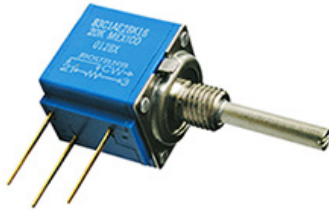


Series S159-10 5/8" Modular Precision 10-Turn Potentiometer



Description:

The Series S159-10 Precision 10-Turn Potentiometer modules are 5/8" square (15.88mm), with metal shaft and bushing.

Wirewound or Hybritron® elements are available. Hybritron is a wirewound element covered with a Conductive Plastic coating, which offers temperature stability, low-noise, and virtually infinite resolution. Combine up to 2 modules.

For more information about this product, visit our website at: www.potentiometers.com

Features:

- **5/8" Square Modular 10 Turn Panel Control**
- **Stackable** - up to 2 modules
- **Linear Taper**
- **±0.25% Independent Linearity**
- **Wirewound or Hybritron® Hybrid Element**
- **Metal Shaft and Bushing**
- **PCB or Solder Lug Terminals**
- **IP40 Rating**
- **RoHS Compliant**

Electrical Specifications

Resistance Range - Wirewound Element

J Linear Taper: 200 ohms to 100K ohms

Resistance Range - Hybritron® Hybrid Element

K Linear Taper: 1K ohms to 100K ohms

Total Resistance Tolerance

Wirewound: ±5%

Hybritron: ±10%

Independent Linearity: ±0.25 %

Absolute Minimum Resistance:

Wirewound: 1.0 ohm or 0.1 % (whichever is greater)

Effective Electrical Angle: 3600° +10, -0°

Dielectric Withstanding Voltage (MIL-STD-202 - Method 301)

Sea Level: 1,000 VAC minimum

Insulation Resistance: 1,000 megohms minimum

Power Rating: +70 °C: 1 watt; +125 °C: 0 watt

(Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)

Theoretical Resolution:

Wirewound: See table

Hybritron: Essentially Infinite

End Voltage

Hybritron (K Taper): 0.2 % of applied voltage

Noise:

Wirewound: (J Taper): 100 ohms

Output Smoothness

Hybritron (K Taper): 0.15 % maximum

Mechanical Specifications

Mechanical Angle: 3600° +15°, -0°

Stop Strength:

33.90 N-cm (48.0 oz.-in.) minimum

Starting Torque:

Running torque plus 0.7 N-cm (1.0 oz.-in.) max

Running Torque (1 or 2 sections):

0.18 to 1.41 N-cm (0.25 to 2.0 oz.-in.)

Mounting Torque (Torque on Bushing):

1.7-2.0 N-m (15-18 lb.-in.) maximum

Shaft Runout: 0.15 mm (0.006 in.) T.I.R.

Shaft End Play: 0.36 mm (0.014 in.) T.I.R.

Shaft Radial Play: 0.13 mm (0.005 in.) T.I.R.

Weight: Single Section - 21 gm (0.75 oz.)

Each additional Section: 18 gm (0.65 oz.)

Terminals: Printed circuit terminals or solder lugs

Soldering Condition:

Recommended hand soldering using Sn95/Ag5
no clean solder, 0.025" wire diameter.

Maximum temperature 399 °C (750 °F) for 3 seconds.

No wash process to be used with no clean flux.

Ganging (Multiple Section Potentiometers): 2 modules max.

Series S159-10 5/8" Modular Precision 10-Turn Potentiometer

Environmental Specifications

Operating Temperature Range: +1° C to +125° C

Storage Temperature Range: -55 °C to +125 °C

Temperature Coefficient over Storage Range:

Wirewound: ±50 ppm/°C;

Hybritron: ±100 ppm/°C

Vibration (Single Section): 15 G

Total Resistance Shift: ±2% maximum

Voltage Ratio Shift: ±0.2% maximum

Wiper Bounce: 0.1 millisecond maximum

Shock (Single Section): 50 G

Total Resistance Shift: ±2% maximum

Voltage Ratio Shift: ±0.2% maximum

Wiper Bounce: 0.1 millisecond maximum

Load Life: 1,000 hours

Wirewound: Total Resistance Shift: ±2% max.

Hybritron: Total Resistance Shift: ±5% max.

Rotational Life - Wirewound (No Load):

1,000,000 shaft revolutions, ±5% TRS maximum

Rotational Life - Hybritron (No Load):

4,000,000 shaft revolutions, ±5% TRS maximum

Moisture Resistance (MIL-STD-202, Method 103, Condition B)

Wirewound: ±2% Total Resistance Shift max.

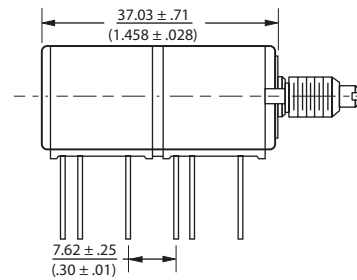
Hybritron: ±5% Total Resistance Shift max.

Insulation Resistance (500 VDC): 100 megohms minimum

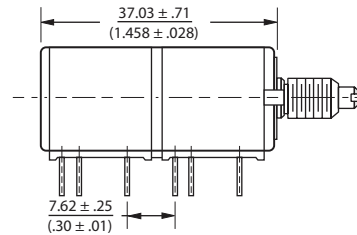
IP Rating: IP40

Dimensional Drawings

Dual Section Model S159-10 PC Pins



Dual Section Model S159-10 Solder Lugs



Note: The dimensions for dual section assembly are for either single or dual concentric shaft styles.

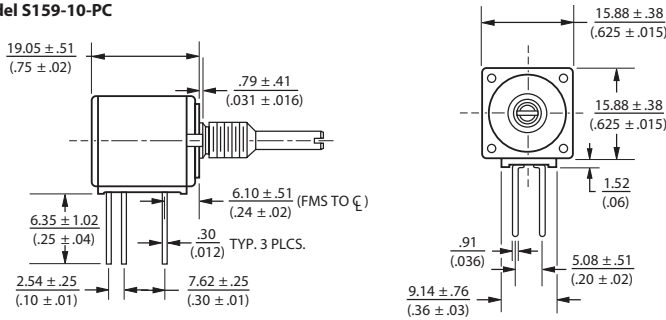
Wirewound Resolution Table

Resistance (Ohms)	Resolution (Nom.) (%)
200	.048
500	.037
1 K	.032
2 K	.031
5 K	.023
10 K	.020
20 K	.015
50 K	.012
100 K	.010

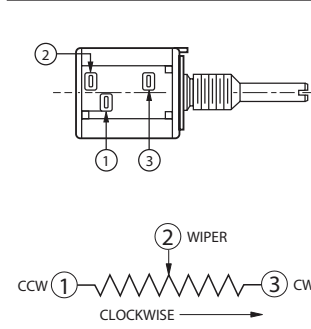
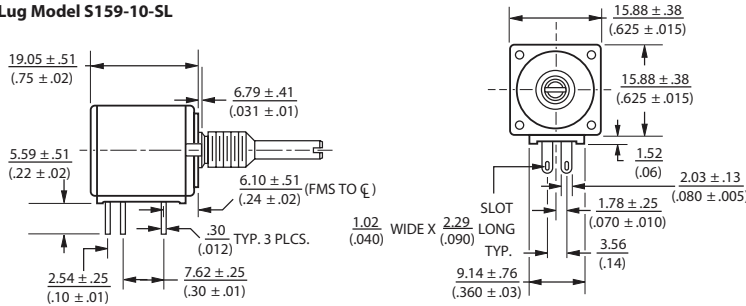
Series S159-10 5/8" Modular Precision 10-Turn Potentiometer

Dimensional Drawings

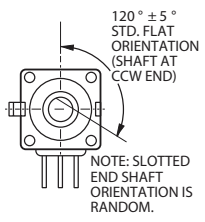
PC Pin Model S159-10-PC



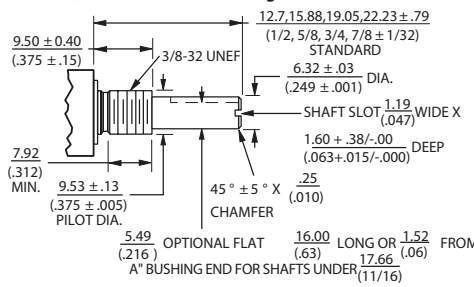
Solder Lug Model S159-10-SL



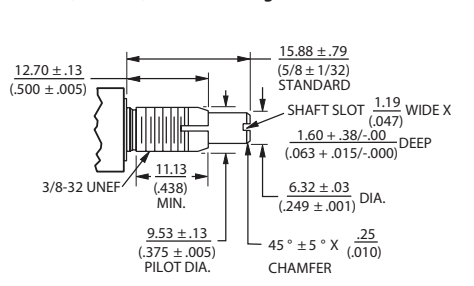
Shaft Flat Orientation



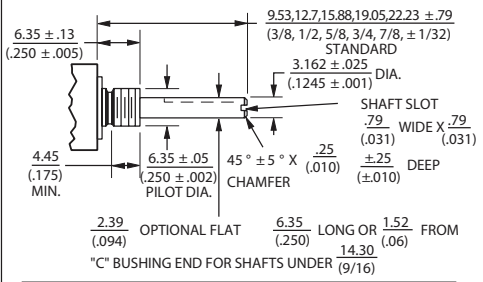
"A" Bushing 3/8" (9.53 mm) Dia. Plain - Single Shaft



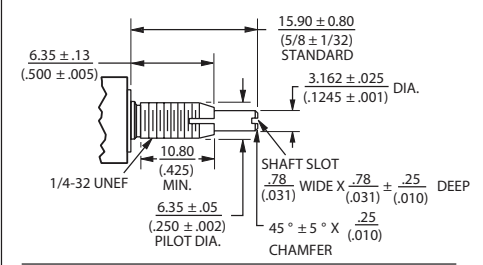
"B" Bushing 3/8" (9.53 mm) Dia. Plain - Single Shaft



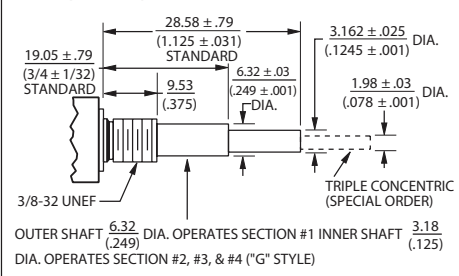
"C" Bushing 1/4" (6.35 mm) Dia. Plain - Single Shaft



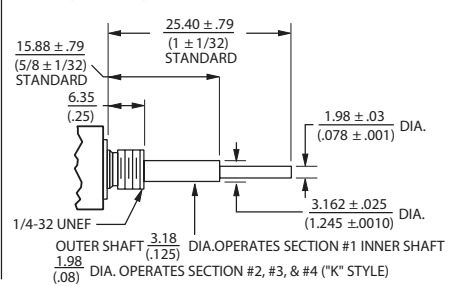
"E" Bushing 1/4" (6.35 mm) Dia. Locking - Single Shaft



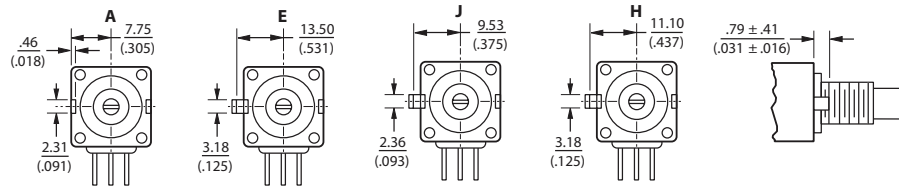
"A" Bushing 3/8" (9.53 mm) Dia. Plain - Concentric Shaft



"C" Bushing 1/4" (6.35 mm) Dia. Plain - Concentric Shaft



Locating Lug Options



NOTE: "D" OPTION - NO A/R LUG. OTHER LOCATING LUG OPTIONS AVAILABLE. FOR DETAILS CONSULT FACTORY.

TOLERANCES EXCEPT AS SHOWN: DECIMALS .XXX ± .127 (.005)
 .XX ± .38 (.015)
 ANGLE ± 5°
 FRACTIONS ± 1/64

DIMENSIONS: MM (INCHES)

Ordering Information - S159-10 Precision Ten Turn Modular Potentiometer

Example Part Number: **S159-10-PC-A2A-B28-J103**

Model S159-10	PC	A	2	A	B	28	J	103
<p>Anti-Rotation Lug: A = Single .305" R, 90° CW B = Double .305" R, 90° & 270° CW C = Single .305" R, 270° CW D = No Lug E = Single .531" R, 90° CW F = Single .305" R, 180° CW J = Single .375" R, 90° CW K = Double .375" R, 90° & 270° CW</p>								
<p>Modules: 1 = Single 2 = Double</p>								
<p>Bushing: A = Plain 3/8" Dia. x 3/8" Length B = Locking 3/8" Dia. x 1/2" Length C = Plain 1/4" Dia. x 1/4" Length E = Locking 1/4" Dia. x 1/2" Length J = Plain 3/8" Dia. x 1/4" Length N = Plain 1/4" Dia. x 3/8" Length R = Plain 10mm Dia. x 9mm Length U = Plain 7mm Dia. x 6mm Length</p>								
<p>Style PC = PC Pins SH = Solder Lugs</p>								
<p>Element & Taper: J = Linear Wirewound 10-Turn ±5% K = Linear Hybritron 10-Turn ±10%</p>								
			<p>SHAFT LENGTH (FMS)</p>			<p>AVAILABLE ONLY IN BUSHING</p>		
			<p>Resistance</p>			<p>Element</p>		
			<p>Code</p>			<p>Description</p>		
			<p>Code</p>			<p>Code</p>		
			<p>12 3/8"</p>			<p>C, J, N</p>		
			<p>16 1/2"</p>			<p>A, C, J, N</p>		
			<p>20 5/8"</p>			<p>A, B, C, E, J, N</p>		
			<p>24 3/4"</p>			<p>A, B, C, E, J, N</p>		
			<p>28 7/8"</p>			<p>A, B, C, E, J, N</p>		
			<p>32 1"</p>			<p>A, B, C, E, J, N</p>		
			<p>36 1-1/8"</p>			<p>A, B, C, E, J, N</p>		
			<p>40 1-1/4"</p>			<p>A, B, C, E, J, N</p>		
			<p>Metric</p>					
			<p>10 10mm</p>			<p>U</p>		
			<p>13 13mm</p>			<p>U</p>		
			<p>16 16mm</p>			<p>R,</p>		
			<p>19 19mm</p>			<p>R</p>		
			<p>22 22mm</p>			<p>R, U</p>		
			<p>30 30mm</p>			<p>R</p>		
			<p>42 42mm</p>			<p>R</p>		
			<p>50 50mm</p>			<p>R</p>		
<p>Shaft Type</p>								
<p>Code Description</p>								
<p>A = Single Plain 1/4" Dia 16, 20, 24, 28 A, B, J</p>								
<p>B = Single Slotted 1/4" Dia 16, 20, 24, 28 A, B, J</p>								
<p>C = Single Flatted 1/4" Dia 20, 24, 28 A, B, J</p>								
<p>E = Single Slotted 1/8" Dia 12, 16, 20, 24, 28 C, E, N</p>								
<p>G = Dual Concentric Plain (Outer 1/4" Dia - Inner 1/8" Dia) Outer Operates Section 1 36, 40 A, J</p>								
<p>K = Dual Concentric Plain (Outer 1/8" Dia - Inner 5/64" Dia) Outer Operates Section 1 32, 36 C, N</p>								
<p>L = Dual Concentric Plain (Outer 1/4" Dia - Inner 1/8" Dia) Outer Operates Section 1/2 36, 40 A, J</p>								
<p>M = Dual Concentric Plain (Outer 1/8" Dia - Inner 5/64" Dia) Outer Operates Section 1 32, 36 C, N</p>								
<p>N = Dual Concentric Plain (Outer 1/4" Dia - Inner 1/8" Dia) Outer Operates Section 1/2 36, 40 A, J</p>								
<p>P = Dual Concentric Plain (Outer 1/8" Dia - Inner 5/64" Dia) Outer Operates Section 1/2 32, 36 C, N</p>								
<p>R = Single Slotted 6 mm Dia 16, 19, 22, 50 R</p>								
<p>T = Single Slotted 4 mm Dia 10, 13, 22 U</p>								
<p>V = Dual Concentric Plain (Outer 6mm Dia - Inner 3mm Dia) Outer Operates Section 1 30, 42 R</p>								

For Pricing and Delivery information, [Create an RFQ on our website](#) or Contact your State Electronics Sales Representative at 973-887-2550

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