



Spring Return Electronic Actuator Tri-State (Floating) Control ES62C2(-S) & ES142C2(-S)



Description

The ES62C2(-S) (24 VAC/VDC) and ES142C2(-S) direct coupled 24 VAC spring return electronic actuators are designed for tri-state (floating) control of building HVAC dampers and valves.

Features

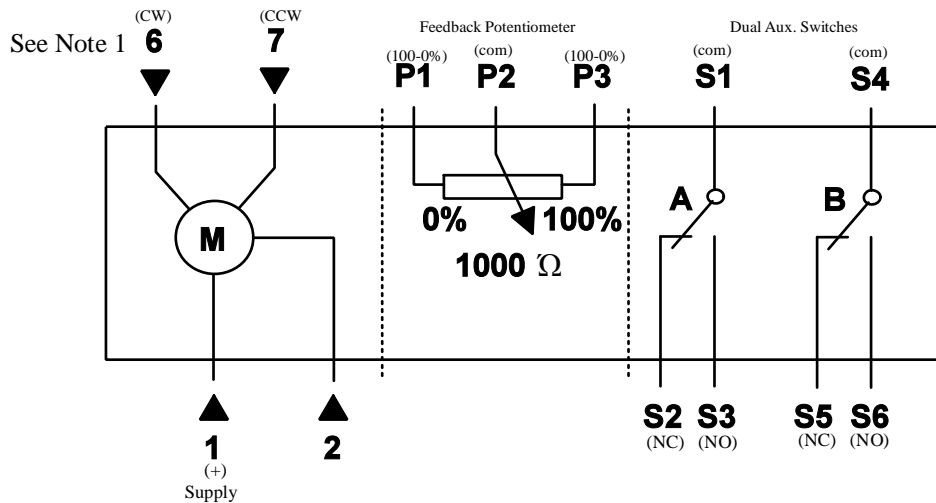
- Brushless DC motor technology with stall protection
- Bidirectional fail-safe spring return
- Unique self-centering shaft coupling
- Access to all functions from either side of the actuator
- All metal housing
- Manual override
- 5° pre-load as shipped from factory
- Models with independently adjustable auxiliary switches available (-S option), includes potentiometer feedback
- UL, CSA approved, pending CE approval

Application

This actuator is used in constant or variable air volume installations for the control of return air, mixed air, exhaust, face and bypass valves, and dampers requiring up to 62 in-lb (7 N-m) or 142 in-lb (16 N-m) torque. It is designed for applications that require the valve or damper to return to a fail-safe position when there is a power failure.

Wiring

Three-position Control (24 V)



Actuator Part Number Table

Torque	Input Signal	Cabling	24 VAC Operating Voltage		
			Standard	Dual Auxiliary Switches	Feedback Potentiometer
62 in-lb (7 N-m)	Tri-state (floating)	Standard Cable	ES62C2	ES62C2-S	ES62C2-P
142 in-lb (16 N-m)	Tri-state (floating)	Plenum Cable	ES142C2	ES142C2-S	ES142C2-P

Note:

1 Do not ground switched legs (6 & 7)



Spring Return Electronic Actuator Tri-State (Floating) Control ES62C2(-S) & ES142C2(-S)

Technical Data	ES62C2(-S)	ES142C2(-S)
Power supply	24 VAC ± 20%, 24 VDC ± 15%, 50/60 Hz	24 VAC +20%, -15%, 50/60 Hz
Power consumption	running: 5 VA (3.5 WDC) holding: 4 VA (3 WDC)	running: 8 VA holding: 5 VA
Transformer sizing	class 2 power source req. for UL, CSA	
Electrical connection	3 ft, 18 GA appliance cable	3 ft, 18 AWG plenum cable
Overload protection	electronic throughout 0° to 95° rotation	
Potentiometer	0-1000 Ω (max. 1 mA)	
Angle of rotation	mechanically limited to 95°	
Minimum torque	62 in-lb (7 N-m)	142 in-lb (16 N-m)
Direction of rotation	spring: option when ordering valves; reversible with mounting for dampers motor: reversible with 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	1/4" to 3/4" (6.4 mm to 20.5 mm) diameter 1/4" to 1/2" (6.5 mm to 13 mm) square	3/8" to 1" (8 mm to 25.6 mm) diameter 1/4" to 3/4" (6 mm to 18 mm) square
Minimum shaft length	3/4" (20 mm)	
Auxiliary switches (-S option)	AC: 24 VAC to 250 VAC 6 A resistive 2 A general purpose use DC: 12 VDC to 30 VDC 2 A	plenum: 4 A resistive, 24 VAC plenum: 2 A inductive, 24 VAC
Switch range (-S option)*	0° to 90° with 5° intervals	
– Switch A	0° to 45°	
– Recommended range usage	5°	
– Factory setting	2°	
– Switching hysteresis		
Switch range (-S option)*	0° to 90° with 5° intervals	
– Switch B	45° to 90°	
– Recommended range usage	85°	
– Factory setting	2°	
– Switching hysteresis		
Running time for 90°	Motor: 90 secs Spring: 15 secs typical (60 secs max. @ 25°F)	Motor: 90 secs constant, independent of load Spring: 15 secs typical (30 secs max.)
Humidity	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 or UL 873 listed, C-UL certified to CSA C22.2 No. 24-93, pending CE approval for plenum models	
CE conformity***	Electromagnetic Compatibility (EMC): 89/336/EEC Emissions standards: EN50081-1 Immunity standards: EN50082-2	–
Noise level	20 dBA (running)	max. 45 dBA
Servicing	maintenance free	
Quality standard	ISO 9002	
Weight	2.86 lbs (1.3 kg)	6.0 lbs (2.7 kg)

Notes:

! * SWITCH WARNING: Apply only line voltage or or only Class 2 voltage to the switching outputs of both auxiliary switches A and B. Mixed operation is not permissible.

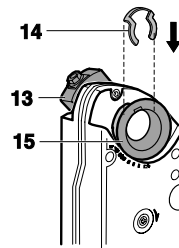
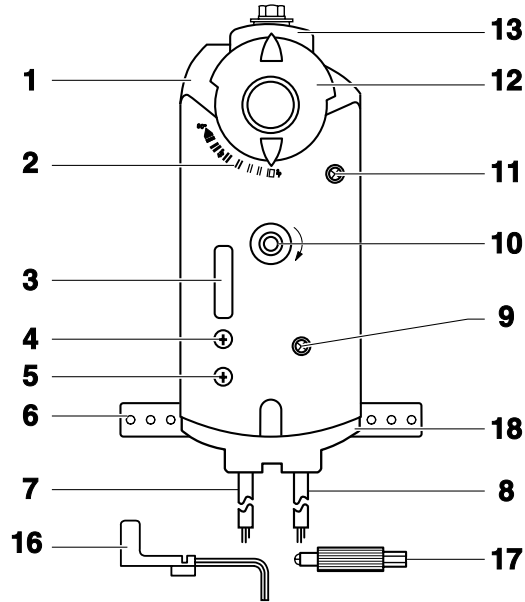
** DEI has optional NEMA 4/4X type housings for these actuators. Call DEI for information.

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



Spring Return Electronic Actuator 24 VAC/VDC Tri-State (Floating) Control ES62C2(-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

Operation

A tri-state (floating) control signal controls the valve or damper actuator. The actuator's angle of rotation is proportional to the length of time the signal is applied. A 24 VAC control signal to Y1 causes the actuator coupling to rotate clockwise. A 24 VAC control signal to Y2 causes the actuator coupling to rotate counterclockwise.

With no control voltage, the actuator holds its current position.

In the event of a power failure, the actuator spring returns to the "0" position.

Life expectancy

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

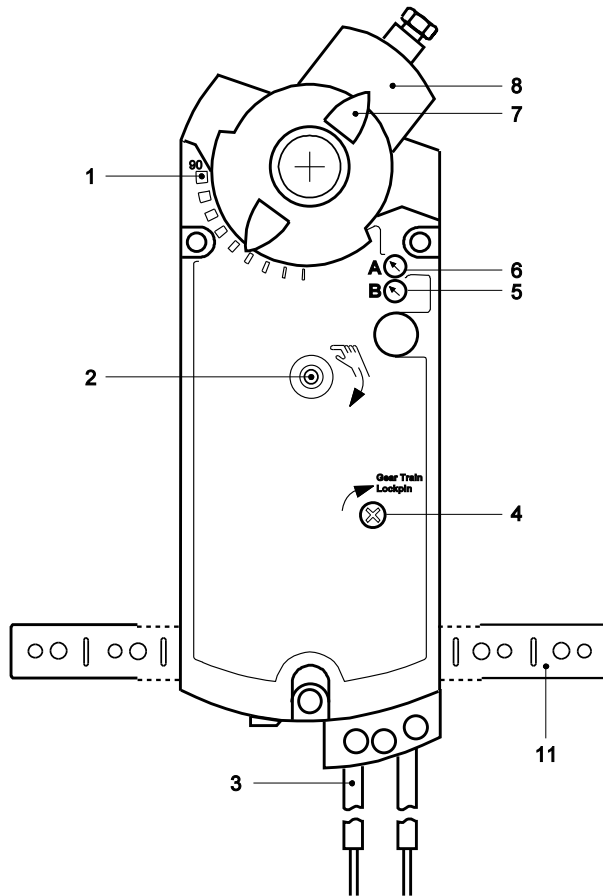
Notes:

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



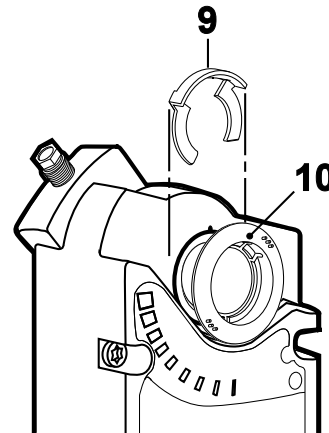
Spring Return Electronic Actuator 24 VAC Tri-State (Floating) Control ES142C2(-S)

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



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