

CLARK SOLUTIONS

ES62, ES75 & ES142 Spring Return Electric Actuators

Tri-State, & Modulating, 132, 177 & 310 in-lb

The ES62C2(-S)(24 VAC/VDC), ES75C2(-S) and ES142C2(-S) direct coupled 24 VAC spring return electronic actuators are designed for tri-state (floating) control of building HVAC dampers and valves.

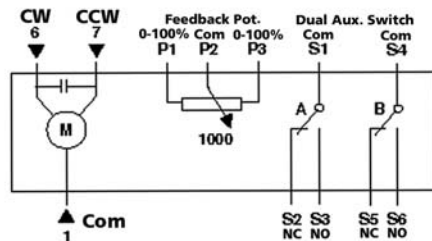
The ES62B2(-S), ES62B2-ZS(-S), ES75B2(-S), ES75B2-ZS(-S), ES142B2(-S), ES142B2-ZS(-S) & ES142D2(-S) direct coupled 24 VAC spring return electronic actuators are designed for modulating control of building HVAC dampers and valves.

These actuators are used in constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass valves or dampers requiring up to 62 in-lb (7 N-m), 75 in-lb (8.5 Nm) or 142 in-lb (16 Nm) torque. They are designed for applications that require the valve or damper to return to a fail-safe position when there is a power failure.

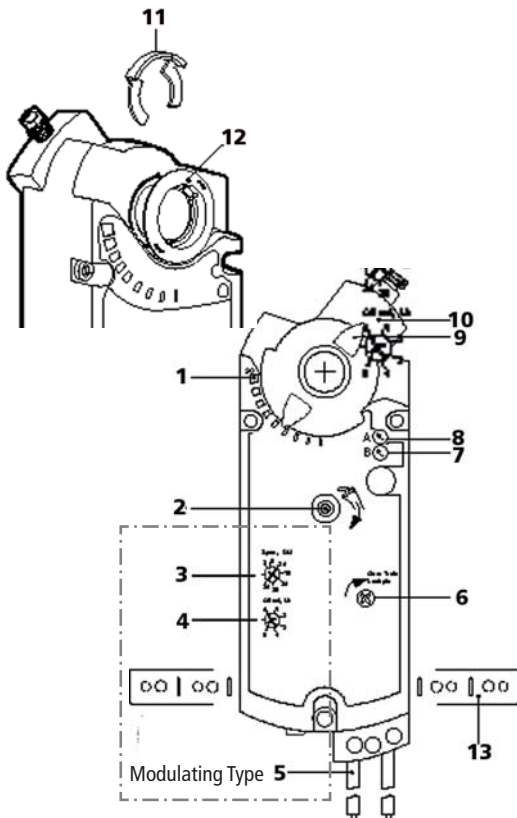
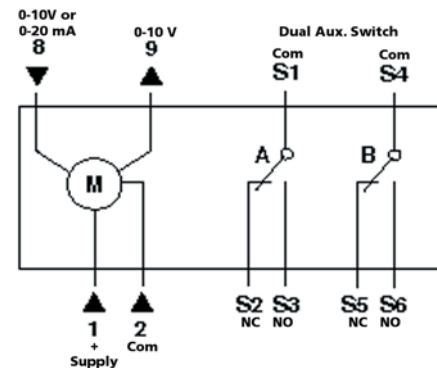


WIRING & COMPONENTS

Tri-State Control



Modulating Control



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

* Self-centering shaft adaptor shown

OPERATION

Two Position or Tri-state: A floating control signal controls the actuator. The actuator's angle of rotation is proportional to the length of time the signal is applied. A 24 VAC control signal to wire 6 causes the actuator coupling to rotate clockwise. A 24 VAC control signal to wire 7 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.

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

Modulating Type: A continuous 4 to 20 mA or 0 to 10 VDC signal from a controller to wire 8 operates the actuator. The angle of rotation is proportional to the control signal. A 0 to 10 VDC position feedback output signal is available between wires 9 and wire 2(com) to monitor the position of the motor.

In the event of a power failure, or when the operating voltage is shut off, the actuator returns to the "0" position.

Actuator Part Number Table							
Torque	Input Signal	Cabling	24 VAC Operating Voltage				
			Standard	With Dual Auxiliary Switches & Potentiometer	Dual Auxiliary Switches only	Span/Offset Adjustable	Dual Aux. Switches and Span/Offset Adjustable
62 in-lb min. (7 N-m)	Tri-state (floating)	Standard Cable	ES62C2	ES62C2-S	-	-	-
75 in-lb min. (8.5 N-m)	Tri-state (floating)	Plenum Cabling	ES75C2	ES75C2-S	-	-	-
142 in-lb min. (16 N-m)	Tri-state (floating)	Plenum Cabling	ES142C2	ES142C2-S	-	-	-
62 in-lb min. (7 N-m)	0-10 VDC 0-20 mA	Plenum Cabling	ES62B2	-	ES62B2-S	ES62B2-ZS	ES62B2-ZS-S
75 in-lb min. (8.5 N-m)	0-10 VDC 0-20 mA	Plenum Cabling	ES75B2	-	ES75B2-S	ES75B2-ZS	ES75B2-ZS-S
142 in-lb min. (16 N-m)	0-10 VDC 0-20 mA	Plenum Cabling	ES142B2	-	ES142B2-S	ES142B2-ZS	ES142B2-ZS-S
142 in-lb min. (16 N-m)	4-20 mA	Plenum Cabling	ES142D2	-	ES142D2-S	-	-

Specifications	ES62C2(S)	ES75C2(S)	ES142C2	ES62B2(S)(ZS,S)	ES75B2(S)(ZS,S)	ES142B2(S)(ZS,S)	ES142D2(S)
Power supply	24 VAC	24 VAC +20%-15%,50/60HZ	24 VAC	24 VAC +20%, -15% 50/60 Hz			
Transformer sizing	(class 2 power source required for UL, CSA)						
Power consumption	5 VA running	8 VA running	5 VA running	9 VA running			
Electrical connection	3 ft 18 GA appliance	3 ft 18 AWG plenum cable					
Control signal "Y"	-	-	-	0-10 VDC(max 35VDC), 0-20 mA(add 500 ohm, 1/4 W resistor across pins 2 & 8)			4-20 mA
Input resistance	-	-	-	>100 Kohm	100 Kohm (0.1 mA)		500 ohms
Operating range	-	-	-	0-10 VDC, 0-20 mA(add 500 ohm, 1/4 W resistor across pins 2 & 8)			4-20 mA
Feedback signal	-	-	-	0-10 VDC, ±1 mA max. for 95°			
Overload protection	electronic throughout 0° to 95° rotation						
Potentiometer	0-1000 Ohms, max. 1 mA		-	-	-	-	-
Manual override	3 mm hex crank (shipped with actuator)						
Angle of rotation	mechanically limited to 95°						
Minimum torque	62 in-lb min.	75 in-lb min.	142 in-lb	62 in-lb min.	75 in-lb min.	142 in-lb min.	142 in-lb min.
Direction of rotation	Direction & Direction spring return, selectable when ordering (CW=clockwise Direction with power, counterclockwise by spring; CCW=reverse of CW)						
Position indication	visual indicator, -5° to 90° (-5° is spring return position)			visual indicator, 0 to 90° (0° is spring return position)			
Shaft size	1/4" to 3/4" dia. 1/4" to 1/2"sq	3/8" to 1" dia. 1/4" to 3/4"sq	1/4" to 3/4" dia. 1/4" to 1/2"sq	3/8" to 1" dia. 1/4" to 5/8"sq			
Minimum shaft length	3/4" (20 mm)						
- Auxiliary switches (-S option)	24 to 250 VAC, 6 A res 12 to 30 VDC, 2A	Plenum 4A resistive, 24 VAC Plenum 2A inductive, 24 VAC	24 to 250 VAC, 6 A res	Plenum 4A resistive, 24 VAC Plenum 2A inductive, 24 VAC			
Switch range (-S option)	0° to 90° with 5° intervals						
- Switch A	0° to 45°						
- Rec. range usage	5°						
- Factory setting	2°						
- Switching hysteresis	2°						
Switch range (-S option)	0° to 90° with 5° intervals						
- Switch B	45° to 90°						
- Rec. range usage	85°						
- Factory setting	2°						
- Switching hysteresis	2°						
Running time for 90°	motor: 90 secs, constant spring 15 secs typ. (60	motor:120 secs, constant spring: 25 sec Typ.	motor: 90 secs, constant spring: 15 sec Typ.	motor:150 secs, constant spring: 25 sec Typ.	motor:90 secs, constant spring: 15 sec Typ.		
Humidity	95% RH noncondensing						
Housing type	NEMA type 1/IP40 according to EN60529; NEMA 4/4X housings available on request						
Housing material	Diecast aluminum						
Ambient temperature	-25°F to 130°F (-32°C to 55°C)						
Storage temperature	-25°F to 158°F (-32°C to 70°C)						
Noise level	max. 20 dBA	20 dBA	<45 dBA running				
Servicing	maintenance free						
Agency ratings	UL 873 or UL60730 listed, CE-UL certified to CSA C22.2 No. 24-93 (pending CE approval for plenum models)						
CE conformity	EMC: 89/336/EEC, Emissions: EN5081-1						
Immunity	EN61000-6-2 except EN50082-1	IEN50082-2					
Quality standard	ISO 9002						
Weight	2.86 lbs (1.3 kg)	6 lbs (2.7 kg)	-	-			