EDA-8100 Electric Damper Actuator
Incremental Control with Spring Return

The EDA-8100 Electric Damper Actuator provides clockwise and counterclockwise incremental control of dampers and mounts directly on the damper drive shaft, eliminating the need for costly and complicated linkage combinations.

The mechanically limited torque output of 100 in-lb provides long actuator life, protection of the controlled equipment, and minimal setup and calibration time.

The EDA-8100 Electric Damper Actuator operates on 24 VAC power. It can be ordered with clockwise or counterclockwise return to normal.

### Features and Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tbody>
<tr>
<td>Direct Mount</td>
<td>Simplifies installation</td>
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<tr>
<td>Over Torque Protection (Patent Pending)</td>
<td>Eliminates the need for setup or maintenance of limit switches. Extends the life of the actuator.</td>
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<tr>
<td>Up to 90 Degree Clockwise or Counterclockwise Rotation</td>
<td>Increases application versatility</td>
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<tr>
<td>Precise Positioning Based on 24 VAC Incremental Input Signals</td>
<td>Assures compatibility with most HVAC controllers</td>
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<tr>
<td>Coupler Fits 10 to 12 mm (0.394 to 0.472 in.) Square or 7/16 to 1/2 in. (11 to 12.5 mm) Round Damper Shafts</td>
<td>Increases application versatility</td>
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<tr>
<td>Designed to Meet 300,000 Driven Cycles</td>
<td>Provides longer actuator life</td>
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<tr>
<td>Metasys® Network Compatible</td>
<td>Provides seamless integration for efficient, cost-effective, facility-wide control</td>
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Applications

The EDA-8102 is designed to regulate control air dampers in HVAC systems. Typical applications include:

- positioning of D-1300 Series Dampers
- outdoor air, return air, or exhaust dampers
- face and bypass control
- blade positioning for variable volume fans

Refer to damper manufacturer’s information to properly size the damper and actuator. Return to normal actuators are recommended for use with outdoor air dampers.

Operation

The EDA-8100 Electric Damper Actuator provides a stall torque output of 100 in·lb with incremental control of dampers. It can also be used in a variety of other applications at 80 in·lb continuous load.

The EDA-8100 is used on dampers having externally accessible 10 to 12 mm (0.394 to 0.472 inch) square or 7/16 to 1/2 inch (11 to 12.5 mm) round shafts.

It is compatible with Johnson Controls D-1300 Dampers as a direct mount actuator. The EDA-8100 housing has additional mounting slots to aid adaptation to unusual applications. Several kits are available to solve virtually any mounting situation.

The EDA-8100 spring return actuator will drive the damper through a full stroke cycle of 90 degrees in 180 seconds. The spring return provides 100 in·lb of torque to return the damper blades to a normal position upon loss of power.

Note: The spring return feature is intended only as a safety feature to drive the actuator during a power interruption. Continuous use of the spring return during normal operation shortens the life of the actuator.

In typical incremental operation, a controller provides 24 VAC to the Clockwise (CW) or Counterclockwise (CCW) terminal on the actuator depending on the desired movement of the damper. This signal causes the motor to rotate in the proper direction and moves the damper blades open or closed. When no control signal is present, the actuator holds its position.

The actuator is energized as long as the 24 VAC signal is present. Therefore, it is more efficient to pulse the signal to the actuator, which will prevent excessive drive time of the motor. The use of a controller and/or software that provides a time out to remove the signal at the end of rotation is preferred to leaving the signal applied to the actuator at all times.

When no control signal is present, the actuator holds its position.

When no 24 VAC power is present, the spring return drives the actuator to the mechanical limit. This will drive the damper blades to an open or closed position (clockwise or counterclockwise, based on model selection).
Installation

Kit Includes

- EDA-8100-110X Electric Damper Actuator for direct shaft mounting (0 = counterclockwise spring return, 1 = clockwise spring return)
- two No. 10 mounting screws
- two isolation grommets

Tools Required

- screwdriver, flat-blade, 1/4 to 5/16 inch and 1/8 inch tips
- drill, 5/32 inch (4 mm) and 11/64 inch drill bits, 1-1/4 inch (32 mm) hole saw
- adjustable wrench
- pliers

Accessories

- D-9999-142 blade pin extension for JCI D-1300 dampers
- D-9999-134 blade pin extension for JCI D-1300 dampers (includes D-3153-105)
- D-3153-105 universal mounting bracket if mounted on duct or wall less than 16 gauge
- EDA-8000-101 adjustable bracket for spanning channels or objects

Dimensions

Note: The actuator requires a minimum damper shaft length of four inches from the mounting surface. When determining shaft length, consideration has to be given to channel depth, insulation, etc. Refer to the following dimensional drawings.

Before starting the job, obtain the damper installation information to use as a reference when mounting the actuator.

Figure 2: Cover Removal Dimensional Requirement

Figure 3: Dimensions (inches/mm)
If access to the damper shaft is limited, or internal mounting is required, mount the actuator remotely by installing a six inch long, 1/2 inch diameter rod into the coupler and use linkage accessories shown in the Damper Accessory Kits, Order No. 268.1-100 located in the Damper and Actuator Manual, FAN 268.1.

Mounting

CAUTIONS:
- Follow NEC and local electrical codes.
- Disconnect power supplies.
- Observe the ranges and limitations found in Specifications.
- Do not install the actuator in applications where its failure could result in personal injury and/or loss of property.
- Do not install if explosive vapors, corrosive vapors, or escaping gases will be present.
- Add protective control devices, as needed, to prevent undesirable system failure modes.

Note: Use of the actuator’s top and bottom center mounting slots with the isolation grommets is the preferred mounting arrangement when using shafts 10 mm (0.472 inch) square or 7/16 inch (11 mm) round or larger. If the duct or wall is less than 16 gauge (0.06 inch or 1.5 mm), use the Universal Mounting Bracket (D-3153-105).

When using the blade pin extension and/or the universal mounting bracket, follow installation procedures packaged with the product.

Standard Mounting

The EDA-8100 is not position sensitive and can be mounted in any convenient orientation on a duct or wall that is 16 gauge (0.06 inch or 1.5 mm) or thicker as long as the drive shaft is perpendicular to the mounting surface of the actuator.
Wiring

CAUTION: Disconnect all power before wiring the actuator to avoid electrical shock or damaging the equipment.

1. If the cover was replaced after installation, insert a screwdriver under the edge of the plastic cover and carefully pry off the cover as shown in Figure 5.

2. Insert the conduit and wires from the controller through one of the three conduit openings.

3. Install the black plugs in the other two openings. See Figure 6.

4. Connect the leads to Terminal Block 1 (TB1) as shown in Figure 7.

Figure 5: Removing Cover

Figure 6: Conduit Openings

Figure 7: Identification of Wiring Connections
Checkout Procedure

Follow these steps to verify operation after all wiring connections have been completed:

1. Apply power to the unit.
2. Refer to the controller’s manual for directions on checking out a newly installed device.
3. Use the controller to drive the actuator fully clockwise and counterclockwise.
4. Verify that the damper blades fully open and close.
5. Install the plastic cover and checkout is completed.

Ordering Information

<table>
<thead>
<tr>
<th>Product Code Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>EDA-8100-1100</td>
<td>Electric Damper Actuator, incremental, with 180 second travel time for 90 degrees, counterclockwise spring return</td>
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<tr>
<td>EDA-8100-1101</td>
<td>Electric Damper Actuator, incremental, with 180 second travel time for 90 degrees, clockwise spring return</td>
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</table>
Unit Replacement

The EDA-8100 is not field repairable. For a replacement, contact the nearest Johnson Controls branch office or your wholesale distributor.
### Specifications

<table>
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<tr>
<th><strong>Product</strong></th>
<th>EDA-8100 Incremental Damper Actuator Incremental Control with Spring Return</th>
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<tbody>
<tr>
<td><strong>Power Requirements</strong></td>
<td>24 VAC (20 to 30 VAC) at 50/60 Hz, 356 to 607 mA (479 mA nominal)</td>
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<tr>
<td><strong>Electrical Connections</strong></td>
<td>Screw terminals</td>
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<tr>
<td><strong>Control Signal</strong></td>
<td>24 VAC (20 to 30 VAC) at 50/60 Hz, 1 mA (maximum), 0.024 VA (maximum)</td>
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<tr>
<td><strong>Ambient Operating Conditions</strong></td>
<td>-20° to 150°F (-29° to 65°C) 90% RH maximum, non-condensing</td>
</tr>
<tr>
<td><strong>Ambient Storage Conditions</strong></td>
<td>-20° to 150°F (-29° to 65°C) 90% RH maximum, non-condensing</td>
</tr>
<tr>
<td><strong>Dimensions (H x W x D)</strong></td>
<td>9.25 in. x 4.5 in. x 4.375 in. (235 mm x 114 mm x 111 mm)</td>
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</table>
| **Mechanical Output** | Stall Torque: 100 in·lb  
Spring Return: 100 in·lb  
Continuous Use Rating: 80 in·lb |
| **Maximum Damper Area** | 16 sq ft based on a closing torque of 4.8 in-lbs/sq ft at 1.25 in. WG closed static pressure and 1000 FPM fully open approach velocity |
| **90° Rotation Time** | 180 seconds during normal powered operation  
8 second spring return if power is lost or interrupted |
| **Drive Shaft** | 10 mm (0.394 in.) to 12 mm (0.472 in.) square and 7/16 in. (11 mm) to 1/2 in. (12.5 mm) round |
| **Shipping Weight** | 9.5 lbs (4.3 kg) |
| **Accessories** | 3/4 inch coupler kit--Product Code Number 8000-100  
Drive pin extension for JCI D-1300 Dampers--D-9999-142  
Universal mounting bracket for ducts less than 16 gauge--D-3153-105 |
| **Agency Compliance** | UL 916, CSA  
UL Listed as part of the Metasys Network |
| **Agency Listings** |  |
| **Accessories** | 3/4 inch coupler kit--Product Code Number 8000-100  
Drive pin extension for JCI D-1300 Dampers--D-9999-142  
Universal mounting bracket for ducts less than 16 gauge--D-3153-105  
Adjustable Mounting Bracket--EDA-8000-101 |

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.