115 VAC Two-Position Control ES142A(-S)

Actuator Components



Legend

1. Positioning scale for angle of rotation
2. Manual override wrench opening and direction of rotation arrow
3. Connection cables
4. Gear train lock pin
5. Auxiliary switch B (-S option)
6. Auxiliary switch A (-S option)
7. Position indicator
8. Standard or self-centering shaft adapter*
9. Shaft adapter locking clip
10. Position indicator adapter
11. Mounting bracket



Operation

When power is applied, the actuator coupling moves toward the “90°” position. In the event of a power failure, or when operating voltage is turned off, the actuator returns to the “0°” position.

Life expectancy

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Notes:

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* Self-centering shaft adapter shown.