

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

3590 - Precision Potentiometer

Electrical Characteristics¹

| | |
|---|---|
| Standard Resistance Range..... | 200 to 100 K ohms |
| Total Resistance Tolerance..... | ±5 % |
| Independent Linearity..... | ±0.25 % |
| Effective Electrical Angle..... | 3600 ° +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) | |
| Sea Level..... | 1,500 VAC minimum |
| Power Rating (Voltage Limited By Power Dissipation or 450 VAC, Whichever is Less) | |
| +40 °C..... | 2 watts |
| +125 °C..... | 0 watt |
| Insulation Resistance (500 VDC)..... | 1,000 megohms minimum |
| Resolution..... | See recommended part numbers |

Environmental Characteristics¹

| | |
|---|-----------------------------|
| Operating Temperature Range..... | -40 °C to +125 °C |
| Storage Temperature Range..... | -55 °C to +125 °C |
| Temperature Coefficient Over Storage Temperature Range ² | ±50 ppm/°C maximum/unit |
| Vibration..... | 15 G |
| Wiper Bounce..... | 0.1 millisecond maximum |
| Shock..... | 50 G |
| Wiper Bounce..... | 0.1 millisecond maximum |
| 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 |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) | |
| 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 |

Mechanical Characteristics¹

| | |
|--|--|
| Stop Strength..... | 45 N-cm (64 oz.-in.) minimum |
| Mechanical Angle..... | 3600 ° +10 °, -0 ° |
| Torque (Starting & Running)..... | 0.35 N-cm (0.5 oz.-in.) maximum (unsealed) 1.1 N-cm (1.5 oz.-in.) maximum (sealed) |
| Mounting..... | 55-80 N-cm (5-7 lb.-in.) (plastic) 90-113 N-cm (8-10 in.-lb.) (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..... | 0.25 mm (0.010 in.) T.I.R. |
| Shaft Radial Play..... | 0.13 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..... | 96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds |
| Wave Soldering..... | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds |
| Wash processes..... | Not recommended |
| Marking..... | Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code. |
| Ganging (Multiple Section Potentiometers)..... | 1 cup maximum |
| Hardware..... | One lockwasher and one mounting nut is shipped with each potentiometer. |

NOTE: For Anti-rotation pin add 91 after configuration dash number. Example: -2 becomes -291 to add AR pin.

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

²Consult manufacturer for complete specification details for resistances below 1k ohms.

Recommended Part Numbers

| (Printed Circuit) | (Solder Lug) | (Solder Lug) | Resistance (Ω) | Resolution (%) |
|-------------------|---------------------|--------------|----------------|----------------|
| 3590P-2-102L | 3590S-2-102L | 3590S-1-102L | 1,000 | .029 |
| 3590P-2-202L | 3590S-2-202L | 3590S-1-202L | 2,000 | .023 |
| 3590P-2-502L | 3590S-2-502L | 3590S-1-502L | 5,000 | .025 |
| 3590P-2-103L | 3590S-2-103L | 3590S-1-103L | 10,000 | .020 |
| 3590P-2-203L | 3590S-2-203L | 3590S-1-203L | 20,000 | .019 |
| 3590P-2-503L | 3590S-2-503L | 3590S-1-503L | 50,000 | .013 |
| 3590P-2-104L | 3590S-2-104L | 3590S-1-104L | 100,000 | .009 |

BOLDFACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.

FOR OTHER OPTIONS CONSULT FACTORY.

ROHS IDENTIFIER:

L = COMPLIANT

BLANK = NON-COMPLIANT

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex Specifications are subject to change without notice.

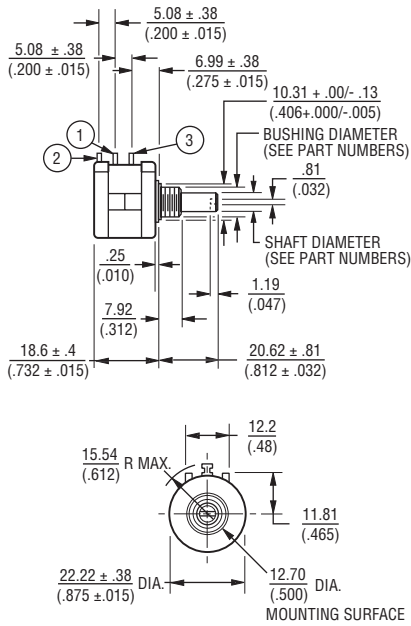
Customers should verify actual device performance in their specific applications.

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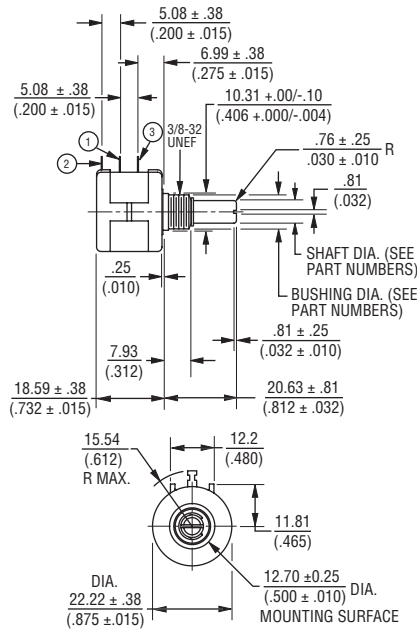
BOURNS®

Product Dimensions

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

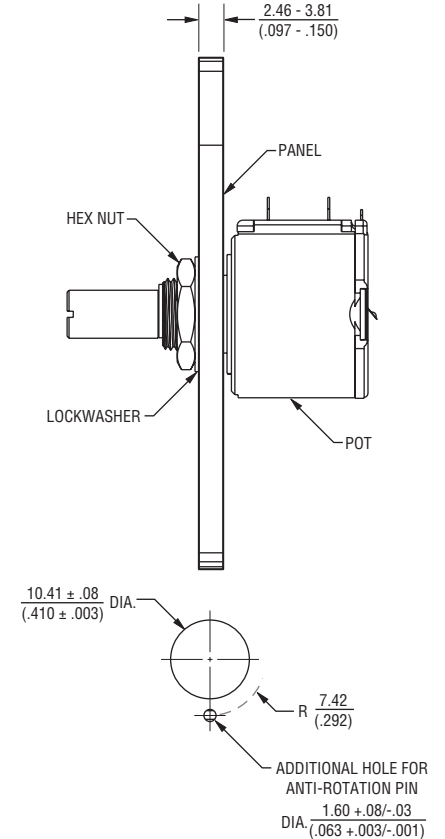


-2, -4, -6, -8 Configurations

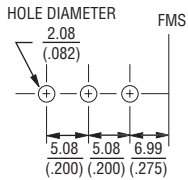


Panel Thickness Dimensions

(For Bushing Mount Only)

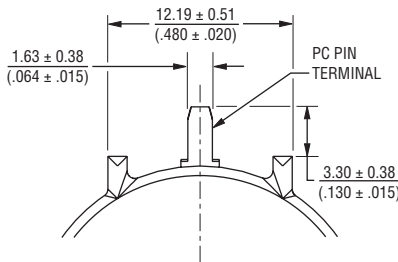


Recommended PCB Layout

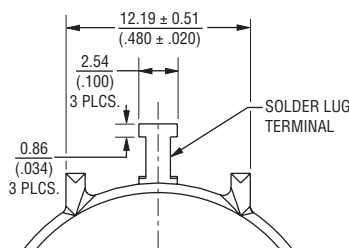


Terminal Styles

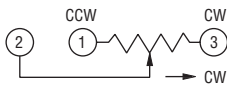
"P" Terminal Style



"S" Terminal Style



Schematic



TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: XX ± $\frac{.508}{.02}$, .XXX ± $\frac{.127}{.005}$
 FRACTIONS: ± 1/64
 DIMENSIONS: $\frac{MM}{(IN.)}$

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)

REV. 09/10

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Customers should verify actual device performance in their specific applications.