



## 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.....	0.2 % maximum
	(whichever is greater)	
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>		
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>	
Stop Strength.....	67.8 N-cm (96 oz.-in.) minimum
Mechanical Angle .....	3600 ° +10 °, -0 °
Torque (Starting & Running).....	0.42 N-cm (0.6 oz.-in.) maximum
Mounting.....	170-200 N-cm (15-18 lb.-in.) maximum
Shaft Runout.....	0.05 mm (0.002 in.) T.I.R.
Lateral Runout.....	0.13 mm (0.005 in.) T.I.R.
Shaft End Play.....	0.13 mm (0.005 in.) T.I.R.
Shaft Radial Play.....	0.08 mm (0.003 in.) T.I.R.
Pilot Diameter Runout .....	0.05 mm (0.002 in.) T.I.R.
Backlash .....	1.0 ° maximum
Weight .....	Approximately 28 gm
Terminals .....	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
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).....	2 cups maximum
Hardware .....	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 (17.46)
3500S-2-RC	13/16 (20.64)
3501H-1-RC	13/16 (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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