



Features

- Wirewound and Hybritron® elements
- High rotational life
- Optional 0.1 % linearity
- Optional A/R lug
- RoHS compliant*
- Suitable for use under some side load conditions
- Designed for HMI and MMI applications
- Dual gang option
- Servo mount option
- Dual ball bearing option

3549 - 10-Turn Precision Potentiometer

Electrical Characteristics ¹	Wirewound Element	Hybritron® Element
Standard Resistance Range.....	100 to 100K ohms.....	1K to 100K ohms
Total Resistance Tolerance.....	±3 %.....	±10 %
Independent Linearity.....	±0.2 %.....	±0.2 %
Independent Linearity (Maximum Practical).....	±0.1 %.....	±0.1 %
Effective Electrical Angle.....	3600 ° +10 °, -0 °.....	3600 ° +10 °, -0 °
Absolute Minimum Resistance/End Voltage.....	1 ohm or 0.1 % maximum.....	0.2 % maximum
(whichever is greater)		
Noise/Output Smoothness.....	100 ohms maximum.....	0.10 % maximum
Max. Wiper Current @ 5K ohms.....	20 mA.....	10 mA
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level.....	1,000 VAC minimum.....	1,000 VAC minimum
Insulation Resistance (500 VDC).....	1,000 megohms minimum.....	1,000 megohms minimum
Resolution.....	See How to Order chart.....	Essentially infinite
Power Rating (Voltage Limited By Power Dissipation)		
+70 °C.....	2 watts.....	2 watts
+125 °C.....	0 watt.....	0 watt

Environmental Characteristics ¹		
Operating Temperature Range		
Dynamic.....	-40 °C to +125 °C.....	-40 °C to +125 °C
Static.....	-55 °C to +125 °C.....	-55 °C to +125 °C
Temperature Coefficient (Over Static Temperature Range).....	±50 ppm/°C.....	±100 ppm/°C
Temperature Cycling (5 Cycles Over Static Temperature Range).....	±2 % TR shift max.....	±4 % TR shift max.
Vibration (15 Gs, 10 Hz to 2 kHz)		
Wiper Bounce.....	0.1 ms max.....	0.1 ms max.
Shock (100 Gs, 6 ms sawtooth)		
Wiper Bounce.....	0.1 ms max.....	0.1 ms max.
Load Life (1,000 hours @ 70 °C).....	±2 % TR shift.....	±5 % TR shift max.
Rotational Life		
No Load or Powered.....	2,000,000 shaft revolutions.....	5,000,000 shaft revolutions
No Load or Powered (Dual Ball Bearing).....	N/A.....	10,000,000 shaft revolutions
Moisture Resistance (Mil-Std-202, Method 103).....	±2 % TR shift max.....	±5 % TR shift max.
IP Rating.....	IP 50.....	IP 50

Mechanical Characteristics ¹	
Mechanical Angle.....	3600 ° +10 °, -0 °
Backlash.....	1.0 ° max.
Stop Strength.....	53 N-cm (75 oz-in.) min.
Torque	
Starting.....	0.5 N-cm (0.7 oz-in.) max.
Running.....	0.5 N-cm (0.7 oz-in.) max.
Clutch.....	1.0 to 4.2 N-cm (1.5 to 6.0 oz-in.)
Mounting.....	170-200 N-cm (15-18 in.-lb.) max.
Shaft Runout T.I.R.....	0.08 mm (0.003 in.)
Lateral Runout T.I.R.....	0.13 mm (0.005 in.)
Shaft End Play T.I.R.....	0.15 mm (0.006 in.)
Shaft Radial Play T.I.R.....	0.08 mm (0.003 in.)
Pilot Diameter Runout T.I.R.....	0.08 mm (0.003 in.)
Weight	
Single.....	20 gm (0.7 oz.) typ.
Dual.....	36 gm (1.27 oz) typ.
Shaft Side Load (Max. Allowable)	
Nickel Plated Brass Shaft w/Brass Bushing.....	50 gm (1.7 oz)
Stainless Steel Shaft w/Bronze Bushing.....	250 gm (8.8 oz)
Terminals.....	Gold-plated solder lugs
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
Mounting Hardware.....	One lockwasher and one mounting nut is shipped with each potentiometer
Recommended Panel Thickness (Bushing Mount).....	2.46-3.81 mm (0.097-0.150 in.)
Marking.....	Manufacturer's symbol, model number, product code and date code
Standard Packaging.....	Plastic trays (5 pcs./tray)

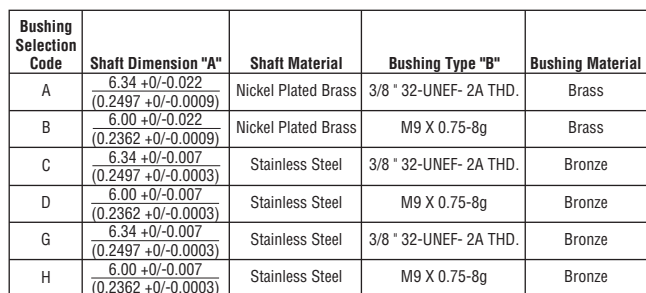
¹At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.
For other options, please consult factory.

*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.

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Users should verify actual device performance in their specific applications.

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Single Gang, Bushing Mount



Technical drawing of the 1000 Series Motor, showing front and side views with dimensions in inches and millimeters.

Front View Dimensions:

- Overall length: 40.259 ± 0.762 (1.585 ± .030)
- Distance from left end to center of first winding: 34.798 ± 0.762 (1.370 ± .030)
- Distance from center of first winding to center of second winding: 18.796 ± 0.381 (.740 ± .015)
- Distance from center of second winding to right end: 6.02 ± 0.381 (.237 ± .015)
- Distance from left end to center of second winding: 26.467 ± 0.762 (1.042 ± .030)
- Distance from center of second winding to right end: 14.351 ± 0.381 (.565 ± .015)
- Shaft dimension "A": $10.287 \pm 0.00/-0.05$ (.405 +0.00/-0.002)
- Mounting surface distance from left end: 1.52 (.060)
- Mounting surface distance from center of second winding: 7.92 ± 0.381 (.312 ± .015)
- Mounting surface distance from right end: 20.643 ± 0.787 (.813 ± .031)
- Adjustment slot: 0.813 (.032) WIDE X $0.813 \pm .0004$ (.032 ± .010) DEEP

Side View Dimensions:

- Optional anti-rotational pin: $1.524 \pm 0.00/-0.127$ (.060 +.000/- .005) DIA.
- Optional anti-rotational pin: 1.016 (.040)
- Radius: $R 16.256$ (.640) MAX.
- Top flange thickness: 6.86 ± 0.25 (.270 ± .010)
- Top flange outer diameter: 12.7 ± 0.254 (.500 ± .010)
- Bottom flange outer diameter: 22.479 ± 0.812 (.885 ± .032) DIA.
- Bottom flange mounting face diameter: 12.649 ± 0.254 (.498 ± .010) DIA.

Other Labels:

- 1, 2, 3: Winding terminals
- CW: Clockwise rotation
- BUSHING TYPE "B"
- SHAFT DIMENSION "A"
- MOUNTING SURFACE
- OPTIONAL ANTI-ROTATIONAL PIN
- OPTIONAL ANTI-ROTATIONAL PIN
- MOUNTING FACE

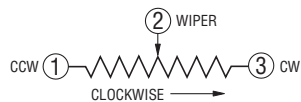
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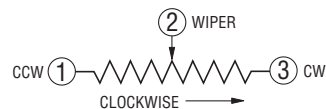
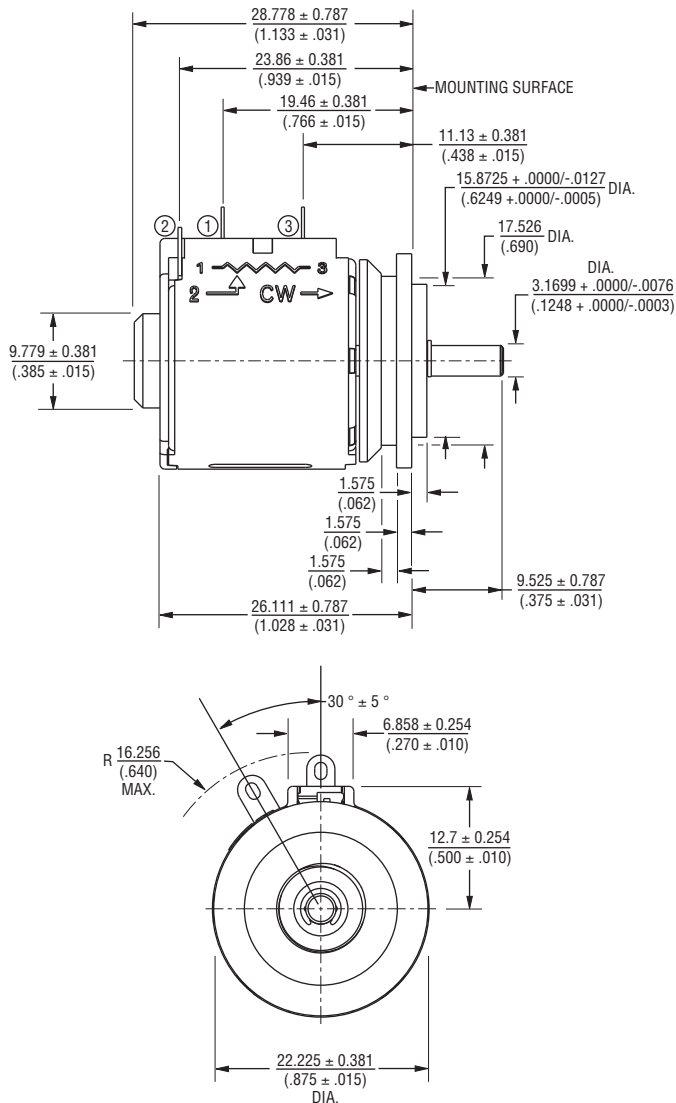
Product Dimensions

Single Gang, Servo Mount



TOLERANCES: EXCEPT WHERE NOTED
 DECIMALS: .XX ± .50 (0.02) .XXX ± .127 (0.005) .XXXX ± .0127 (0.0005)
 DIMENSIONS: $\frac{\text{MM}}{(\text{IN})}$

Single Gang, Servo Mount, Dual Ball Bearing

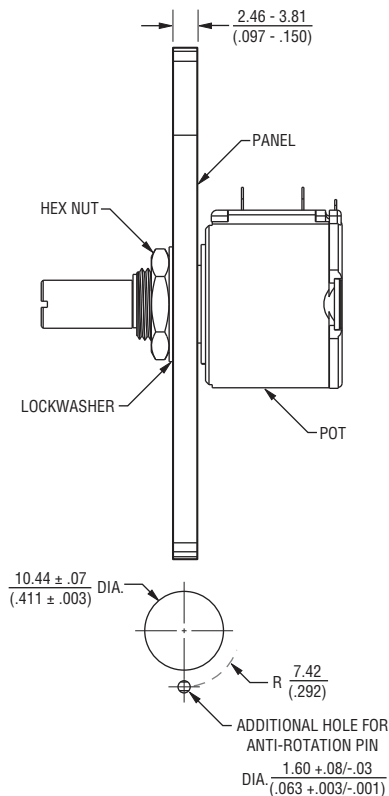


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Panel Thickness Dimensions

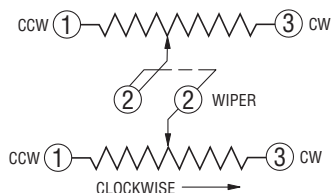
(For Bushing Mount Only)



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: $\frac{\text{MM}}{(\text{INCHES})}$ TOLERANCES: $\pm \frac{0.127}{(.005)}$



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How To Order

3	5	4	9	S	-	2	A	A	-	1	0	3	/	1	0	3	A
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MODEL DESIGNATOR	
Code	Description
3549	10-Turn

ELEMENT TYPE	
Code	Description
H	Hybritron®
S	Wirewound

NO. OF SECTIONS	
Code	Description
1	Single
2	Dual

ANTI-ROTATION LUG	
Code	Description
A	None
B	180 °

* Anti-rotation lug is not available for servo mount versions.

INDEPENDENT LINEARITY	
Code	Description
A	0.20 %
B	0.10 %

RESISTANCE**		
Code	Element Type	Resolution (%)
102 (1K ohms)	Hybritron®	—
202 (2K ohms)	Hybritron®	—
502 (5K ohms)	Hybritron®	—
103 (10K ohms)	Hybritron®	—
203 (20K ohms)	Hybritron®	—
503 (50K ohms)	Hybritron®	—
104 (100K ohms)	Hybritron®	—
101 (100 ohms)	Wirewound	0.055
201 (200 ohms)	Wirewound	0.042
501 (500 ohms)	Wirewound	0.031
102 (1K ohms)	Wirewound	0.027
202 (2K ohms)	Wirewound	0.021
502 (5K ohms)	Wirewound	0.016
103 (10K ohms)	Wirewound	0.019
203 (20K ohms)	Wirewound	0.014
503 (50K ohms)	Wirewound	0.011
104 (100K ohms)	Wirewound	0.008

** For Single gang, use only first three digits.
For Dual gang, use six digits separated by a "/".

BUSHING MOUNT						
Code	Shaft FMS	Shaft Dia.	Shaft Material	Bushing Dia.	Bushing Material	Slip Clutch
A	13/16 "	1/4 "	Nickel Plated Brass	3/8 "	Brass	N/A
B	20.6 mm	6 mm	Nickel Plated Brass	9 mm	Brass	N/A
C	13/16 "	1/4 "	Stainless Steel	3/8 "	Bronze	N/A
D	20.6 mm	6 mm	Stainless Steel	9 mm	Bronze	N/A
G	13/16 "	1/4 "	Stainless Steel	3/8 "	Bronze	Yes***
H	20.6 mm	6 mm	Stainless Steel	9 mm	Bronze	Yes***

SERVO MOUNT				
Code	Shaft FMS	Shaft Dia.	Shaft Material	Ball Bearings
E	3/8 "	1/8 "	Stainless Steel	N/A
F	3/8 "	1/8 "	Stainless Steel	Front & Rear****

*** Not available in dual gang version.

**** Available in Hybritron® version only and limited to single section.

REV. 10/14

"Hybritron" is a registered trademark of Bourns, Inc.
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