A-Series Industrial Electric Actuator
(600 to 18,000 lb-in)

Description
The A-Series quarter-turn industrial electric actuator features a compact, reliable design that mounts directly to Siemens resilient seat butterfly valves without the need for brackets and linkages. Available in torque outputs from 600 to 18,000 lb-in (68 to 2,033 Nm), 24V and 120 Vac, Two-position (On/Off) and Modulating units all in NEMA 4x and IP65-rated housings.

Features
- Compact, lightweight design and direct mounting
- High visibility Beacon position indicator
- Manual, declutchable override handwheel
- Terminal strip for cable terminations
- Servo NXT option for modulating control
- Travel limit cams adjustable by hand or screwdriver
- UL-approved (120 Vac only)
- On/off or modulating control
- Available in 120, 24 Vac 50/60 Hz, single-phase, 24 Vdc voltages
- Output torque 600 lb-in (68 Nm) to 18,000 lb-in (2,033 Nm)
- ISO 5211 for direct mounting
- All actuators include a heater to prevent condensation build-up
- All modulating units include a feedback potentiometer

Servo NXT Features
(for Modulating Actuators)
- Provides precise modulating control of valve position
- Single Finger Technology (SFT) menu driven, pushbutton, programming with LED confirmation of all settings:
  - Input Control – 4 to 20 mA, 0 to 10 Vdc, 0 to 5 Vdc or 2 to 10 Vdc
  - Position Feedback – 4 to 20 mA, 0 to 10 Vdc, or 0 to 5 Vdc
  - Auto Calibrating
  - Fail Position:
    - Loss of supply power - fail-in-place
    - Loss of control signal - selectable
  - Adjustable Speed Control
- Including:
  - Manual mode
  - Onboard signal generator to simplify field set-up
  - Fault display – Simplifies troubleshooting
  - Stall detection – Eliminates mechanical damage in case of obstruction or bad switch settings
- Optical isolation of all inputs/outputs
  - Provides interoperability with all controllers
  - Earth ground tolerant
  - Allows for parallel operation

Applications
These actuators are ideal for use on valves for chillers, cooling towers, boilers, heat exchangers and other outdoor applications. The actuators’ advanced electronics assure reliable compatibility with virtually any analog control signal used in today’s building automation and temperature control systems.
## Specifications

<table>
<thead>
<tr>
<th>Operating Conditions</th>
<th>Ambient Temperature</th>
<th>-20°F to 150°F (-29°C to 65°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fail Position</td>
<td>Loss of supply power - fail-in-place</td>
<td></td>
</tr>
<tr>
<td>Motor Insulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 Vac</td>
<td>Class F, 311°F (155°C) thermal trip at 275°F (135°C)</td>
<td></td>
</tr>
<tr>
<td>24 Vac/dc</td>
<td>Class B, Slow Blow Fuse 5A @ 250 Vac</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Description</th>
<th>Housing</th>
<th>ASTM B85 Pressure Die Cast Aluminum, Polyester Powder Coated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 Vac</td>
<td>Single-Phase, Reversible, Permanent Split Capacitor Induction Motor</td>
<td></td>
</tr>
<tr>
<td>24 Vac/Vdc</td>
<td>Single-Phase, Permanent Magnet-Brush D.C. Motor</td>
<td></td>
</tr>
<tr>
<td>Auxiliary/Limit Switches SPDT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 Vac</td>
<td>10A- 1/3 HP</td>
<td></td>
</tr>
<tr>
<td>12 Vdc</td>
<td>2A</td>
<td></td>
</tr>
<tr>
<td>Terminal Strip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch Plate</td>
<td>12 to 22 AWG (2.0 to 0.65 mm)</td>
<td></td>
</tr>
<tr>
<td>Servo</td>
<td>14 to 24 AWG (1.63 to 0.51 mm)</td>
<td></td>
</tr>
<tr>
<td>Heater</td>
<td>5-Watt, PTC style</td>
<td></td>
</tr>
<tr>
<td>Dimensions and weight</td>
<td></td>
<td>See Dimensions.</td>
</tr>
<tr>
<td>Enclosure</td>
<td></td>
<td>Designed to meet NEMA Type 4, 4x and IP65 specifications</td>
</tr>
<tr>
<td>Travel stops</td>
<td></td>
<td>Externally adjustable at both 0 and 90 degrees.</td>
</tr>
<tr>
<td>Conduit entries</td>
<td>Two 1/2” NPT (BSP)</td>
<td></td>
</tr>
<tr>
<td>600 lb-in</td>
<td>Two 3/4” NPT</td>
<td></td>
</tr>
<tr>
<td>1200 lb-in and higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual operation</td>
<td>Pull to engage, push to disengage - 30:1 drive ratio, 12 and 18K lb.-in. models are 90:1</td>
<td></td>
</tr>
<tr>
<td>Certifications</td>
<td>UL508 certified (120 Vac only)</td>
<td></td>
</tr>
</tbody>
</table>
## Servo Specifications (for Use with Modulating Actuators)

<table>
<thead>
<tr>
<th><strong>Power Requirements</strong></th>
<th>120 Vac 50/60 Hz +/- 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 Vac 50/60 Hz +/- 10%</td>
</tr>
<tr>
<td></td>
<td>24 Vdc -10%, +30%</td>
</tr>
<tr>
<td></td>
<td>5 VA average (no load)</td>
</tr>
<tr>
<td></td>
<td>Fuse: 5A Slow Blow 5 mm × 20 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Input Signal</strong></th>
<th><strong>Control Signal</strong></th>
<th>4 to 20 mA, 0 to 10 Vdc, 0 to 5 Vdc, 2 to 10 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Impedance</strong></td>
<td>&gt;100 Meg Ohms (0 to 10V, 2 to 10V, 0 to 5V)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Output Signal</strong></th>
<th><strong>Operating Modes</strong></th>
<th>4 to 20 mA, 0 to 10 Vdc, 0 to 5 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output Impedance</strong></td>
<td>&lt;10 Ohms (0 to 5 Vdc, output, 0 to 10 V output)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 Ohms (4 to 20 mA output mode)</td>
<td></td>
</tr>
<tr>
<td><strong>Loop Voltage</strong></td>
<td>12 Vdc (4 to 20 mA output mode)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Resolution</strong></th>
<th><strong>Absolute Position Accuracy</strong></th>
<th>&lt;1%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dead Band Adjustment</strong></td>
<td>1% (+/- 0.5%) to 6% (+/-3%) (3% default)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1% minimum increment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Potentiometer Feedback Signal</strong></th>
<th><strong>Supply Voltage</strong></th>
<th>3.3 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>External Feedback Potentiometer</strong></td>
<td>1K to 10K Ohms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speed Control</strong></th>
<th><strong>Open/Close Speed</strong></th>
<th>0% to 100% (default). Step size: 20%. Actuator open/close speed as a percentage of full speed. (See motor speed specification for maximum 90° run times.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Operating Mode</strong></th>
<th><strong>Normal Mode</strong></th>
<th>Modulating – follow setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loss of Control Signal</strong></td>
<td>Selectable to Open, Close, or Last</td>
<td></td>
</tr>
<tr>
<td><strong>Loss of Supply Power</strong></td>
<td>Fail-in-place</td>
<td></td>
</tr>
<tr>
<td><strong>Reverse Acting Mode</strong></td>
<td>Configurable for inverted input signal</td>
<td></td>
</tr>
<tr>
<td><strong>Autocalibration</strong></td>
<td>Automatic endpoint detection</td>
<td></td>
</tr>
<tr>
<td><strong>Manual Operation</strong></td>
<td>Keypad electrical manual operation of actuator (Open, Stop, Close)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Torque Protection</strong></th>
<th><strong>Stall Detection</strong></th>
<th>Motor detected stationary &gt;2 seconds (600 to 6500 lb-in units only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Torque Limit</strong></td>
<td><em>(Optional)</em> externally connected Open/Close torque limit switch</td>
</tr>
<tr>
<td></td>
<td><strong>Electronic Torque Limit</strong></td>
<td><em>(Optional)</em> factory-programmable current/torque limit switch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Environmental</strong></th>
<th><strong>Ambient Temperature</strong></th>
<th>-20°F to 150°F (-29°C to 65°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compliance</strong></td>
<td>120V units comply with UL, cUL, and CSA. All models are CE certified</td>
<td></td>
</tr>
</tbody>
</table>

---

**CAUTION:**

Do not install or use the A-Series Industrial Electric Actuator in or near environments where corrosive substances or vapors could be present. Exposure of the electric actuator to corrosive environments may damage the internal components of the device and will void the warranty.
## Ordering Information

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Operating Mode</th>
<th>Voltage 50/60 Hz</th>
<th>Torque</th>
<th>90° Stroke Time*</th>
<th>Current Draw (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>24 Vac/dc</td>
<td>(lb-in)</td>
<td>(Nm)</td>
<td>Full Load</td>
</tr>
<tr>
<td>A126.600</td>
<td>On/Off</td>
<td>24 Vac/dc</td>
<td>600</td>
<td>68</td>
<td>60 sec. AC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40 sec. DC</td>
</tr>
<tr>
<td>A126.2K</td>
<td></td>
<td></td>
<td>2,000</td>
<td>226</td>
<td>60 sec.</td>
</tr>
<tr>
<td>A126.5K</td>
<td></td>
<td></td>
<td>5,000</td>
<td>565</td>
<td>60 sec.</td>
</tr>
<tr>
<td>A166.600</td>
<td>Modulating</td>
<td>24 Vac</td>
<td>600</td>
<td>68</td>
<td>60 sec.</td>
</tr>
<tr>
<td>A166.2K</td>
<td></td>
<td></td>
<td>2,000</td>
<td>226</td>
<td>60 sec.</td>
</tr>
<tr>
<td>A166.5K</td>
<td></td>
<td></td>
<td>5,000</td>
<td>565</td>
<td>60 sec.</td>
</tr>
<tr>
<td>A226.600</td>
<td>On/Off</td>
<td>120 Vac</td>
<td>600</td>
<td>68</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.1K</td>
<td></td>
<td></td>
<td>1,200</td>
<td>135</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.2K</td>
<td></td>
<td></td>
<td>2,000</td>
<td>226</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.3K</td>
<td></td>
<td></td>
<td>3,000</td>
<td>339</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.5K</td>
<td></td>
<td></td>
<td>5,000</td>
<td>565</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.6K</td>
<td></td>
<td></td>
<td>6,500</td>
<td>734</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A226.13K</td>
<td></td>
<td></td>
<td>13,000</td>
<td>1,470</td>
<td>110 sec.</td>
</tr>
<tr>
<td>A226.18K</td>
<td></td>
<td></td>
<td>18,000</td>
<td>2,034</td>
<td>110 sec.</td>
</tr>
<tr>
<td>A266.600</td>
<td>Modulating</td>
<td>120 Vac</td>
<td>600</td>
<td>68</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.1K</td>
<td></td>
<td></td>
<td>1,200</td>
<td>135</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.2K</td>
<td></td>
<td></td>
<td>2,000</td>
<td>226</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.3K</td>
<td></td>
<td></td>
<td>3,000</td>
<td>339</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.5K</td>
<td></td>
<td></td>
<td>5,000</td>
<td>565</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.6K</td>
<td></td>
<td></td>
<td>6,500</td>
<td>734</td>
<td>30 sec.</td>
</tr>
<tr>
<td>A266.13K</td>
<td></td>
<td></td>
<td>13,000</td>
<td>1,470</td>
<td>110 sec.</td>
</tr>
<tr>
<td>A266.18K</td>
<td></td>
<td></td>
<td>18,000</td>
<td>2,034</td>
<td>110 sec.</td>
</tr>
</tbody>
</table>

* Operating times shown are with 60 Hz power supply. Actuators with 50 Hz power supply will be 20% slower.

**NOTE:** 13K and 18K torque models are available starting July 2020.
**Wiring**

**NOTE:**
Use this A-Series Industrial Electric Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the electric actuator could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls intended to warn of, or protect against, failure or malfunction of the electric actuator.

**Figure 1.** 24 Vac/dc On/Off Wiring 600 and 2000 lb.-in. Models.

**Figure 2.** 24 Vac Wiring 5000 lb.-in. Models.

**Figure 3.** 120 Vac Wiring, All Models.
NOTES:
1. Command signal and feedback wires must be shielded and grounded for proper servo operation.
2. The command signal input (-) terminal is internally connected to the Servo neutral terminal. DO NOT connect the live to the neutral terminal on the servo.
3. Command signal and feedback signal must be isolated from each other and any other circuits. When using 0 to 10 Vdc, 0 to 5 Vdc, and 2 to 10 Vdc, the common of the command signal should NOT be ground/earth referenced.
4. Feedback loop is powered by the servo. Do NOT supply external power.
5. Command signal and feedback signal wires should be shielded properly, and shield should be grounded on one end only, preferably the controller end.
6. The 24V Servo (NXT) can be wired 3 or 4 wire configured.

Figure 4. 24 Vac Modulating.

Figure 5. 120 Vac Modulating.
Dimensions

<table>
<thead>
<tr>
<th>Actuator Model Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>Wt lbs (kgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axx6.600</td>
<td>7.5</td>
<td>5.8</td>
<td>5.6</td>
<td>1.0</td>
<td>1.94</td>
<td>.19</td>
<td>1/2</td>
<td>2.2</td>
<td>5/16-18</td>
<td>1/2-13</td>
<td>1.75</td>
<td>3.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Axx6.1K Axx6.2K       | 10.1 | 7.8 | 6.8 | 2.4 | 2.69 | .56 | 3/4 | 2.6 | 5/16-18 | 1/2-13 | .51 | 1.75 | 3.5 | -- | -- | -- | 13 |

| Axx6.3K Axx6.5K Axx6.6K | 12.1 | 9.5 | 7.2 | 2.9 | 3.19 | .56 | 3/4 | 3.1 | 1/2-13 | 3/4-10 | 1.18 | .67 | 2.22 | 8.0 | 8.0 | 8.0 | 28 |

| Axx6.13K Axx6.18K     | 12.1 | 9.5 | 12.5 | 8.1 | 9.2 | .56 | 3/4 | 8.3 | 1/2-13 | 3/4-10 | 1.18 | .67 | 2.22 | 8.0 | 8.0 | 8.0 | 28 |

Figure 6. Models Axx6.600 to Axx6.6K.

Figure 7. Models Axx6.13K and Axx6.18K.

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