

**CRA Series**  
**Electric Capacitor-Return Rotary-Motion Actuators**

**Features and Benefits**

*Low Noise Rating of Maximum 55 dBA when running*

- Meets audible requirements for open ceiling

*At least 60,000 Life Cycles*

- Extends actuator life due to improved technology

*Direct Shaft Mount*

- Simplifies installation in any convenient orientation

*Fail-safe Operation*

- On power shutdown, built-in capacitor returns controlled device to normal position
- Provides torque protection for the controlled device without limit switches

*Switch-Selectable Direction of Rotation (Modulating Models only)*

- Simplifies installation

*0(2)-10 VDC/0(4)-20 mA Feedback Signal (Modulating Models Only)*

- Provides simple, closed-loop control with accurate position sensing

*Automatic Stop at End of Rotation in Each Direction*

- Avoid excessive wear or drive time on the motor

*Angle of Rotation with Mechanical End Stops from 30° to 90° at 10° Increments*

- Allows application versatility requiring less than 90° rotation

*Optional Auxiliary Switches (On-Off Models Only)*

- 2xSPDT switches available

**General**

The CRA Series electric capacitor-return rotary-motion actuators are designed for use with 2-wire on-off or 2-wire modulating controllers. These capacitor-return actuators are used to position dampers, ball valves and butterfly valves in typical HVAC control applications. They are also



used to position the blades in VAV boxes.

A controller provides a control signal, causes the actuator motor to rotate in the proper direction and moves the damper blade or valve open or closed. To avoid unnecessary excessive wear or drive time on the motor, a controller that provides a time-out function to remove the signal at the end of rotation is recommended.

The CRA Series actuators are electric capacitor-return rotary-motion actuators for 2-wire on-off or 2-wire modulating control actions. The 2-wire on-off actuators are available with 24 VAC/VDC or 230 VAC power supply while modulating actuators are available with 24 VAC/VDC power supply only.

A built-in capacitor in the actuator is charged up when power is turned on. The capacitor will discharge and return the actuator to its original position when power is interrupted.

These bi-directional actuators do not require a damper linkage and are easily installed on a damper with:

<u>Round Shaft (Φ)</u>	<u>Square Shaft</u>
10 to 20 mm (3/8" to 3/4")	8 to 14 mm (5/16" to 9/16")

They may also be mounted to a ball valve or butterfly valve which comes with a direct-couple mounting bracket and an extended valve shaft.

Rotation is mechanically limited to 95° by integral end-stops. The position of the actuator is marked from 0 to 90° on the gear box faceplate. The actuator rotation angle can be set from 30° to 90° at 10° increments. Standard factory setting is 90°.

### **Modulating Models Only**

#### **Direction of Rotation Switch Position Selection**

CW is set for clockwise rotation with DA control action and CCW for counter clockwise rotation with RA control action. The factory setting is for CW. Can be changed in the field to CCW by moving the switch from CW to CCW position on the actuator enclosure.

#### **Feedback Signal**

The CRA Series actuators are provided with 0(2)-10 VDC/0(4)-20 mA position feedback signal.

### **On-Off Models Only**

#### **Optional Auxiliary Switches**

The CRA Series actuators are available with two

built-in auxiliary switches as an option on all on-off models, allowing position feedbacks.

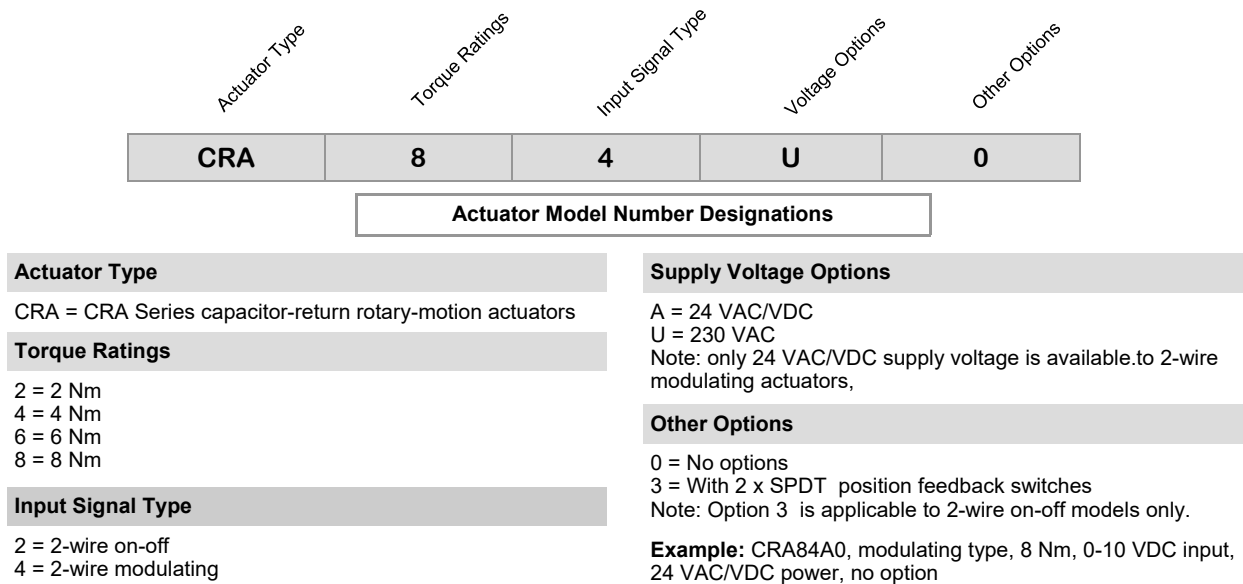
#### **Ordering**

To order, specify complete model number. For modulating models, factory setting is for 0-10 VDC input. If 4-20 mA input is required, specify when ordering.

#### **Replacement and Repair**

Field repairs must not be made and no field replacement parts are available.

Figure 1: Actuator Model Number Selection Guide



## Specifications

Product model numbers	See Figure 1: Actuator Model Number Selection Guide		
Power supply	2-wire on-off: 24 VAC/VDC or 230 VAC 2-wire modulating: 24 VAC/VDC only		
Power consumption	Operating: 15 W maximum Holding: 6 W		
Input control signal	2-wire on-off: 24 VAC/VDC or 230 VAC 2-wire modulating: 0(2)-10 VDC/0(4)-20 mA		
Input signal impedance (modulating models)	1,000,000 $\Omega$ for voltage input; 500 $\Omega$ for current input		
Feedback signal (modulating models only)	0(2)-10 VDC (1 mA); 0(4)-20 mA (maximum load impedance 500 $\Omega$ )		
Auxiliary switches (2-wire on-off models only)	Settings: S1 fixed at 10° S2 adjustable from 10° to 90° Contact ratings: 250 VAC 3 A		
Electrical connection	500 mm long cable with color-coded wires		
Mechanical connection	10 to 20 mm (3/8" to 3/4") round shaft or 8 to 14 mm (5/16" to 9/16") square shaft		
Protection class	IP54		
Cycles of operation	At least 60,000		
Torque ratings	2, 4, 6, or 8 Nm		
Rotation range	30-90° in 10° increments, mechanically limited to 95°; factory set at 90°		
Actuator motor type	Bi-directional brushed DC motor		
Running times (full travel with load))	On-off Models	Modulating Models	
	Initialization:	15 s	15 s
	Stroke:	14 to 20 s	30 to 40 s
	Return:	20 s	20 s
Audible Noise Rating	Maximum 55 dBA when running		
Ambient Conditions	Operating: -5 to 50°C (23 to 122°F); 0-95% RH, non-condensing Storage: -30 to 70°C (-22 to 158°F); 0-95% RH, non-condensing		
Agency Approval	CE Mark compliant pending		
Dimensions	See Figure 2: Dimensions		
Shipping Weights	1.5 kg (3.3 lb.)		

*The performance specifications above are nominal and subject to tolerances and application variables of generally acceptable industry standards. The Manufacturer shall not be liable for damages resulting from misapplication or misuse of its products.*

**CAUTION:** Equipment Damage Hazard. Do not install the actuator in atmospheres where explosive or corrosive vapors or escaping gases are present. This could result in damage to the unit.

**WARNING:** All RCA Series actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

### Direction of Rotation Switch Location (Modulating Models Only)



Figure 2: Dimensions

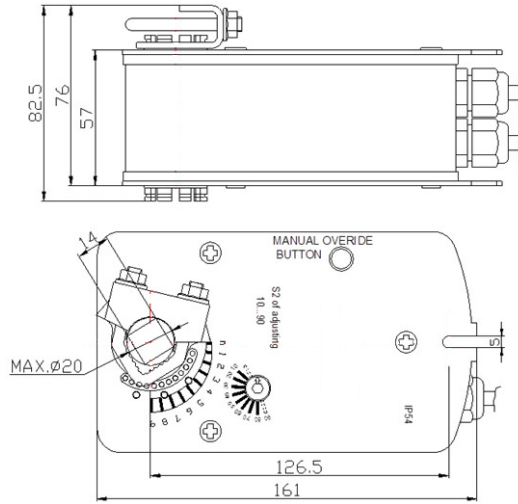
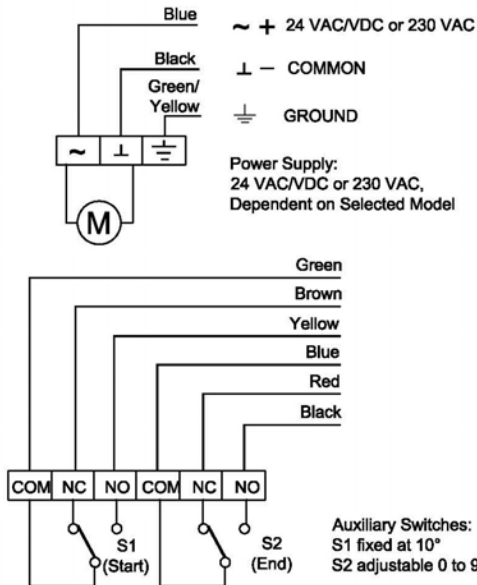
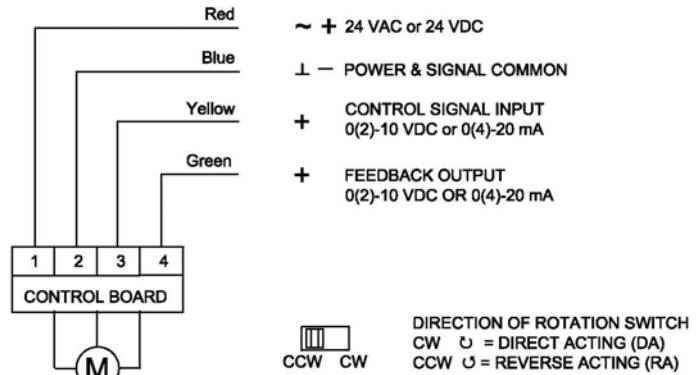


Figure 3: Wiring Diagrams

For 2-Wire On-Off Actuators



For 2-wire Modulating Actuators



**Mega Controls Limited**  
 Room 1225, Star House  
 3 Salisbury Road, Tsimshatsui, Kowloon, Hong Kong  
 WhatsApp Text & Call: +852 5404 4590 E-mail: sales@megacontrols.com Website: www.megacontrols.com