



Non-Spring Return Electronic Actuators 24 VAC Modulating Control (132, 221 & 310 in-lb) EN132B2, EN132B2-ZS-S, EN221B2(-S), EN221B2-ZS(-S), EN310B2(-S) & EN310B2-ZS(-S)



Description

The EN132B2, EN132B2-ZS-S, EN221B2(-S), EN221B2-ZS(-S), EN310B2(-S) and EN310B2-ZS(-S) direct coupled 24 VAC non-spring return (NSR) rotary electronic actuators are designed for modulating control of building HVAC dampers or valves.

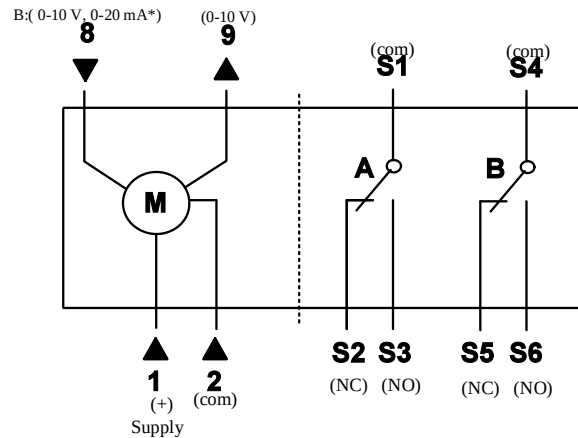
Features

- Built-in feedback
- Unique self-centering shaft coupling
- All metal housing
- Manual override
- Offset and span adjustment models available
- Independently adjustable dual auxiliary switches available
- UL, cUL and CE listed

Application

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), 221 in-lb (25 N-m), or 310 in-lb (35 N-m) torque.

Wiring



Actuator Part Number Table						
Torque	Input Signal	Cabling	24 VAC Operating Voltage			
			Standard	Span/Offset Adjustable	Dual Auxiliary Switches and Span/Offset Adjustable	Dual Auxiliary Switches Only
132 in-lb (15 N-m)	0 to 10 VDC 0 to 20 mA *	Standard or Plenum Cable	EN132B2	—	EN132B2-ZS-S	—
221 in-lb (25 N-m)	0 to 10 VDC 0 to 20 mA *	Plenum Cable	EN221B2	EN221B2-ZS	EN221B2-ZS-S	EN221B2-S
310 in-lb (35 N-m)	0 to 10 VDC 0 to 20 mA *	Standard Cable	—	—	EN310B2-ZS-S	—
		Plenum Cable	EN310B2	EN310B2-ZS	—	EN310B2-S

Note:

* 0-20 mA: Requires 500 W (1 %, 1/4 W) resistor across pins 2 and 8. "-ZS" version can be calibrated to 4-20 mA.



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Technical Data	EN132B2, EN132B2-ZS-S	EN221B2(-S), EN221B2-ZS(-S)	EN310B2(-S), EN310B2-ZS(-S)
Power supply	24 VAC $\pm 20\%$, 50/60 Hz		
Transformer sizing	5 VA running 1 VA holding (class 2 power source req. for UL)	8 VA running 1.1 VA holding (class 2 power source req. for UL)	
Electrical connection	3 ft, 18 AWG	3 ft, 18 AWG plenum cable	
Overload protection	Electronic throughout 0° to 95° rotation		
Control signal	0-10 VDC, 0-20 mA†		
Input resistance	> 100 Kohm	> 100 Kohm	
Operating range	0 to 10 VDC, 0 to 20 mA†		
Feedback output "U"	0 to 10 VDC (1 mA max.)		
Angle of rotation	90°, 95° max.		
Minimum torque	132 in-lb (15 N-m)	221 in-lb (25 N-m)	310 in-lb (35 N-m)
Direction of rotation	control: selectable by dip switch		
Position indication	visual indicator, 0° to 95°		
Manual override	push down button		
Shaft size	1/4" to 3/4" (6.4 mm to 20.5 mm) diameter	Standard: 3/8" to 1" (8 mm to 25.6 mm) diameter	
	1/4" to 1/2" (6.4 mm to 13 mm) square	1/4" to 5/8" (6.4 mm to 18 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	AC: 24 VAC to 250 VAC plenum: 4 A resistive, 24 VAC plenum: 2 A general purpose use, 24 VAC DC: 12 VDC to 30 VDC, 2A	
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			
Zero Span Control Signal Adjustment (-ZS model)	0-5 VDC		
- Offset (startpoint)	0 VDC		
- Factory Setting	2-30 VDC		
- Span	125 secs (60 Hz) 150 secs (50 Hz)		
Running time (90°) (nominal)	95% RH noncondensing		
Humidity	-25°F to 130°F (-32°C to 55°C)		
Ambient temperature	-40°F to 158°F (-40°C to 70°C)		
Storage temperature	NEMA type 1/IP40 according to EN60529		
Housing type**	Die cast aluminum alloy		
Housing material	Silicone free		
Gear lubrication	UL 60730 or UL 873 listed, CE-UL certified to CSA C22.2 No. 24-93		
Agency ratings	Electromagnetic Compatibility (EMC): 89/336/EEC Emissions standards: EN50081-1 Immunity standards: EN50082-2 Low-voltage directive		
CE conformity***	<45 dBA		
Noise level	maintenance free		
Servicing	ISO 9002		
Quality standard	2.2 lbs (1.0 kg)		
Weight	4.4 lbs (2.0 kg)		

Notes:

† Add 500 Ω (1 %, 1/4 W) resistor across pins 2 & 8 for 0-20 mA signal.

! * 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.

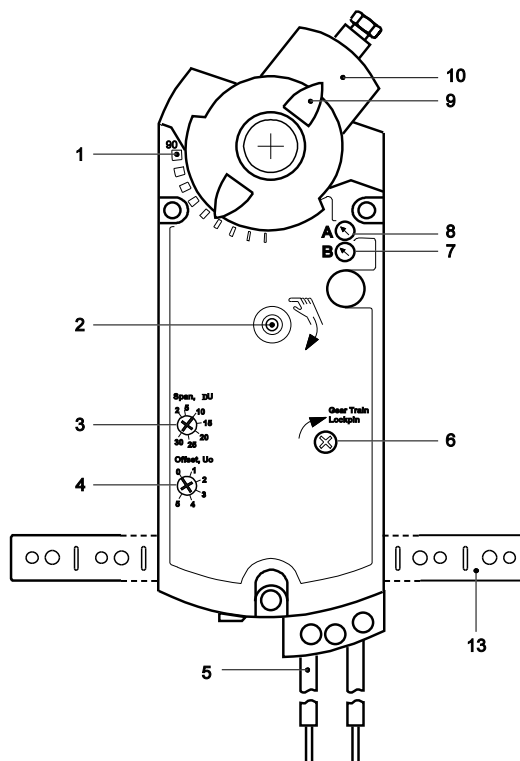
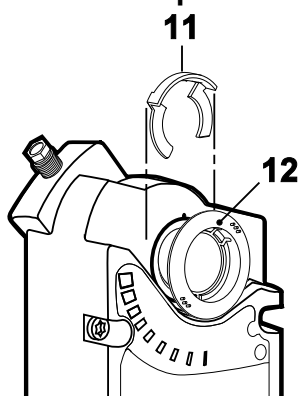
** DEI has optional NEMA 4/4X type housings for these actuators. Call DEI for information.

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



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Actuator Components



Legend

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. Auxiliary switch B (-S option)
7. Auxiliary switch A (-S option)
8. Position indicator
9. Standard or self-centering shaft adapter*
10. Shaft adapter locking clip
11. Position indicator adapter
12. Mounting bracket

Operation

A continuous DC 4 to 20 mA signal or a 0 to 10 VDC (0-20 mA**) signal from a controller to wire Y 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 U and com (system neutral) to monitor the position of the motor.

In the event of a power failure, the actuator holds its current position. If only the control signal is lost, 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.

WARNING: Apply only AC-line voltage from the same phase or only UL-Class 2 voltage (SELV for CE conformance) to the switching outputs of both auxiliary switches A and B. Mixed operation is not permissible.

Notes:

* Self-centering shaft adapter shown.

** Add 500 Ω (1 %, 1/4 W) resistor across pins 2 & 8 for 0-20 mA signal.