

CLARK SOLUTIONS

EN132, EN177 & EN310 Non-Spring Return Electric Actuators

On/Off, Tri-State, & Modulating, 132, 177 & 310 in-lb

The EN132C2(-S), EN177C2(-S) and EN310C2(-S) direct coupled 24 VAC non-spring return (NSR) rotary electronic actuators are designed for tri-state (floating) or two-position control of building HVAC dampers and valves.

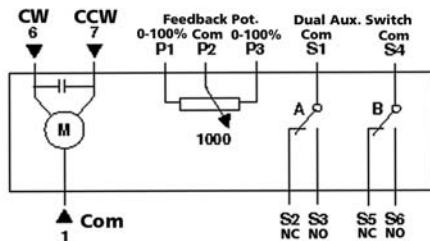
The EN132B2, EN132B2-ZS-S, EN177B2(-S), EN177B2-ZS(-S), EN177D2(S), EN310B2(-S), EN310B2-ZS(-S) and EN310D2(-S) direct coupled 24 VAC non-spring return (NSR) rotary electronic actuators are designed for modulating control of building HVAC dampers or valves.

These actuators are used in constant or variable air volume installations for the control of return air, mixed air, exhaust, and face and bypass dampers and valves requiring up to 132 in-lb (15 N-m), 177 in-lb (20 N-m), or 310 in-lb (35 N m) torque.

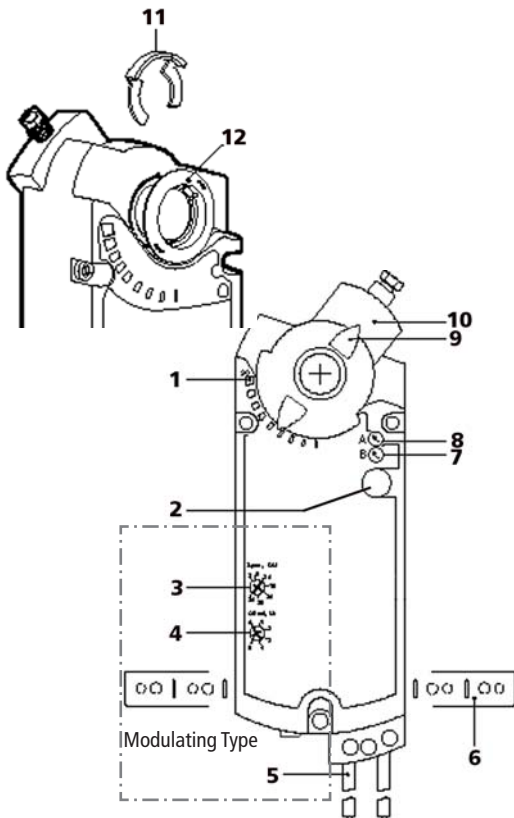
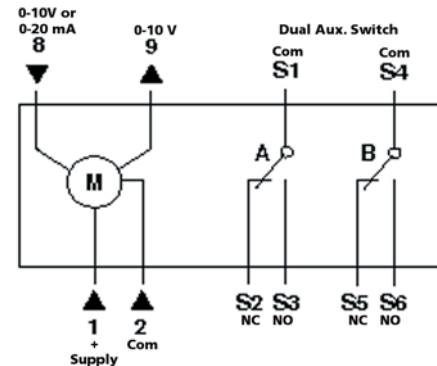


WIRING & COMPONENTS

Two Position or Tri-State Control



Modulating Control



1. Positioning scale for angle of rotation
2. Manual override (push)
3. Span adjustment (-ZS version)
4. Offset (start point) adjustment (-ZS version)
5. Connection cables
6. Mounting bracket
7. Auxiliary switch B (-S option)
8. Auxiliary switch A (-S option)
9. Position indicator
10. Standard or self-centering shaft adapter*
11. Shaft adapter locking clip
12. Position indicator adapter

* 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. Reverse the position indicator so that the counterclockwise 0 to 90 scale is visible, if needed.

In the event of a power failure, or with no control voltage, the actuator holds its current position.

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

Modulating Type: A continuous 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 the actuator holds its position. In the event only the control signal is lost, the actuator returns to the "0" position.

Actuator Model 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
132 in-lb min. (15 N-m)	Tri-state or two-position	Std. or Plenum	EN132C2	EN132C2-S	-	-	-
177 in-lb min. (20 N-m)	Tri-state or two-position	Plenum Cabling	EN177C2	EN177C2-S	-	-	-
310 in-lb min. (35 N-m)	Tri-state or two-position	Plenum Cabling	EN310C2	EN310C2-S	-	-	-
132 in-lb min. (15 N-m)	0-10 VDC 0-20 mA	Std. or Plenum	EN132B2	-	-	-	EN132B2-ZS-S
177 in-lb min. (20 N-m)	0-10 VDC 0-20 mA	Plenum Cabling	EN177B2	-	EN-177B2-S	EN177B2-ZS	EN177B2-ZS-S
	4-20 mA	Plenum Cabling	EN177D2	-	EN177D2-S	-	-
310 in-lb min. (35 N-m)	0-10 VDC	Plenum Cabling	EN310B2	-	EN310B2-S	EN310B2-ZS	EN310B2-ZS-S
	4-20 mA	Plenum Cabling	EN310D2	-	EN310D2-S	-	-

Specifications	EN132C2(S)	EN177C2(S)	EN310C2(S)	EN132B2(ZS)(S)	EN177B2(ZS)	EN310B2(ZS)(S)	EN177D2(S)	EN310D2(S)
Power supply	24 VAC ±20%	24 VAC ±15%, 50/60 Hz		24 VAC ±20%	24 VAC +20%, -15% 50/60 Hz			
Transformer sizing	(class 2 power source required for UL)							
Power consumption	3 VA running	4 VA running	6 VA running	5 VA running	4 VA running	6 VA running	4 VA running	6 VA running
Electrical connection	3 ft 18 AWG plenum cable							
Control signal "Y"	-	-	-	0-10 VDC, 0-20 mA (add 500 ohm, 1/4 w resistor across pins 2 & 8)			4-20 mA	
Input resistance	-	-	-	>100 Kohm	100 Kohm		500 ohms	
Operating range	-	-	-	0-10 VDC, 0-20 mA			4-20 mA	
Feedback signal	-	-	-	0-10 VDC, 1 mA max.				
Overload protection	electronic throughout 0° to 95° rotation							
Potentiometer	0-1000 Ohms<10mA	0-1000 Ohms, max. 1 mA		-	-	-	-	-
Manual override	push down button							
Angle of rotation	mechanically limited to 95°			90 to 95° max.				
Minimum torque	132 in-lb min.	177 in-lb	310 in-lb min.	132 in-lb min.	177 in-lb min.	310 in-lb min.	177 in-lb min.	310 in-lb
Direction of rotation	selectable by dip switch							
Position indication	Visual Indicator, -5° to 90° (-5° is spring return position)			visual indicator, 0 to 90°				
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 3/4" 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 resistive	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°	125 secs at 60 Hz 150 secs at 50 Hz	120 secs		125 secs at 60 Hz 150 secs at 50 Hz	150 secs			
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)			-40°F to 158°F (-40°C to 70°C)				
Noise level	max. 40 dBA		max. 45 dBA					
Servicing	maintenance free							
Agency ratings	UL 873 or UL60730 listed, CE-UL certified to CSA C22.2 No. 24-93							
CE conformity	EMC: 89/336/EEC, Emissions: EN5081-1							
Immunity	EN61000-6-2 except EN50082-1		IEN50082-2					
Quality standard	ISO 9002							
Weight	2.2 lbs (1.0 kg)		4.4 lbs (2.0 kg)		2.2 lbs (1.0 kg)		4.4 lbs (2.0 kg)	