3590 - Precision Potentiometer

Features
- Bushing mount
- Optional AR pin feature
- Plastic or metal shaft and bushings
- Wirewound
- Solder lugs or PC pins
- Sealable (Full body seal)
- Designed for use in HMI applications

Electrical Characteristics
- Standard Resistance Range: 200 to 100 K ohms
- Total Resistance Tolerance: ±0.25 %
- Effective Electrical Angle: 360 ° ±10 °, ±0 °
- Absolute Minimum Resistance: 1 ohm or 0.1 % maximum (whichever is greater)
- Noise: 100 ohms ENR maximum
- Dielectric Withstanding Voltage (MIL-STD-202, Method 301): 1,500 VAC minimum
- Power Rating (Voltage Limited By Power Dissipation or 450 VAC, Whichever is Less):
  - +40 °C: 2 watts
  - +125 °C: 9 watt
- RPM (Operating): 1,000 megohms minimum
- Resolution: 200 maximum

Environmental Characteristics
- Operating Temperature Range: -40 °C to +125 °C
- Storage Temperature Range: -55 °C to +125 °C
- Temperature Coefficient Over Storage Temperature Range: ±50 ppm/°C maximum/Unit
- Vibration: 15 G
- Wiper Bounce: 0.1 millisecond maximum
- Shock: 50 G
- Load Life: 1,000 hours, 2 watts
- Total Resistance Shift: ±2 % maximum
- Rotational Life (No Load): 1,000,000 shaft revolutions
- Total Resistance Shift: ±5 % maximum
  - Sealed Versions (-3, -4, -7, and -8): IP 65
  - Unsealed Versions (-1, -2, -5, and -6): IP 40
- Moisture Sensitivity Level: 1
- Insulation Resistance (500 VDC): 1,000 megohms minimum
- +40 °C: 2 watts
- Power Rating (Voltage Limited By Power Dissipation or 450 VAC, Whichever is Less):
  - Sea Level: 1,500 VAC minimum
  - Dielectric Withstanding Voltage (MIL-STD-202, Method 301): 500 VDC 1,000 megohms minimum
- Load Life: 1,000 hours, 2 watts
- Rotational Life (No Load): 1,000,000 shaft revolutions
- Total Resistance Shift: ±2 % maximum
- IP Rating
- Sealed Versions (-3,-4,-7, and -8): IP 65
- Unsealed Versions (-1, -2, -5, and -6): IP 40
- ESD Classification (HBM): N/A

Mechanical Characteristics
- Stop Strength: 45 N-cm (64 oz.-in.) minimum
- Mechanical Angle: 360 ° ±10 °, ±0 °
- Torque: 0.85 N-cm (1.2 oz.-in.) maximum (unsealed)
- Mounting: 1.41 N-cm (2.0 oz.-in.) maximum (sealed) 55-80 N-cm (5-7 lb.-in.) (plastic) 90-113 N-cm (8-10 lb.-in.) (metal)
- Shaft Runout: 0.13 mm (0.005 in.) T.I.R.
- Lateral Runout: 0.20 mm (0.008 in.) T.I.R.
- Shaft End Play: 0.015 mm (0.001 in.) T.I.R.
- Shaft Radial Play: 0.013 mm (0.005 in.) T.I.R.
- Pilot Diameter Runout: 0.08 mm (0.003 in.) T.I.R.
- Backlash: 1.0 ° maximum
- Weight: Approximately 19 G
- Terminals: Solder lugs or PC pins
- Soldering Condition:
  - Manual Soldering: .965Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds
  - Wave Soldering: .965Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds
- Wash processes: Not recommended
- Ganging (Multiple Section Potentiometers): 1 cup maximum
- Note: For Anti-rotation pin add 91 after configuration dash number. Example: -2 becomes -291 to add AR pin.

1 At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.
2 Consult manufacturer for complete specification details for resistances below 1k ohms.

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Users should verify actual device performance in their specific applications.
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3590 - Precision Potentiometer

Product Dimensions

-1, -3, -5, -7 Configurations

-2, -4, -6, -8 Configurations

Recommended PCB Layout

Terminal Styles

“P” Terminal Style

“S” Terminal Style

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### 3590 - Precision Potentiometer

**Panel Thickness Dimensions**

*(For Bushing Mount Only)*

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.46 - 3.81 (.097 - .150)</td>
</tr>
</tbody>
</table>

Anti-rotation pin hole is shown at six o’clock position for reference only. The actual location is determined by the customer’s application. Refer to the front view of the potentiometer to see the location of the optional A/R pin.

Panel thickness and hole diameters are recommended for best fit. However, customers may adjust the dimensions to suit their specific application.

**Shaft & Bushing Configurations**

*(Bushing - DxL, Shaft - D):*

1. Plastic Bushing (3/8” x 5/16”) and Shaft (.2480 + .001, - .002)
2. Metal Bushing (3/8” x 5/16”) and Shaft (.2497 + .0000, - .0009)
3. Sealed, Plastic Bushing (3/8” x 5/16”) and Shaft (.2480 + .001, - .002)
4. Sealed, Metal Bushing (3/8” x 5/16”) and Shaft (.2497 + .0000, - .0009)
5. Metric, Plastic Bushing (9 mm x 7.94 mm) and Shaft (6 mm + .0, - .076 mm)
6. Metric, Metal Bushing (9 mm x 7.94 mm) and Shaft (6 mm + .0, - .023 mm)
7. Metric, Sealed, Plastic Bushing (9 mm x 7.94 mm) and Shaft (6 mm + .0, - .076 mm)
8. Metric, Sealed, Metal Bushing (9 mm x 7.94 mm) and Shaft (6 mm + .0, - .023 mm)

**Recommended Part Numbers**

<table>
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<tr>
<th>Printed Circuit</th>
<th>Solder Lug (Printed)</th>
<th>Solder Lug (Solder Lug)</th>
<th>Resistance (Ω)</th>
<th>Resolution (%)</th>
</tr>
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<tbody>
<tr>
<td>3590P-2-102L</td>
<td>3590S-2-102L</td>
<td>3590S-1-102L</td>
<td>1,000</td>
<td>.029</td>
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<tr>
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<td>.023</td>
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<td>.019</td>
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<td>.013</td>
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<td>.009</td>
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<td>3590S-1-104L</td>
<td>100,000</td>
<td>.003</td>
</tr>
</tbody>
</table>

**Specifications**

3590 - Precision Potentiometer

Panel thickness dimensions and hole diameters are recommended for best fit. However, customers may adjust the dimensions to suit their specific application.

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C1753 05/17/18R