

BOURNS®

Features

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

3500/3501 - Precision Potentiometer

Electrical Characteristics ¹	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..... (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 ¹	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 ²	±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 ²	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 ¹	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.

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

²Consult 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
3500S-2-102L	1,000	.030
3500S-2-502L	5,000	.018
3500S-2-103L	10,000	.019

Part Number	Resistance (Ω)
3501H-1-102L	1,000
3501H-1-502L	5,000
3501H-1-103L	10,000

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.

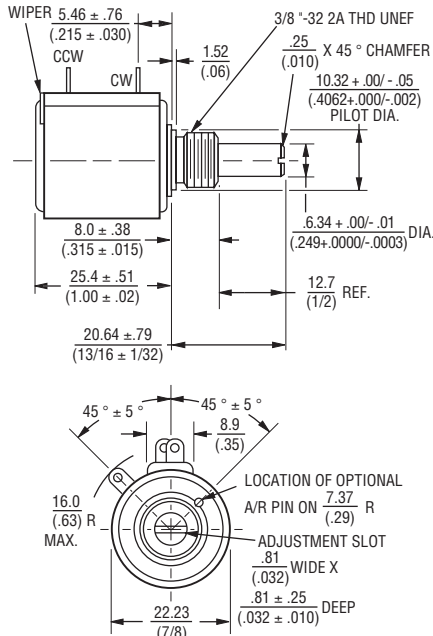
Customers should verify actual device performance in their specific applications.

3500/3501 - Precision Potentiometer

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Product Dimensions

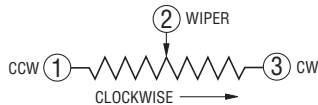
3500S



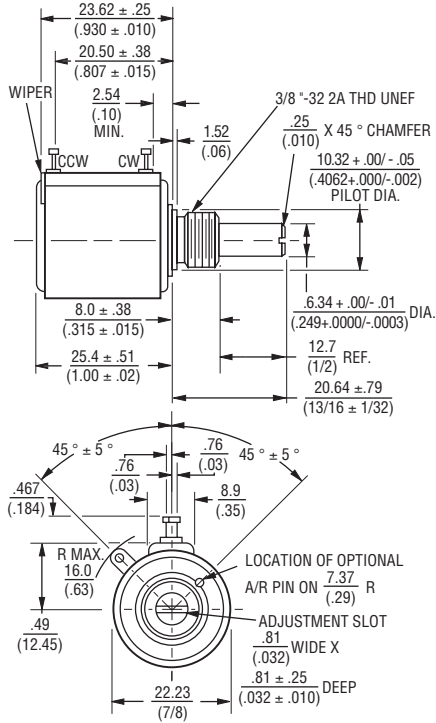
NOTE: SHAFT LENGTH VARIATIONS

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

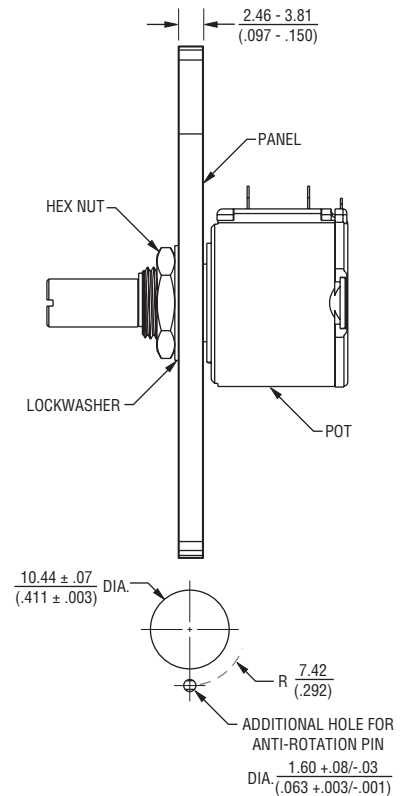
TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± .25 (.010), .XXX ± .13 (.005)
 FRACTIONS: ± 1/64
 DIMENSIONS: $\frac{MM}{(IN.)}$



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: ± $\frac{0.127}{(.005)}$