# Initial Electrical Characteristics

<table>
<thead>
<tr>
<th>Standard Resistance Range</th>
<th>Conducive Plastic Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>1K, 5K, 10K ohms</td>
<td></td>
</tr>
<tr>
<td>Total Resistance Tolerance</td>
<td>10 %</td>
</tr>
<tr>
<td>Independent Linearly</td>
<td>±2 % maximum</td>
</tr>
<tr>
<td>Effective Electrical Angle</td>
<td>240 ° ± 5 °</td>
</tr>
<tr>
<td>Output Smoothness</td>
<td>0.15 % maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dielectric Withstanding Voltage (MIL-STD-202, Method 301)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Level (1,500 V AC minimum)</td>
</tr>
<tr>
<td>70,000 Feet (500 V AC minimum)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insulation Resistance (500 VDC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 megohms minimum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pov Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+70 °C Single Section Assembly 0.14 watt/section</td>
</tr>
<tr>
<td>+125 °C 1 watt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theoretical Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essentially infinite</td>
</tr>
</tbody>
</table>

# Environmental Characteristics

<table>
<thead>
<tr>
<th>Operating Temperature Range</th>
<th>-40 °C to +125 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature Range</td>
<td>-55 °C to +125 °C</td>
</tr>
<tr>
<td>Temperature Coefficient Over Storage</td>
<td>±1,000 ppm/°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vibration (Single Section)</th>
<th>15 G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resistance Shift</td>
<td>±2 % maximum</td>
</tr>
<tr>
<td>Voltage Ratio Shift</td>
<td>±5 % maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shock (Single Section)</th>
<th>30 G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resistance Shift</td>
<td>±2 % maximum</td>
</tr>
<tr>
<td>Voltage Ratio Shift</td>
<td>±5 % maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Load Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resistance Shift</td>
</tr>
<tr>
<td>Rotational Life (No Load)</td>
</tr>
<tr>
<td>Total Resistance Shift</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moisture Resistance (MIL-STD-202, Method 103, Condition B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Resistance Shift</td>
</tr>
<tr>
<td>Insulation Resistance (500 VDC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP Rating</th>
<th>IP40 (potentiometer body)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IP65 (shaft and bushing interface only)</td>
</tr>
</tbody>
</table>

# Mechanical Characteristics

<table>
<thead>
<tr>
<th>Stop Strength (A &amp; R Bushings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C &amp; U Bushings)</td>
</tr>
<tr>
<td>45.19 N-cm (4 lb.-in.)</td>
</tr>
<tr>
<td>33.89 N-cm (3 lb.-in.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 ° ± 5 °</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting</td>
</tr>
<tr>
<td>Running Torque</td>
</tr>
<tr>
<td>Single or Dual Section (A &amp; R Bushings)</td>
</tr>
<tr>
<td>Single or Dual Section (C &amp; U Bushings)</td>
</tr>
<tr>
<td>0.21 to 1.06 N-cm (0.3 to 1.5 oz.-in.)</td>
</tr>
<tr>
<td>0.14 to 1.06 N-cm (0.2 to 1.5 oz.-in.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7-2.0 N-m (15-18 lb.-in.) maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight (Single Section, Metal Bushing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Each Additional Section)</td>
</tr>
<tr>
<td>12.7 grams nominal</td>
</tr>
<tr>
<td>4 grams nominal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended hand soldering using Sn95Ag5 no clean solder, 0.025 &quot; wire diameter.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soldering Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed circuit terminals, J-Hooks or solder lugs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer's trademark, date code, resistance, manufacturer's part number</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ganging (Multiple Section Potentiometers)</th>
<th>2 cups maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td>One lockwasher and one mounting nut is shipped with each potentiometer, except where noted in the part number.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

1 At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

Model 91, 92, 93 & 95 - Long Life Series

Product Dimensions

**Model 91 PC Pin Terminals, In-Line**

**Model 93 PC Pin Terminals, "L" Pattern**

**Model 95 Solder Lug Terminals, "Triangular" Pattern**

Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.
Model 91, 92, 93 & 95 - Long Life Series

**Product Dimensions**

**SHAFT TYPE "E" (USES BUSHING C)**

- SHAFT DIMENSIONS:
  - 0.79 ± 0.25 (20mm ± 1.0mm)
  - 3.16 (72mm)
  - 0.79 (20mm)
  - 6.32 ± 0.010 (/250 ± 0.0004) DIA

**SHAFT TYPE "G" (USES BUSHING A)**

- SHAFT DIMENSIONS:
  - 1.60 ± 0.38 (40mm ± 1.0mm)
  - 2.00 (50mm)
  - 1.954 (42mm)
  - 6.32 ± 0.010 (/250 ± 0.0004) DIA

**SHAFT TYPE "H" (USES BUSHING A)**

- SHAFT DIMENSIONS:
  - 5.486 ± 0.051 (140mm ± 0.020)
  - 6.32 ± 0.010 (/250 ± 0.0004) DIA

**TOLERANCES EXCEPT AS SHOWN:**
- .XX = ± 0.02
- .XXX = ± 0.005
- .XXXX = ± 0.0005

**Dimensions:**
- **MM**
- **INCHES**

**How to Order**

Part number for multiple section potentiometers must have a taper and resistance value for each section.

**ANTI-ROTATION LUG**

- A: Single .305" (7.8 mm) R, 90° CW
- B: No Lug

**BUSHING**

- A: Metal Plain 3/8" (9.53 mm) D x 3/8" (9.53 mm) L
- C: Metal Plain 1/4" (6.35 mm) D x 1/4" (6.35 mm) L
- R: Metal Plain 10 mm D x 9 mm L

**SHAFT LENGTH AVAILABLE ONLY IN BUSHING**

- Code Description
  - 16: 1/2" L
  - 20: 5/8" L
  - 24: 3/4" L
  - 28: 7/8" L
  - 32: 1" L

**METRIC**

- 16: 16 mm L
- 22: 22 mm L

**ELEMENT TAPER TYPE/TOLERANCE**

- L: Long Life Linear C-P ±10%

**RESISTANCE CODE**

- VALUE IN OHMS
  - (10) - 1 K
  - (13) - 5 K
  - (15) - 10 K

**Rohs Identifier**

- L: Compliant

**Model**

- 91: Single-Turn, In-Line PC Pins
- 92: Single-Turn, In-Line J-Hooks
- 93: Single-Turn, L-Pattern PC Pins
- 95: Single-Turn, Triangle-Pattern Solder Lugs

**Specifications**

- Boldface features are Bourns standard options.
- All others are available with higher minimum order quantities.

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http://www.potentiometers.com

For more information about this product, visit our website at:

www.potentiometers.com

Updated April 19, 2016

08/27/13

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