

## 2" (50.8 mm) Single Turn Wirewound Precision Potentiometer



### FEATURES

- Screw, servo and bushing mount types available
- Large range of ohmic values: 5  $\Omega$  to 85 k $\Omega$
- Extra taps upon request
- Gangable up to 6 sections on a same shaft
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### QUICK REFERENCE DATA

Sensor type	ROTATIONAL, single turn wirewound
Output type	Output by turrets
Market appliance	Professional
Dimensions	2" (50.8 mm)

### ELECTRICAL SPECIFICATIONS

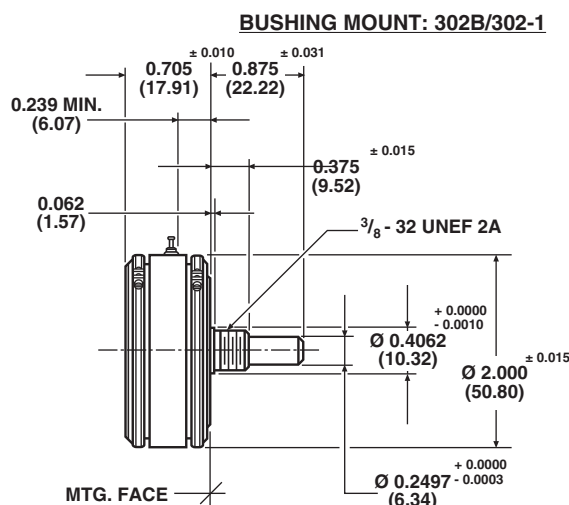
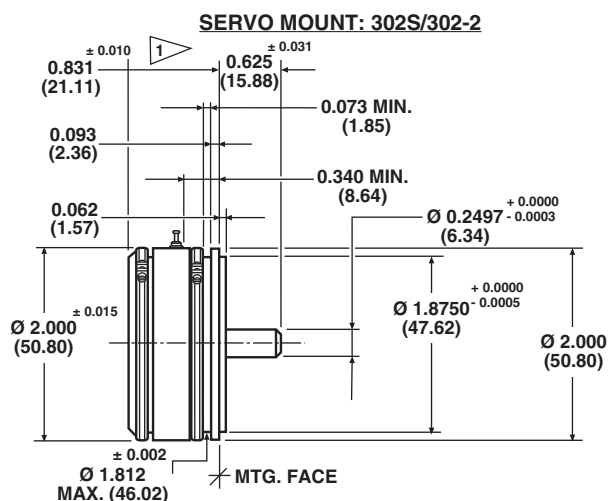
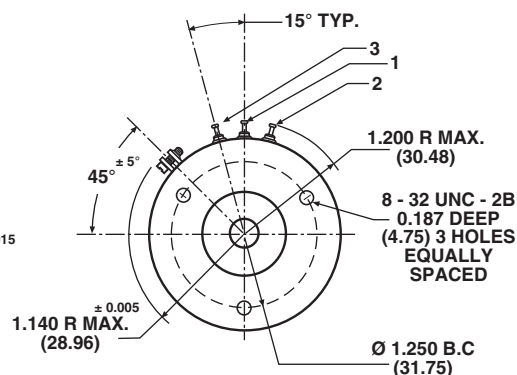
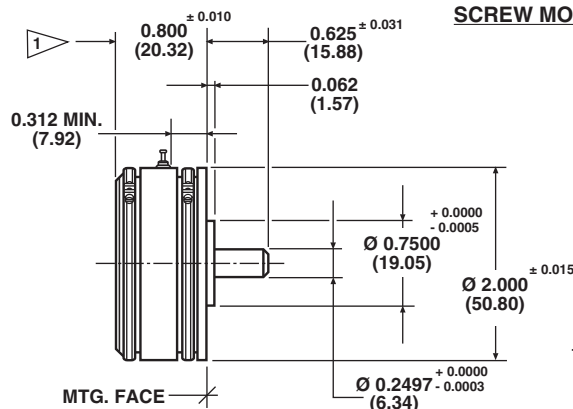
PARAMETER		
Total resistance: Tolerance 50 $\Omega$ and above Below 50 $\Omega$	<b>STANDARD</b> 5 $\Omega$ to 50 k $\Omega$ $\pm 3\%$ $\pm 5\%$	<b>SPECIAL</b> 85 k $\Omega$ $\pm 1\%$ $\pm 3\%$
	Linearity x total resistance or 0.5 $\Omega$ whichever is greater	
	Linearity x total applied voltage for total resistance above 20 $\Omega$ , 2.0 % of total applied voltage for 20 $\Omega$ and below	
Absolute minimum resistance		
End voltage		
Linearity (independent) 5 $\Omega$ to 50 $\Omega$ 50 $\Omega$ to 200 $\Omega$ 200 $\Omega$ to 1 k $\Omega$ 1 k $\Omega$ to 10 k $\Omega$ 10 k $\Omega$ and above	<b>STANDARD</b> $\pm 1.0\%$ $\pm 0.50\%$ $\pm 0.25\%$ $\pm 0.25\%$ $\pm 0.25\%$	<b>BEST PRACTICAL</b> $\pm 0.50\%$ $\pm 0.35\%$ $\pm 0.20\%$ $\pm 0.15\%$ $\pm 0.10\%$
	100 $\Omega$ ENR	
	350° $\pm 2^\circ$	
	70 °C ambient derated to zero at 125 °C 75 % of the rating of section 1 (3.0 W at 70 °C)	
	1000 M $\Omega$ minimum 500 V <sub>DC</sub>	
	1000 V <sub>RMS</sub> , 60 Hz	
Noise		
Electrical angle		
Power rating Section 1: 4.0 W Additional sections		
Insulation resistance		
Dielectric strength		
Taps (extra)	21 available as special, standard tolerance $\pm 1^\circ$	
Phasing (CCW end points)	Additional sections phased to section 1 within $\pm 1^\circ$	

### ORDERING INFORMATION/DESCRIPTION

302	C	1	501	BO1
MODEL	MOUNTING TYPE	NUMBER OF SECTIONS	OHMIC VALUE	PACKAGING
	<b>B:</b> Bushing <b>S:</b> Servo <b>C:</b> Screw	From 1 up to 6 (max.)	500 $\Omega$	Box of 1 piece
Other characteristics will be standard as described on this datasheet. If special characteristics are required, such as: special linearity tolerance, special resistance tolerance, extra taps, non-linear functions, etc., please state these on your order and allow additional lead time for delivery.				

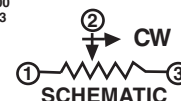
### SAP PART NUMBERING GUIDELINES

302	S	2	103	202	BO1
MODEL	MOUNTING TYPE	NUMBER OF SECTIONS	OHMIC VALUE	OHMIC VALUE	PACKAGING
	<b>S:</b> Servo		Section N° 1 103 = 10K	Section N° 2 202 = 2K	Box of 1 piece

**DIMENSIONS** in inches (millimeters)


1 ADD 0.500 (12.70) FOR EACH ADDITIONAL SECTION

TOLERANCES: UNLESS OTHERWISE NOTED.  
DECIMALS ± 0.005 ANGLES ± 2°


**MECHANICAL SPECIFICATIONS**

PARAMETER		
Rotation	360° (continuous)	
Bearing type	Servo and screw mount: ball Bushing mount: sleeve	
Ganging	6 sections maximum, terminal alignment, added sections, within ± 10° of section 1 terminals	
Torque (maximums)	<b>STARTING</b>	<b>RUNNING</b>
Servo and screw (1 section)	1.0 oz. - in (72.00 g - cm)	0.5 oz. - in (36.00 g - cm)
Bushing (1 section)	1.7 oz. - in (122.42 g - cm)	1.0 oz. - in (72.00 g - cm)
Each added section	0.6 oz. - in (43.21 g - cm)	0.4 oz. - in (28.80 g - cm)
Mechanical runouts (maximums)	<b>SERVO AND SCREWING</b>	<b>BUSHING</b>
Shaft (TIR/in)	0.002" (0.05 cm)	0.002" (0.05 cm)
Pilot dia. (TIR)	0.002" (0.05 cm)	0.002" (0.05 cm)
Lateral (TIR)	0.003" (0.08 cm)	0.005" (0.13 cm)
Shaft end play	0.005" (0.13 cm)	0.005" (0.13 cm)
Shaft radial play	0.002" (0.05 cm)	0.003" (0.08 cm)
Moment of inertia	2.0 g - cm <sup>2</sup> per section maximum	
Weight (maximums)		
Single section:	4.0 oz. (113.40 g)	
Each additional section:	1.2 oz. (34.02 g)	



### MATERIAL SPECIFICATIONS

Housing and lids	Aluminum, anodized
Shaft and clamp rings	Stainless steel, non-magnetic non-passivated
Terminals	Brass, plated for solderability
Bushing mount hardware Lockwasher internal tooth: Panel nut:	Steel, nickel plated Brass, nickel plated

### ENVIRONMENTAL SPECIFICATIONS

Vibration	15 g thru 2000 Hz
Shock	50 g
Salt spray	96 h
Rotational life	1 million shaft revolutions
Temperature range	-55 °C to +125 °C

#### Note

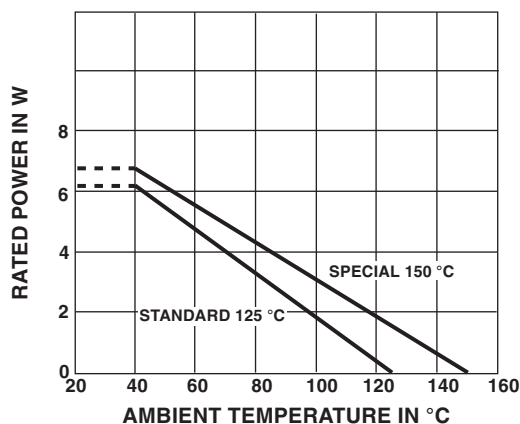
- Nothing stated herein shall be construed as a guarantee of quality or durability.

### MARKING

Unit identification	Units shall be marked with Vishay Spectrol name, model no and date code, and on each section, resistance, resistance tolerance, linearity and terminal identification. Example of a marking for a standard part: 302-11202
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### POWER RATING CHART

(Ratings for cup No. 1. Additional cups 75 % of values shown)



### RESISTANCE ELEMENT DATA

RESISTANCE VALUES (Ω)	RESOLUTION (%)	OHMS PER TURN	MAXIMUM CURRENT AT 40 °C AMBIENT (mA)	MAXIMUM VOLTAGE ACROSS COIL (V)	WIRE TEMP. COEF. (ppm/°C)
5	0.320	0.016	893	4.48	800
10	0.200	0.020	633	6.32	800
20	0.165	0.033	447	8.95	800
50	0.148	0.074	283	14.1	800
100	0.151	0.151	200	20.0	20
200	0.126	0.252	141	28.4	20
500	0.115	0.573	89.4	44.7	20
1K	0.098	0.981	63.3	63.2	20
2K	0.085	1.70	44.7	89.5	20
5K	0.059	2.93	28.3	141	20
10K	0.051	5.16	20.0	200	20
20K	0.043	8.55	14.1	284	20
50K	0.032	15.80	8.94	447	20



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