Non-Spring Return 24 VAC/VDC Electronic Actuators, Resistive EN70E2(-S), EN140E2(-S) & EN210E2(-S)

The EN "E" Series is a direct-mount line of actuators that operates on 24 VAC or VDC power and is available for use with resistive controllers. These bidirectional actuators do not require a damper linkage and are easily installed on a round shaft up to a 3/4" (20 mm) diameter or a square shaft up to 5/8" (16 mm). They can also be mounted to valves (ball, globe, and butterfly) using one of the many valve linkage kits available through Dodge Engineering & Controls.

The EN models deliver up to 210 in-lb (24 N-m) of torque. The angle of rotation is mechanically adjustable from 0° to 90° in 5° increments. Integral auxiliary switches are available to indicate end-stop position or to perform switching functions at any angle within the selected rotation range. Position feedback is available through switches or a 0 (2) to 10 VDC signal.

Torque Minimum: EN70E2: 70 in-lb; EN140E2: 140 in-lb; EN210E2: 210 in-lb.

Application: EN Series actuators are designed to position air dampers and valves in HVAC systems. Applications include: positioning return air or exhaust dampers; controlling face and bypass dampers; positioning blades for variable volume fans; positioning ball, butterfly or globe valves. Refer to the manufacturer's information to size properly the damper, valve and/or actuator. Spring return actuators, such as Dodge Engineering's ES Series, are recommended for use with outdoor air dampers in cold climates.

Operation: EN Series actuators operate on 24 VAC at 50/60 Hz or 24 VDC. These compact actuators use a DC motor with stall detection circuitry that operates throughout the entire stroke. The resistive actuators employ noise filtering techniques on the control signal to eliminate response to spurious noise.

Rotation is mechanically limited to 93° by integral end-stops. The position of the actuator is visually indicated from 0° to 90° on the cover. An anti-rotation bracket prevents lateral movement of the actuator. For hand positioning the coupler, pressing the spring-loaded gear release on the actuator cover can manually disengage the gear train.
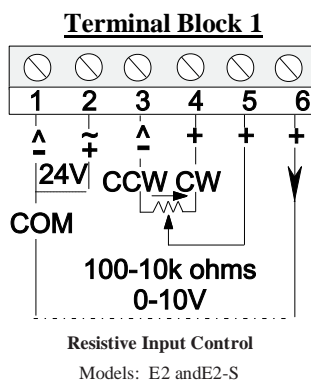
Non-Spring Return 24 VAC/VDC Electronic Actuators, Resistive EN70E2(-S), EN140E2(-S) & EN210E2(-S)

Technical Data	EN70E2(-S)	EN140E2(-S)	EN210E2(-S)
Power supply	20 to 30 VAC, 24 VDC ±10%, 50/60 Hz		
Transformer sizing	7.5 VA class 2 power soure req. for UL		
Electrical connection	screw terminals for 22 to 14 AWG (max. of two 18-22 AWG/terminals)		
Control signal	100 to 10,000 Ω		
Factory setting	direct (CW) with signal increase		
Feedback signal	0 to 10 VDC for 90° (1 mA at 10 VDC)		
Input impedance	1.8 MΩ		
Switch contact rating (-S option)	two SPDT rated @ 24 VAC, 1.5 A inductive, 3 A resistive (3.5 VA max. per switch)		
Mechanical connection (shaft size)	3/8" to 3/4" (10 mm to 20 mm) diameter round shaft 3/8" to 5/8" (10 mm to 16 mm) square shaft		
Angle of rotation	0° to 90° in 5° increments, mechanical limitation 93°		
Torque	70 in-lb (8 N-m) constant	140 in-lb (16 N-m)	210 in-lb (24 N-m)
Direction of rotation	jumper selectable		
Position indication	clip-on indicator		
Running time	25-50 secs for 0-70 in-lb (0-8 N-m)	70-115 secs For 0-140 in-lb (0-16 N-m)	115-175 secs For 0-210 in-lb (0-24 N-m)
Humidity	0 to 95% RH non-condensing		
Ambient temperature	-40°F to 122°F (-20°C to 50°C)		
Storage temperature	-40°F to 186°F (-40°C to 86°C)		
Housing type*	NEMA 2, IP42		
Agency listings	UL 873 listed; CSA C22.2, CE 89/336/EEC		
Noise level	<45 dBA @ 1 m		
Servicing	maintenance free		
Quality standard	ISO 9002		
Weight	2.9 lbs (1.3 kg)		

Note:
* Most commercial assemblies are available with an optional NEMA 4/4X type housing. See applicable data sheet for details.

Wiring Diagrams

Terminal Block 1

1 | 2 | 3 | 4 | 5 | 6
∧ | ~ | ∧ | + | + | +
∼ | + | ∼

24V   CCW CW

COM

100-10k ohms
0-10V

Resistive Input Control
Models: E2 and E2-S

Note:
Terminals 3 and 4 function as CCW and CW references when the Resistive models are in the DA mode, but as CW and CCW references when these models are in the RA mode.

Terminal Block 2

Switch S1   Switch S2
10°   80°

NC ⟍NO   NO⟋ NC

21   22   23   24   25   26

Auxiliary Switches

(Shown Factory Set)
Model: E2-S