TYPE EU & ER ELECTRIC ACTUATORS

EU and ER electric actuators offer the simplest, most economical, and reliable automatic control of quarter turn valves. The only requirement for installation is simple wiring from a convenient switch or centralized control center. The low-cost Type EU uni-directional electric actuators offer distinct price advantages over other available electric actuators. The reversible Type ER actuators provide maximum versatility as well as economy.

These compact actuators offer high-torque output and fast, reliable response. All components are contained in a rugged housing that protects internal components. The EU and ER units are rated for NEMA 4 and 4X. All actuators have self-lubricating shaft bearings, and the gear box is lubricated and sealed at the factory. No subsequent lubrication is required.

FEATURES AND BENEFITS

**Maximum Allowable Duty Cycle**
- Units with AC motors have a maximum allowable duty cycle of 25% at an ambient temperature of 80°F (27°C), allowing these actuators to fill practically every service application. DC units have a maximum allowable duty cycle of 85% at ambient temperature.

**Versatile Actuator Mounting Design**
- Actuator mounting provides for rigid vibration proof attachment of the actuator to the valve.
- The actuator female square drive is directly aligned with the valve stem, avoiding side thrust.
- Actuator can be mounted in any orientation for maximum installation flexibility.

**Rugged Enclosures Protect Drive Train in Severe Services**
- Heavy-duty enclosures guard against drive-train misalignment or changes in settings.
- Easy access to internal components is provided if resetting switches or rewiring is ever required.

**Thermally Protected Motors**
- AC motors have a thermal overload device built into the motor winding to prevent motor damage.

**Motor Brake**
- All ER actuators are equipped with motor brakes as standard. (Not available on EU actuators.)

**Weatherproof Enclosures Available for Exposed or Hazardous Locations**
- All EU and ER actuators have watertight NEMA 4 and 4X enclosures and are CSA-approved (pending on FM). CE Marking available.

**Declutchable Manual Override**
- All ER actuators are equipped with a declutchable manual override. (Not available on EU actuators.)

**Low Profile Design**
- Low profile design is perfect for applications with limited space environments.
**SPECIFICATIONS**

**Temperature:**
-40˚F (-40˚C) to +150˚F (+66˚C) with heater and thermostat
Heater recommended below +40˚F (+4˚C)

**Conduit Connection:**
1/2” NPT

**Enclosure:**
NEMA 4, 4X

**Duty Cycle:**
- AC units: 25%
- DC units: 100%

**Approximate Weight:**
6 lb (3 kg)

**Lubrication:**
Permanently lubricated gear train & bearings

**Options:** (Refer to Bulletin A121-2 for Option details)
- Extra Single Limit Switch (EU only) SPDT
- Two Extra Limit Switches (ER only) SPDT
- Heater with Thermostat 115V, 15 watts / 230V, 30 watts*
- Other voltages available - consult factory

* DC heater options require factory installation

---

### Actuator Model Specifications

<table>
<thead>
<tr>
<th>Actuator Model</th>
<th>Torque Output</th>
<th>Speed (seconds)</th>
<th>Amperes at stall</th>
<th>Max. Amperes at Rated Torque*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FT•LBS N•m</td>
<td>115/230 VAC 24 VDC</td>
<td>115 VAC 230 VAC 24 VDC</td>
<td></td>
</tr>
<tr>
<td>EU-12</td>
<td>12</td>
<td>5</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>EU-25</td>
<td>25</td>
<td>9</td>
<td>1.9</td>
<td>0.75</td>
</tr>
<tr>
<td>EU-50</td>
<td>50</td>
<td>16</td>
<td>1.9</td>
<td>0.9</td>
</tr>
<tr>
<td>ER-12</td>
<td>12</td>
<td>5</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>ER-25</td>
<td>25</td>
<td>9</td>
<td>1.0</td>
<td>0.75</td>
</tr>
<tr>
<td>ER-50</td>
<td>50</td>
<td>16</td>
<td>1.0</td>
<td>0.9</td>
</tr>
</tbody>
</table>

* Inrush current is approximately 3 times max. amperes at rated torque.

---

### Wiring Diagrams

#### Series ER DC

#### Series ER AC

---

---
WIRING DIAGRAMS (Continued)

Series EU, AC, DC

Terminal Strip

1. BLK
2. WHT
3. COM
4. NO
5. NC
6. RED
7. RED
8. WHT
9. BLK

DC Negative, AC Neutral
DC Positive, AC Hot, Opt. Heater
DC Positive, AC Hot, 0 & 180 Control
DC Positive, AC Hot, 90 & 270 Control
0 & 180 Indication
90 & 270 Indication
NC
Aux. Limit Switch Com
NO

BILL OF MATERIALS AND PARTIAL PARTS LIST

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Limit Switch</td>
</tr>
<tr>
<td>2</td>
<td>Cam</td>
</tr>
<tr>
<td>3</td>
<td>O-Ring</td>
</tr>
<tr>
<td>4</td>
<td>Override Shaft (ER only)</td>
</tr>
<tr>
<td>5</td>
<td>Capacitor (ER only)</td>
</tr>
</tbody>
</table>

DIMENSIONS

ER Models Only

1/2-14 NPT Conduit Entry

Mounting Configuration

EU, ER

Bolt Circle Thread
F03: 1.417 (38) M5x0.8-Hx9.5
*F05: 1.968 (50) M6x1.0-Hx10.5

S: 0.55 in. (14 mm)
Female 8-point drive
* All EU/ER units mount to F05 linkages
HOW TO ORDER TYPE EU AND ER ELECTRIC ACTUATORS

To specify a complete actuator code, simply make a selection from each of the boxes below.
Example: Uni-directional 12 FT•LBS actuator for 115 VAC would be coded as an EU12-01Q–, as shown below:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>12</td>
<td>01</td>
<td>Q</td>
<td>–</td>
</tr>
</tbody>
</table>

1. Actuator Type
   - EU: Uni-Directional Weatherproof Electric Actuator
   - ER: Reversible Weatherproof Electric Actuator

2. Actuator Size
   - 12: 12 FT•LBS (16.3 N•m) Torque Output (All)
   - 25: 25 FT•LBS (33.9 N•m) Torque Output (All)
   - 50: 50 FT•LBS (67.8 N•m) Torque Output (All)

3. Voltage
   - 01: 115 VAC
   - 02: 230 VAC
   - 08: 24 VDC

4. Drive Configuration
   - Q: Female Square

5. Options
   - VCT: Cycle Timer¹
   - HR: Heater with Thermostat²
   - L1: Single Limit Switch (EU only)
   - L2: Two Limit Switches (ER only)¹

1. These two options cannot be combined.
2. DC Heater is factory installed only.

* Other voltages available – consult factory.

HOW TO ORDER ACCESSORY KITS FOR ELECTRIC ACTUATORS

To order an accessory for an ER or EU actuator that is to be field-retrofitted, specify the kit numbers shown at right.

**EXAMPLE:** To order a separate heater with the actuator specified at the top of the range, simply request an EK5098-01.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle Timer (115 VAC)</td>
<td>EK5127, EK5127</td>
</tr>
<tr>
<td>Heater 115 VAC</td>
<td>EK5098-01, EK5098-01</td>
</tr>
<tr>
<td>Heater 230 VAC</td>
<td>EK5098-05, EK5098-05</td>
</tr>
<tr>
<td>Heater 24 VDC</td>
<td>EK5098-08, EK5098-08</td>
</tr>
<tr>
<td>Single Limit Switch</td>
<td>EK5100, N/A</td>
</tr>
<tr>
<td>Two Limit Switches</td>
<td>N/A, EK5101</td>
</tr>
<tr>
<td>Tropical Heater (115 VAC)</td>
<td>EK5123, EK5123</td>
</tr>
</tbody>
</table>

* Tropical heater turns on below 90°F (32°C) and shuts off at 110°F (43°C). Designed for excessively moist environments.

Installation Instructions, Maintenance and Operation

IMO’s (Installation, Maintenance, and Operating instructions) or AMI’s (Assembly, Mounting, and Installation instructions) are shipped with the products. Additional copies of these instructions are available. Call your local Metso Automation Distributor, or visit our web site.

Metso Automation, Field Systems Division

Europe, Levytie 6, P.O.Box 310, 00811 Helsinki, Finland. Tel. int. +358 20 483 150. Fax int. +358 20 483 151

Europe (UK), 2 Lindenwood, Crockford Lane, Chineham Business Park, Basingstoke, RG24 8QY UK. Tel. int. +44 (0) 8706 061478. Fax int. +44 (0) 1256 707661

North America, 44 Bowditch Drive, P.O.Box 8044, Shrewsbury, Massachusetts, 01545-8044 USA. Tel. int. +1 508 852 0200. Fax int. +1 508 852 8172

Latin America, Av. Central, 181- Chácaras Reunidas, 12238-430, São Jose dos Campos. SP BRAZIL. Tel. int. +55 12 3935 3500. Fax int. +55 12 3935 3535

Asia Pacific, 501 Orchard Road, #05-09 Wheelock Place, 238880 Singapore. Tel. int. +65 735 5200. Fax int. +65 735 4566

www.jamesbury.com