Actuator Specifications

<table>
<thead>
<tr>
<th>Torque &quot;lb/Nm</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500&quot;lbs/400Nm</td>
<td>4400&quot;lbs/500Nm</td>
<td>5750&quot;lbs/650Nm</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>120vac</td>
<td>230vac</td>
<td>120vac</td>
</tr>
<tr>
<td>Max Inrush Current</td>
<td>3.8A</td>
<td>2.0A</td>
<td>3.8A</td>
</tr>
<tr>
<td>Running Current</td>
<td>1.9A</td>
<td>1.1A</td>
<td>2.0A</td>
</tr>
<tr>
<td>Motor</td>
<td>Split Phase Capacitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runtime (90°@60Hz)</td>
<td>16 sec</td>
<td>22 sec</td>
<td>28 sec</td>
</tr>
<tr>
<td>Runtime (90°@50Hz)</td>
<td>18 sec</td>
<td>25 sec</td>
<td>31 sec</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>25%, Proportional: Managed (75% maximum)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Starts</td>
<td>1200 per hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>47lbs/22kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Connections</td>
<td>ISO5211 F10 8pt 35mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Entry</td>
<td>(2) 3/4&quot; NPT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Terminations</td>
<td>12-16ga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Rating</td>
<td>NEMA 4/4X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual Override</td>
<td>7.6&quot; Handwheel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>On/Off-Jog, Proportional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuator Case material</td>
<td>Aluminum Alloy, Powder coated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Protection</td>
<td>230°F/110°C Thermal F* Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Totally Enclosed Non-Ventilated Motors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-22°F to +125°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Range</td>
<td>-30°C to +52°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electric actuators designed for load requirements ranging from 3500"lbs up to 5750"lbs. Each actuator comes standard with two auxiliary switches (Form C), an internal low power heater, a NEMA 4X environmental rating, and in 120vac and 230vac supply voltages. The P4/5/6 mechanical connections are ISO5211 compliant. The P4/5/6 Series can be ordered as an on/off (two position) model that can be used in bump/jog applications as well. Models can also be ordered with an internal proportional control card that accepts a wide range of control signals and generates multiple feedback signals for field use.

Product Family

<table>
<thead>
<tr>
<th>Voltage Options</th>
<th>Control Options</th>
<th>Special Designations</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-</td>
<td>RO</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>RO</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>RO</td>
</tr>
</tbody>
</table>

Note: Not all combinations are possible. Please consult factory.

- Duty cycle is defined as the ratio of total time vs. run time, and is a function of environmental conditions including ambient temperature, supply voltage and control signal stability
- Duty Cycle rating on all proportional control actuators is managed (75% maximum).
**Application Notes:**

1. These actuators are to be mounted ONLY between a horizontal and upright position.
2. When installing conduit, use proper techniques for entry into the actuator. Use drip loops to prevent conduit condensate from entering the actuator.
3. Both NPT conduit ports MUST use proper equipment to protect the NEMA 4X integrity of the housing.
4. The anti-condensate heater is to be used in ALL applications.
5. Do not install or store the actuator outdoors or in humid environments without power to the heater.
6. Use proper wire size to prevent actuator failure (see wire sizing chart).
7. Mechanical travel stops exist to prevent over-rotation for manual override only. They are not intended to stop motor driven rotation.
8. Do not parallel wire multiple actuators together without utilizing isolation relays! If this is your intention, please contact ProMation Engineering for a multiple actuator parallel wiring diagram.

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**Switch Logic Map and Switch/Cam Arrangement**

Switch sequencing data is provided in the table below to show the change-of-state points during the rotation of the actuator from OPEN to CLOSED and back again. The red bar indicates when that terminal makes with it's respective common.

SW1 and SW2 are set at the factory and should NOT be changed. The INCLUDED auxiliary switches SW3 & SW4 are for terminals 7 thru 12 and those setpoints may be modified if need be. When so optioned, SW5 & SW6 auxiliary switches are initially set to function the same as auxiliary switches SW3 & SW4.
Wiring Diagrams for P4/5/6 Series

- Field Control Device may be relay contact, Switch or Triac type.
- Pilot device 10A MAX. Auxiliary switches are rated 10A @ 250vac MAX.
- Terminals 7-12 are dry type Form C.
- Terminals accept 12-16ga solid/stranded wire.

SAMPLE DIAGRAM
Refer to the proper IOM for your actuator for the correct wiring diagram or visit www.promationei.com.

Wiring Diagram

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND Screw</td>
</tr>
<tr>
<td>2</td>
<td>Blk 11&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Blk 12&quot;</td>
</tr>
<tr>
<td>4</td>
<td>Red</td>
</tr>
<tr>
<td>5</td>
<td>Wht 11&quot;</td>
</tr>
<tr>
<td>6</td>
<td>Wht 12&quot;</td>
</tr>
<tr>
<td>7</td>
<td>Open PILOT*</td>
</tr>
<tr>
<td>8</td>
<td>Open COM*</td>
</tr>
<tr>
<td>9</td>
<td>Closed PILOT*</td>
</tr>
<tr>
<td>10</td>
<td>Closed COM*</td>
</tr>
<tr>
<td>11</td>
<td>Run OPEN</td>
</tr>
<tr>
<td>12</td>
<td>Run CLOSED</td>
</tr>
</tbody>
</table>

Wire Sizing Chart

<table>
<thead>
<tr>
<th>Actuator Voltage</th>
<th>MAX distance between Actuator and Supply (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120VAC</td>
<td>P4/5/6</td>
</tr>
<tr>
<td>230VAC</td>
<td>P4/5/6</td>
</tr>
<tr>
<td>120VAC</td>
<td>P4/5/6</td>
</tr>
<tr>
<td>230VAC</td>
<td>P4/5/6</td>
</tr>
<tr>
<td>16 Amps Wire Gage</td>
<td>3.8A</td>
</tr>
<tr>
<td>16 Amps Wire Gage</td>
<td>2.0A</td>
</tr>
<tr>
<td>14</td>
<td>342</td>
</tr>
<tr>
<td>14</td>
<td>1245</td>
</tr>
<tr>
<td>12</td>
<td>552</td>
</tr>
<tr>
<td>12</td>
<td>2010</td>
</tr>
<tr>
<td>10</td>
<td>844</td>
</tr>
<tr>
<td>10</td>
<td>3075</td>
</tr>
<tr>
<td>8</td>
<td>1435</td>
</tr>
<tr>
<td>8</td>
<td>5227</td>
</tr>
<tr>
<td>8</td>
<td>2142</td>
</tr>
<tr>
<td>8</td>
<td>7802</td>
</tr>
</tbody>
</table>

ProMation Premium Controller:
The Premium controller offers a full array of features - such as various control and feedback signals, alphanumeric readout, several fault indicators for operational diagnostics, extensive data logging that provides full proportional control for all industrial applications. ModBus communications are also an option on this controller.

Full Proportional Control Featuring:
- Autocalibration
- Programmable
- High resolution
- Alarm Outputs
- Data logging
- Simple User Interface
- Field Selection Friendly
- Thermal Management

Control Signal Inputs
(selectable using program menu):
0-10vdc, 1-5vdc, 2-10vdc, 4-20mA

Factory set with common isolated from ground. Ground reference is possible.

Feedback Signal Output
(Can be different than input):
0-10vdc, 1-5vdc, 2-10vdc, 4-20mA

Max Load: 250 ohms

Auxiliary Signal Output
(programmable):
Alarm Contacts allow for signaling of 5 different fault conditions.
2 Position Control
Contacts and capability for 2 position (only) override of the actuator.

<table>
<thead>
<tr>
<th>Signal</th>
<th>Input Impedance</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10vdc</td>
<td>140k ohms</td>
<td>50mV</td>
</tr>
<tr>
<td>1-5vdc</td>
<td>250k ohms</td>
<td>20mV</td>
</tr>
<tr>
<td>2-10vdc</td>
<td>140k ohms</td>
<td>40mV</td>
</tr>
<tr>
<td>4-20mA</td>
<td>250 ohms</td>
<td>80µA</td>
</tr>
</tbody>
</table>
ProMation Product Line

PL Series Linear Drive
Up to 4400lbs down/up force and up to 100mm (4") stem travel

P Series Non-Spring Return
55"lbs through 40,000"lbs. Quarter-Turn, with Manual Override
Available with On/Off/Jog or Proportional control. For 12vac/dc, 24vac/dc, 120vac, 230vac, 230v/3 phase, 380v/3 phase & 460v/3phase supplies.

PA~PD Series Spring Return
445"lbs through 2300"lbs. Quarter-Turn, both with and w/o manual override handwheel. Spring either CW or CCW. Available with On/Off control for 24vac/dc and On/Off or Proportional control for 120vac & 230vac supplies. Stepdown for 3phase available.

PBU Battery Back-Up Systems
Provides power sufficient to drive P Series actuators to field-selectable fail-safe positions. For P Series & PL Series actuators in On/Off and Proportional control modes. Available for 24/120/230vac actuators. 120vac/230 vac supply.