



**BOURNS®**

## Features

- Snap-in mounting
- Space saving - extends only 5/8" behind most panels
- Easy one-hole, snap-in mounting
- Digital dial provides excellent readability

## 3610 - 10-Turn Precision Knobpot®

### Electrical Characteristics<sup>1</sup>

Standard Resistance Range .....	100 to 100 K ohms
Total Resistance Tolerance .....	±5 %
Effective Electrical Angle .....	3600° nominal
Absolute Minimum Resistance.....	1 ohm or 0.1 % maximum (whichever is greater)
Noise.....	100 ohms ENR maximum
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)	
Sea Level .....	1,000 VAC minimum
70,000 Feet.....	400 VAC minimum
Power Rating (Voltage Limited By Power Dissipation or 385 VAC, Whichever is Less)	
+25 °C.....	1.5 watts
+85 °C.....	0 watt
Insulation Resistance (500 VDC).....	1,000 megohms minimum
Resolution .....	See recommended part numbers
Accuracy (Correlation of Dial Readout to Voltage Ratio Output) .....	±0.5 % voltage ratio
Repeatability of Dial Readout .....	±0.1 % voltage ratio

### Environmental Characteristics<sup>1</sup>

Operating Temperature Range.....	+1 °C to +85 °C
Storage Temperature Range.....	-25 °C to +85 °C
Temperature Coefficient Over Storage Temperature Range <sup>2</sup> .....	±50 ppm/°C maximum/wire
Vibration .....	10 G
Wiper Bounce.....	0.1 millisecond maximum
Total Resistance Shift .....	±2 % maximum
Voltage Ratio Shift .....	±0.2 % maximum
Shock .....	50 G
Wiper Bounce.....	0.1 millisecond maximum
Total Resistance Shift .....	±2 % maximum
Voltage Ratio Shift .....	±0.2 % maximum
Load Life.....	1,000 hours, 1.5 watts
Total Resistance Shift .....	±2 % maximum
Rotational Life (No Load) .....	50,000 shaft revolutions
Total Resistance Shift .....	±2 % maximum
Moisture Resistance (MIL-STD-202, Method 103, Condition B)	
Total Resistance Shift .....	±2 % maximum
IP Rating .....	IP 60

### Mechanical Characteristics<sup>1</sup>

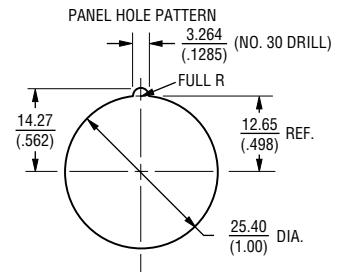
Stop Strength.....	14 N-cm (20 oz.-in.) minimum
Mechanical Angle .....	3600° +20°, -0°
Torque (Starting).....	0.71 to 4.94 N-cm (1.0 to 7.0 oz.-in.) maximum
Torque (Running).....	4.94 N-cm (7.0 oz.-in.) maximum
Variation .....	0.71 N-cm (1.0 oz.-in.) maximum
Backlash.....	1.0° maximum
Weight.....	Approximately 20 gm
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.	
Markings.....Manufacturer's name and part number, resistance value and tolerance, wiring diagram, and date code.	

<sup>1</sup>At room ambient: +25 °C nominal and humidity nominal, except as noted.

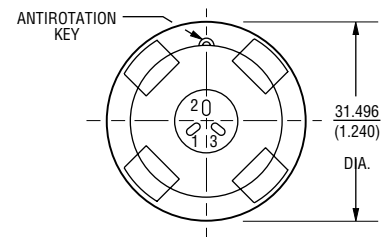
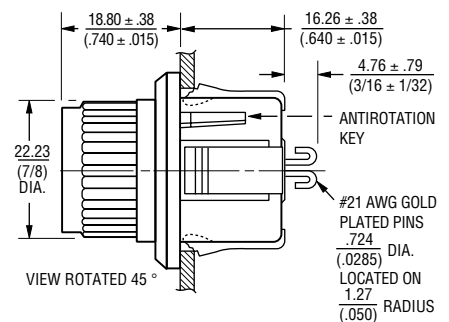
### Recommended Part Numbers

Part Number	Resistance (Ω)	Resolution (%)
<b>3610S-1-102</b>	<b>1,000</b>	<b>.035</b>
<b>3610S-1-502</b>	<b>5,000</b>	<b>.027</b>
<b>3610S-1-103</b>	<b>10,000</b>	<b>.022</b>

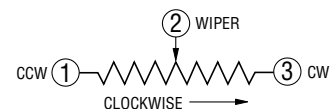
**BOLDFACE** LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.  
FOR OTHER OPTIONS CONSULT FACTORY.



NOTES:  
1. SNAP-IN MOUNTING CUP ACCOMMODATES PANEL THICKNESS  
 $\frac{.64}{(.025)}$  THRU  $\frac{1.98}{(.078)}$  (NO. 22GA THRU NO. 14GA) AND  $\frac{3.18}{(.125)}$



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



REV. 11/04

"Knobpot" is a registered trademark of Bourns, Inc.  
Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# MATERIAL DATA SHEET



Reliable Electronic Solutions

Material #	3610	
Product Line	Precisions	
Posted Date	03/02/2005	
Compliance Date	Since Inception	
RoHS Compliant	Yes	

No.	Construction element	Material group	Material weight [g]	Materials	CAS If applicable	Average mass [%]	Sum [%]
1	Tab	Copper Alloy	0.136	Silver	7440-22-4	35%	0.85%
				Zinc	7440-66-6	21%	
				Copper	7440-50-8	26%	
				Cadmium	7440-43-9	18%	
2	Body Molded	PBT	3.056	Glass	65997-17-3	10-30%	19.10%
				PBT	*****	65-89%	
				Antimony Oxide	1309-64-4	1-5%	
3	Pin Terminal	Nickel Alloy	0.081	Nickel	7440-02-0	99.0%	0.51%
				Magnesium	7439-98-5	0.01-0.08%	
				Titanium	7440-32-6	0.1-0.5%	
				Copper	7440-50-8	0.15% Max	
				Iron	7439-89-6	0.20% Max	
				Carbon	7440-44-0	0.15% Max	
				Silicon	7440-21-3	0.15% Max	
				Sulfur	7704-34-9	0.008% Max	
		Manganese	7439-98-5	0.35% Max			
Gold Plating	0.012	Gold	7440-57-5	100%	0.07%		
4	Ring Collector	Nickel Alloy	0.402	Nickel	7440-02-0	99.0%	2.51%
				Magnesium	7439-98-5	0.01-0.08%	
				Titanium	7440-32-6	0.1-0.5%	
				Copper	7440-50-8	0.15% Max	
				Iron	7439-89-6	0.20% Max	
				Carbon	7440-44-0	0.15% Max	
				Silicon	7440-21-3	0.15% Max	
				Sulfur	7704-34-9	0.008% Max	



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5	Tab Pin	Nickel Alloy	0.144	Manganese	7439-98-5	0.35% Max	0.90%
				Nickel	7440-02-0	99.0%	
				Magnesium	7439-98-5	0.01-0.08%	
				Titanium	7440-32-6	0.1-0.5%	
				Copper	7440-50-8	0.15% Max	
				Iron	7439-89-6	0.20% Max	
				Carbon	7440-44-0	0.15% Max	
				Silicon	7440-21-3	0.15% Max	
				Sulfur	7704-34-9	0.008% Max	
6	Tab Pin	Nickel Alloy	0.124	Manganese	7439-98-5	0.35% Max	0.77%
				Nickel	7440-02-0	99.0%	
				Magnesium	7439-98-5	0.01-0.08%	
				Titanium	7440-32-6	0.1-0.5%	
				Copper	7440-50-8	0.15% Max	
				Iron	7439-89-6	0.20% Max	
				Carbon	7440-44-0	0.15% Max	
				Silicon	7440-21-3	0.15% Max	
				Sulfur	7704-34-9	0.008% Max	
7	Mandrel Wire	Copper Alloy	1.129	Copper	7440-50-8	100%	7.06%
8	Resist Wire	Nickel Alloy	0.1714	Nickel	7440-02-0	100%	1.07%
9	Varnish	Insulating Varnish	0.1996	Phenolic Resin	UNK00185	100%	1.25%
10	Body Counter Molded	Nylon	0.56	Nylon	32131-17-2	55%	3.50%
				Glass Fibers	65997-17-3	45%	
				PTFE	3002-84-0	5%	
11	Gear Pinion Molded	Nylon	0.0215	Nylon	32131-17-2	59-69%	0.13%
				Glass Fibers	65997-17-3	24-34%	
				PTFE	3002-84-0	3-13%	
12	Pin Shaft Molded	Stainless Steel Alloy	0.0355	Nickel	7440-02-0	8.90	0.22%
				Chromium	7440-47-3	18.30	
				Iron	1309-37-1	Balance	
				Manganese	7439-96-5	1.80	
				Silicon	7440-21-3	1.00	
13	Pin Wheel Shaft	Stainless Steel Alloy	0.242	Nickel	7440-02-0	8.90	1.51%
				Chromium	7440-47-3	18.30	
				Iron	1309-37-1	Balance	
				Manganese	7439-96-5	1.80	



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				Silicon	7440-21-3	1.00	
14	Wheel Marked #1 Molded	PBT	0.15	Glass	65997-17-3	10-03%	0.94%
				Antimony Oxide	1309-64-4	1-5%	
				PBT	*****	65-89%	
				Carbon Black	1333-86-4	0.1-1%	
15	Wheel Marked #2 Molded	PBT	0.15	Glass	65997-17-3	10-03%	0.94%
				Antimony Oxide	1309-64-4	1-5%	
				PBT	*****	65-89%	
				Carbon Black	1333-86-4	0.1-1%	
16	Wheel Marked #3 Molded	PBT	0.15	Glass	65997-17-3	10-03%	0.94%
				Antimony Oxide	1309-64-4	1-5%	
				PBT	*****	65-89%	
				Carbon Black	1333-86-4	0.1-1%	
17	Gear Face Molded	PBT	1.6605	Carbon Black	1333-86-4	0.1-1%	10.38%
				Glass	65997-17-3	10-03%	
				Antimony Oxide	1309-64-4	1-5%	
				PBT	*****	65-89%	
18	Lens Molded	Synthetic Polymer	0.2635	Bisphenoe-A-carbonate	111211-39-3	100%	1.65%
19	Collector Bar Plated	Gold Plating	0.012	Gold	7440-57-5	100%	0.07%
20	Collector Bar Unplated	Nickel Silver Alloy	0.4	Nickel	7440-02-0	18%	2.50%
				Copper	7440-50-8	55%	
				Zinc	7440-66-6	27%	
21	Housing Molded Manufactured	PBT	1.588	Glass	65997-17-3	10-03%	9.92%
				Antimony Oxide	1309-64-4	1-5%	
				PBT	*****	65-89%	
				Carbon Black	1333-86-4	0.1-1%	
22	Slider Molded	Nylon	0.087	Nylon	32131-17-2	59-69%	0.54%
				Glass Fibers	65997-17-3	24-34%	
				PTFE	3002-84-0	3-13%	
23	Contact Spring Annealed	Metal Alloy	0.015	Silver	7440-22-4	30.0%	0.09%
				Copper	7440-50-8	14.0%	
				Zinc	7440-66-6	1.0%	
				Platinum	7440-06-4	10.0%	
24	Bracket Molded	RFL	1.973	Nylon	32131-17-2	59-69%	12.33%
				Glass Fibers	65997-17-3	24-34%	
				PTFE	3002-84-0	3-13%	



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25	Cup Mounting Molded	Polyhexamethylene Adelaide	4.455	Polyamide	*****	100%	27.84%
26	Cover Bezel Anodized	Aluminum Alloy	1.216	Aluminum	7429-90-5	88.90%	7.60%
				Cobalt	7440-48-4	0.23%	
				Iron	1309-37-1	1.60%	
				Lead	7439-92-1	0.50%	
				Titanium	7440-32-6	0.06%	
				Manganese	7439-98-5	2.50%	
				Zinc	7440-66-6	6.20%	
		Zinc Plating	0.00174	Chromium	18065-83-1	0.11%	0.01%
				Tin	7440-31-5	0.64%	
				Zinc	7440-66-6	99.25%	
27	Face Dial Marked	PBT	1.3456	Glass	65997-17-3	10-30%	8.41%
				PBT	*****	65-89%	
				Antimony Oxide	1309-64-4	1-5%	
28	Spring Washer	Copper Beryllium Alloy	0.175	Nickel	7440-02-0	8.90	1.09%
				Chromium	7440-47-3	18.30	
				Iron	1309-37-1	Balance	
				Manganese	7439-96-5	1.80	
				Silicon	7440-21-3	1.00	
		Total weight	16.00134				