



## Features

- Bushing mount
- Sealable
- Non-standard features and specifications available
- Optional high torque feature
- Optional center tap feature
- Gangable
- RoHS compliant\*

## 3500/3501 - Precision Potentiometer

| Electrical Characteristics <sup>1</sup>   | 3500 Wirewound Element                                | 3501 Hybritron® Element      |
|---|---|------------------------------|
| Standard Resistance Range.....  | 50 to 200 K ohms .....                                | 1 K to 200 K ohms            |
| Total Resistance Tolerance.....   | ±3 % .....  | ±10 %                        |
| Independent Linearity.....  | ±0.20 % .....   | ±0.25 %                      |
| Effective Electrical Angle .....  | 3600 ° +10 °, -0 ° .....                              | 3600 ° +10 °, -2 °           |
| Absolute Minimum Resistance/Minimum Voltage.....                                  | 1 ohm or 0.1 % maximum.....<br>(whichever is greater) | 0.2 % maximum                |
| Noise .....   | 100 ohms ENR maximum.....                             | Output smoothness 0.1 % max. |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)                         |   |                              |
| Sea Level.....  | 1,500 VAC minimum .....                               | 1,500 VAC minimum            |
| 70,000 Feet .....   | 400 VAC minimum .....                                 | 400 VAC minimum              |
| Power Rating (Voltage Limited By Power Dissipation or 325 VAC, Whichever Is Less) |   |                              |
| +70 °C.....   | 2 watts .....   | 2 watts                      |
| +125 °C.....  | 0 watt .....  | 0 watt                       |
| Insulation Resistance (500 VDC) .....   | 1,000 megohms minimum .....                           | 1,000 megohms minimum        |
| Resolution.....   | See recommended part nos .....                        | Essentially infinite         |

| Environmental Characteristics <sup>1</sup>                 | 3500 Wirewound Element                         | 3501 Hybritron® Element     |
|--|--|-----------------------------|
| Operating Temperature Range.....                           | +1 °C to +125 °C .....                         | +1 °C to +125 °C            |
| Storage Temperature Range .....                            | -65 °C to +125 °C .....                        | -65 °C to +125 °C           |
| Temperature Coefficient Over                               |  |                             |
| Storage Temperature Range <sup>2</sup> .....               | ±50 ppm/°C maximum/unit .....                  | ±100 ppm/°C maximum/unit    |
| Vibration .....  | 20 G .....                                     | 20 G                        |
| Wiper Bounce.....  | 0.1 millisecond maximum .....                  | 0.1 millisecond maximum     |
| Total Resistance Shift .....                               | ±2 % maximum .....                             | ±2 % maximum                |
| Voltage Ratio Shift .....                                  | ±0.1 % maximum .....                           | ±0.1 % maximum              |
| Shock.....   | 100 G .....                                    | 100 G                       |
| Wiper Bounce.....  | 0.1 millisecond maximum .....                  | 0.1 millisecond maximum     |
| Total Resistance Shift .....                               | ±2 % maximum .....                             | ±2 % maximum                |
| Voltage Ratio Shift .....                                  | ±0.1 % maximum .....                           | ±0.1 % maximum              |
| Load Life.....   | 1,000 hours, 2 watts .....                     | 1,000 hours, 2 watts        |
| Total Resistance Shift .....                               | ±2 % maximum .....                             | ±5 % maximum                |
| Rotational Life (No Load).....                             | 2,000,000 shaft revolutions <sup>2</sup> ..... | 4,000,000 shaft revolutions |
| Total Resistance Shift .....                               | ±5 % maximum .....                             | ±5 % maximum                |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) |  |                             |
| Total Resistance Shift .....                               | ±2 % maximum .....                             | ±5 % maximum                |
| IP Rating.....   | IP 65 .....                                    | IP 65                       |

| Mechanical Characteristics <sup>1</sup>        | 3500 Wirewound Element   | 3501 Hybritron® Element  |
|--|--|--|
| Stop Strength.....                             | 67.8 N-cm (96 oz.-in.) minimum   | 67.8 N-cm (96 oz.-in.) minimum   |
| Mechanical Angle .....                         | 3600 ° +10 °, -0 °   | 3600 ° +10 °, -0 °   |
| Torque (Starting & Running).....               | 0.42 N-cm (0.6 oz.-in.) maximum  | 0.42 N-cm (0.6 oz.-in.) maximum  |
| Mounting.....                                  | 170-200 N-cm (15-18 lb.-in.) maximum   | 170-200 N-cm (15-18 lb.-in.) maximum   |
| Shaft Runout.....                              | 0.05 mm (0.002 in.) T.I.R.   | 0.05 mm (0.002 in.) T.I.R.   |
| Lateral Runout.....                            | 0.13 mm (0.005 in.) T.I.R.   | 0.13 mm (0.005 in.) T.I.R.   |
| Shaft End Play.....                            | 0.13 mm (0.005 in.) T.I.R.   | 0.13 mm (0.005 in.) T.I.R.   |
| Shaft Radial Play.....                         | 0.08 mm (0.003 in.) T.I.R.   | 0.08 mm (0.003 in.) T.I.R.   |
| Pilot Diameter Runout .....                    | 0.05 mm (0.002 in.) T.I.R.   | 0.05 mm (0.002 in.) T.I.R.   |
| Backlash .....                                 | 1.0 ° maximum  | 1.0 ° maximum  |
| Weight .....                                   | Approximately 28 gm  | Approximately 28 gm  |
| Terminals .....                                | Gold-plated solder lugs or turrets (see Product Dimensions)  | Gold-plated solder lugs or turrets (see Product Dimensions)  |
| 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                           | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds   |
| Wave Soldering .....                           | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds   | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds   |
| Wash processes .....                           | Not recommended  | Not recommended  |
| Marking.....                                   | Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code. | Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code. |
| Ganging (Multiple Section Potentiometers)..... | 2 cups maximum   | 2 cups maximum   |
| Hardware .....                                 | One lockwasher (H-37-2) and one mounting nut (H-38-2) is shipped with each potentiometer.                                | One lockwasher (H-37-2) and one mounting nut (H-38-2) is shipped with each potentiometer.                                |

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

<sup>2</sup>Consult manufacturer for complete specification details.

### Recommended Part Numbers

| Part Number         | Resistance (Ω) | Resolution (%) |
|---------------------|----------------|----------------|
| 3500S-1-102L        | 1,000          | .030           |
| 3500S-1-502L        | 5,000          | .018           |
| 3500S-1-103L        | 10,000         | .019           |
| <b>3500S-2-102L</b> | <b>1,000</b>   | <b>.030</b>    |
| <b>3500S-2-502L</b> | <b>5,000</b>   | <b>.018</b>    |
| <b>3500S-2-103L</b> | <b>10,000</b>  | <b>.019</b>    |

| Part Number         | Resistance (Ω) |
|---------------------|----------------|
| <b>3501H-1-102L</b> | <b>1,000</b>   |
| <b>3501H-1-502L</b> | <b>5,000</b>   |
| <b>3501H-1-103L</b> | <b>10,000</b>  |

**BOLDFACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.**  
FOR OTHER OPTIONS CONSULT FACTORY.

ROHS IDENTIFIER:  
L = COMPLIANT

"Hybritron" is a registered trademark of Bourns, Inc.  
\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# 3500/3501 - Precision Potentiometer

**BOURNS®**

## Product Dimensions

### 3500S



#### NOTE: SHAFT LENGTH VARIATIONS

|            |                  |
|------------|------------------|
| 3500S-1-RC | 11/16<br>(17.46) |
| 3500S-2-RC | 13/16<br>(20.64) |
| 3501H-1-RC | 13/16<br>(20.64) |

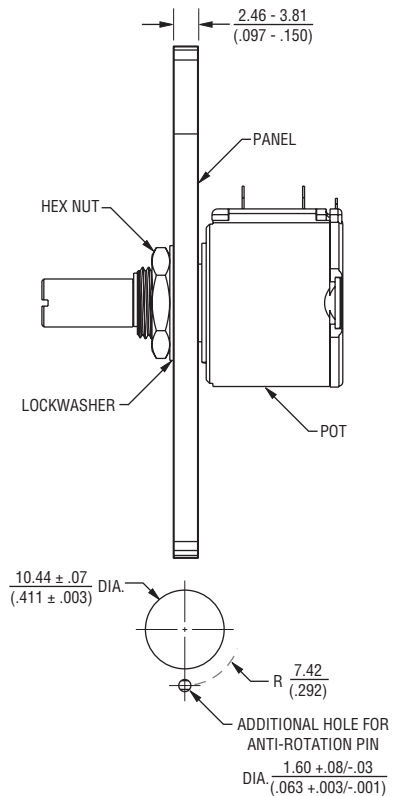
TOLERANCES: EXCEPT WHERE NOTED  
 DECIMALS: .XX ± .25 (.010), .XXX ± .13 (.005)  
 FRACTIONS: ± 1/64  
 DIMENSIONS:  $\frac{MM}{(IN.)}$



### 3501H



## Panel Thickness Dimensions



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.

DIMENSIONS:  $\frac{MM}{(INCHES)}$  TOLERANCES: ±  $\frac{0.127}{(.005)}$

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- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
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- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
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