



Features

- Servo mount
- Excellent resolution
- Non-standard features and specifications available
- Small diameter
- High rotational life

3750/3751 - Precision Potentiometer

Electrical Characteristics¹ 3750 Wirewound Element 3751 Hybritron® Element

Standard Resistance Range	100 to 100 K ohms	1 K to 100 K ohms
Total Resistance Tolerance	±5 %	±10 %
Independent Linearity	±0.25 %	±0.25 %
Effective Electrical Angle	3600° +10°, -0°	3600° +10°, -4°
Absolute Minimum Resistance/	1 ohm or 0.1 % maximum	Minimum voltage
Minimum Voltage	(whichever is greater)	0.2 % maximum
Noise	500 ohms ENR maximum	Output smoothness 0.15 % maximum

Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level	1,000 VAC minimum	1,000 VAC minimum
Power Rating (Voltage Limited By Power Dissipation or 315 VAC, Whichever Is Less)		
+70 °C	1 watt	1 watt
+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 Characteristics¹

Operating Temperature Range	+1 °C to +125 °C	+1 °C to +105 °C
Storage Temperature Range	-65 °C to +125 °C	-55 °C to +105 °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
Shock	100 G	100 G
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Load Life	1,000 hours, 1 watt	1,000 hours, 1 watt
Total Resistance Shift	±2 % maximum	±5 % maximum
Rotational Life (No Load)	1,000,000 shaft revolutions ²	10,000,000 shaft revolutions ²
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 40	IP 40

Mechanical Characteristics¹

Stop Strength	14 N-cm (20 oz-in.) minimum
Mechanical Angle	3600° +20°, -0°
Torque	
Starting	0.35 N-cm (0.5 oz-in.) max.
Running	0.21 N-cm (0.3 oz-in.) max.
Shaft Runout	0.08 mm (0.003 in.) T.I.R.
Lateral Runout	0.08 mm (0.003 in.) T.I.R.
Shaft End Play	0.13 mm (0.005 in.) T.I.R.
Shaft Radial Play	0.05 mm (0.002 in.) T.I.R.
Pilot Diameter Runout	0.05 mm (0.002 in.) T.I.R.
Backlash	1.0° maximum
Weight	Approximately 8.5 G
Terminals	
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.
Marking	Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code
Ganging (Multiple Section Pots.)	1 cup maximum

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

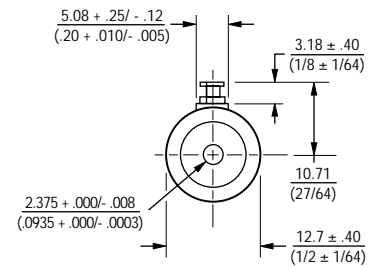
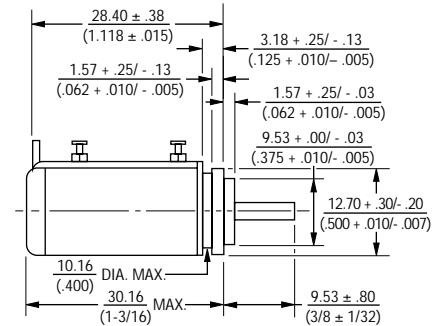
²Consult manufacturer for complete specification details.

Recommended Part Numbers

Part Number	Resistance (Ω)	Resolution
3750S-1-102	1,000	0.05
3750S-1-202	2,000	0.04
3750S-1-502	5,000	0.04
3750S-1-103	10,000	0.02

Part Number	Resistance (Ω)
3751H-1-102	1,000
3751H-1-202	2,000
3751H-1-502	5,000
3751H-1-103	10,000

3750/3751

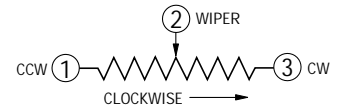


TOLERANCES: EXCEPT WHERE NOTED

DECIMALS: .XX ± (.010) .XXX ± (.005)

DIMENSIONS: $\frac{\text{MM}}{\text{(IN)}}$

FRACTIONS: ±1/64



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



1/2" Ø 10-TURN SERVO MOUNT POTENTIOMETERS WIREWOUND/HYBRITRON® ELEMENT

- Miniature size
- Outstanding resistance to humidity
- Housing: high temperature, moisture resistant, thermo-setting plastic.
- SILVERWELD® termination eliminates vulnerable single-wire termination
- Front and rear ball bearings
- HYBRITRON® element provides essentially infinite resolution
- Performance is guaranteed by Bourns Reliability Program

STANDARD SPECIFICATIONS	MODEL 3750 Wirewound Element	MODEL 3751 Hybritron® Element
Electrical Characteristics		
Resistance Range	100 Ω – 100 KΩ	1 Ω – 50 KΩ
Resistance Tolerance	± 5%	± 10%
Linearity (Independent)	± 0.25%	
Resolution	See ordering information	Essentially infinite
Effective Electrical Angle	3600° +10° -0°	3600° +10° -4°
Absolute Minimum Resistance/Voltage	1 Ω or 0.1% max.	0.2% VR max.
Noise/Output Smoothness	100 Ω ENR max.	0.1% VR max.
Power Rating	1.0 W	
	0 W	
Dielectric Strength MIL-R-12934		
Sea Level	1000 V ~ min.	
80,000 feet	300 V ~ min.	
Insulation Resistance 500 V =	1000 Meg. Ω min.	
Environmental Characteristics		
Operating Temperature Range	-65°C to +125°C	-55°C to +125°C
Temperature Coefficient of Wire ①	20 ppm/°C max.	100 ppm/°C max.
Humidity	MIL-R-12934, Humidity Cycling	
Vibration	MIL-R-12934, 20 G	
Wiper Bounce	0.1 millisecond max.	
Wiper Shift	0.5% max.	
Shock	MIL-R-12934, 100 G	
Wiper Bounce and Wiper Shift	Same as Vibration	
Load Life MIL-R-12934	1000 hours	
Resistance Shift	2.0% max.	5.0% max.
Sand, Dust, Fungus	MIL-E-5272	
Salt Spray	MIL-R-12934	
Mechanical and Physical Characteristics		
Mechanical Angle	3600° +20° -0°	
Shaft Runout	0.003 in. T.I.R.	
Lateral Runout	0.003 in. T.I.R.	
Pilot Diameter Runout	0.002 in. T.I.R.	
Shaft End Play	0.005 in. T.I.R.	
Shaft Radial Play	0.002 in. T.I.R.	
Rotational Life, shaft revolutions	1.000.000	10.000.000
Stop Strength	20 oz.-in. max.	
Torque Starting/Running	0.5 oz.-in. max.	
Moment of Inertia	0.06 g cm ²	

Specifications are subject to change without notice.

BOURNS®

STANDARD SPECIFICATIONS CONT.

Terminals	Gold-plated turrets
Weight	approx. 28 g
Markings	Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram and date code.

ORDERING INFORMATION

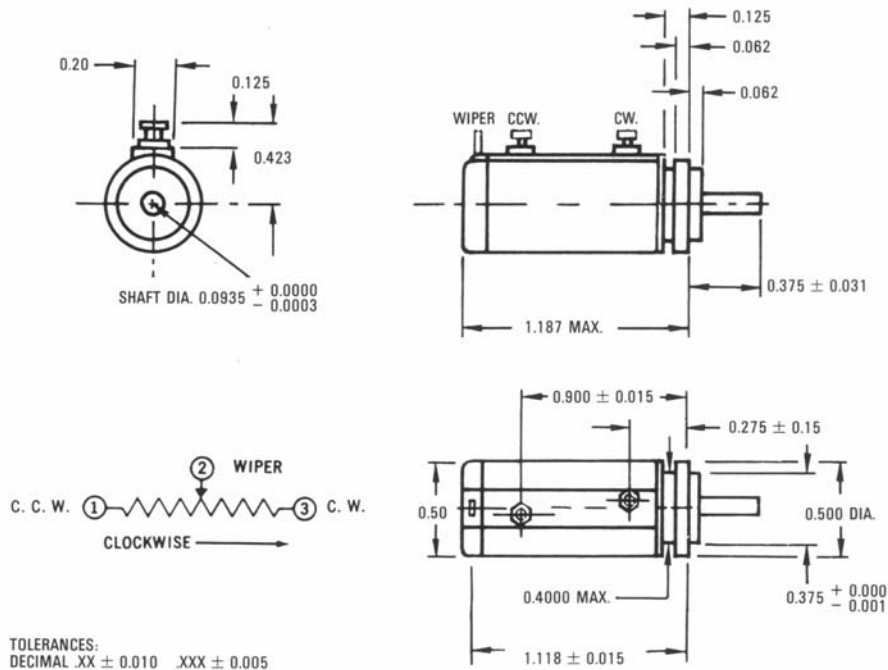
Resistance Ω	Part Number*
1,000	3751H-1-102
2,000	3751H-1-202
5,000	● 3751H-1-502
10,000	● 3751H-1-103
20,000	3751H-1-203
50,000	3751H-1-503

● Preferred resistance values

Part Number*	Resolution%
3750S-1-101	0.090
3750S-1-201	0.075
3750S-1-501	0.060
3750S-1-102	0.050
3750S-1-202	0.040
● 3750S-1-502	0.040
● 3750S-1-103	0.035
3750S-1-203	0.025
3750S-1-503	0.020
3750S-1-104	0.020

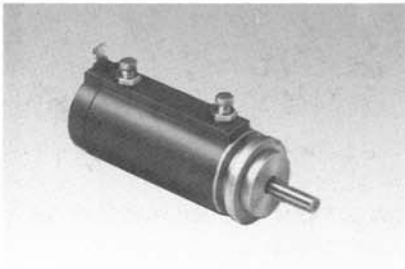
*The last three digits of the part number represent the resistance value in standard code.

DIMENSIONS (INCH)



Specifications are subject to change without notice.

BOURNS®



1/2" DIAMETER / 10-TURN / WIREWOUND AND HYBRITRON® ELEMENT

- Servo mount
- Excellent resolution
- Non-standard features and specifications available
- Small diameter
- High rotational life

BOURNS

FOR ORDERING INFORMATION SEE PAGE 44 .

Models 3750/3751

Bourns® Precision Potentiometers

3750	3751
Wirewound Element	Hybritron® Element

Electrical Characteristics¹

Standard Resistance Range	100 to 100KΩ	1K to 100KΩ
Resistance Tolerance	± 5%	± 10%
Independent Linearity	± 0.25%	± 0.25%
Resolution	See table page 108	Essentially infinite
Effective Electrical Angle	3600° + 10°, - 0°	3600° + 10°, - 4°
Absolute Minimum Resistance/Minimum Voltage	1Ω or 0.1% maximum (whichever is greater)	Minimum voltage 0.2% maximum
Noise	100Ω ENR maximum	Output smoothness 0.1% maximum

Power Rating (Voltage Limited)

By Power Dissipation or 315 VAC, Whichever is Less		
+ 70°C	1 watt	1 watt
+ 125°C	0 watt	0 watt
Dielectric Withstanding Voltage	MIL-STD-202, Method 301	MIL-STD-202, Method 301
Sea Level	1,000 VAC minimum	1,000 VAC minimum
80,000 Feet	300 VAC minimum	
70,000 Feet		300 VAC minimum
Insulation Resistance (500 VDC)	1,000 megohms minimum	1,000 megohms minimum

Environmental Characteristics¹

Operating Temperature		
Static Operation Temp Range	- 65°C to + 125°C	- 55°C to + 105°C
Dynamic Temp Range	+ 1°C to + 125°C	+ 1°C to + 105°C
Temperature Coefficient ²	± 50ppm/°C maximum/unit	± 100ppm/°C maximum/unit
Vibration		
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift	± 2% maximum	± 2% maximum
Voltage Ratio Shift	± 0.2% maximum	± 0.2% maximum
Shock		
Wiper Bounce	0.1 millisecond maximum	0.1 millisecond maximum
Total Resistance Shift	± 2% maximum	± 2% maximum
Voltage Ratio Shift	± 0.2% maximum	± 0.2% maximum
Load Life		
Total Resistance Shift	± 2% maximum	± 5% maximum
Rotational Life (No Load)	1,000,000 shaft revolutions	10,000,000 shaft revolutions
Total Resistance Shift	± 5% maximum	± 5% maximum
Moisture Resistance		
Total Resistance Shift	± 2% maximum	± 5% maximum

Mechanical Characteristics¹

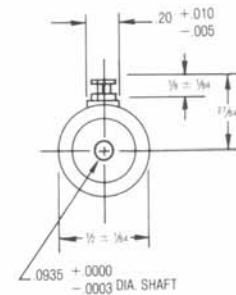
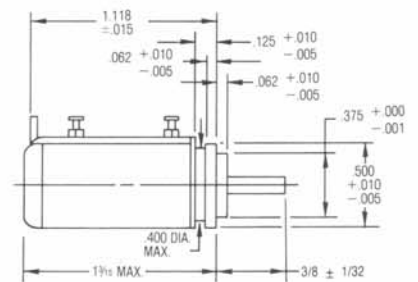
Mechanical Angle	3600° + 20°, - 0°	3600° + 20°, - 0°
Shaft Runout	0.003 in. T.I.R.	0.003 in. T.I.R.
Lateral Runout	0.003 in. T.I.R.	0.003 in. T.I.R.
Pilot Diameter Runout	0.002 in. T.I.R.	0.002 in. T.I.R.
Shaft End Play	0.005 in. T.I.R.	0.005 in. T.I.R.
Shaft Radial Play	0.002 in. T.I.R.	0.002 in. T.I.R.
Stop Strength	20 oz-in. minimum	20 oz-in. minimum
Torque, Starting	0.5 oz-in. maximum	0.5 oz-in. maximum
Torque, Running	0.3 oz-in. maximum	0.5 oz-in. maximum
Backlash	1.0° maximum	1.0° maximum
Weight	Approximately 0.3 oz.	Approximately 0.3 oz.
Terminals	Gold-plated turrets	Gold-plated turrets

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

²Consult factory for complete specification details.

Specifications are subject to change without notice.

3750/3751



TOLERANCES: EXCEPT WHERE NOTED

DECIMALS: .XX ± .010, .XXX ± .005

FRACTIONS: ± 1/64 DIMENSIONS: IN.

