

2" (50.8 mm) Single Turn Wirewound Precision Potentiometer


FEATURES

- Screw, servo and bushing mount types available
- Large range of ohmic values: 5 Ω to 85 kΩ
- 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

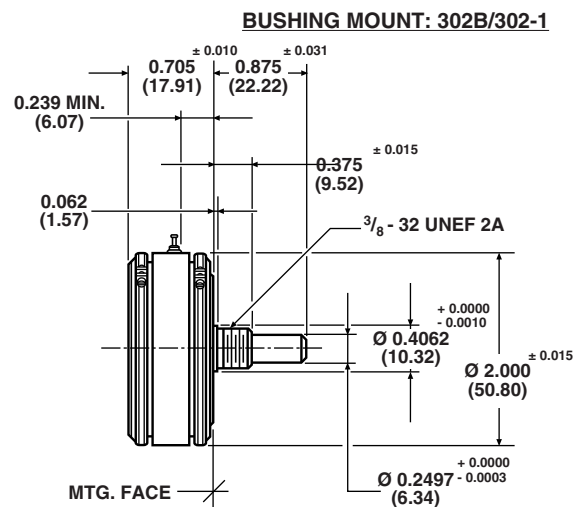
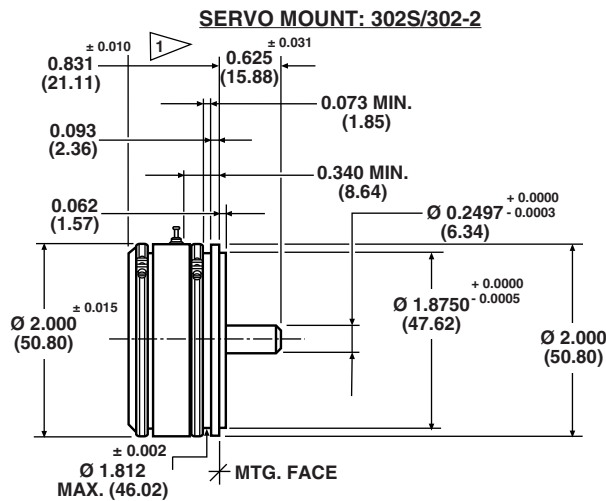
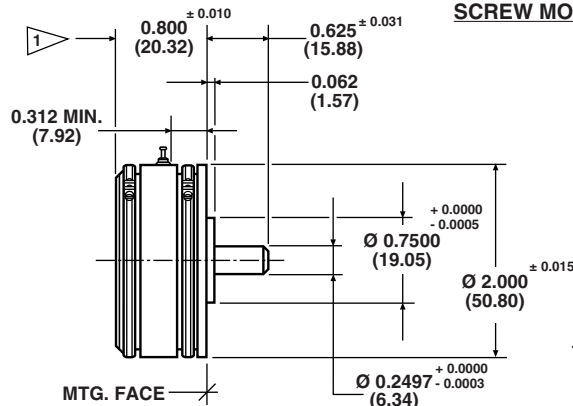

RoHS
COMPLIANT

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

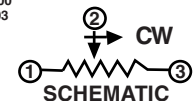
ORDERING INFORMATION/DESCRIPTION				
302	C	1	501	BO1
MODEL	MOUNTING TYPE	NUMBER OF SECTIONS	OHMIC VALUE	PACKAGING
	B: Bushing S: Servo C: Screw	From 1 up to 6 (max.)	500 Ω	Box of 1 piece
Other characteristics will be standard as described on this datasheet. If special characteristics are required, such 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
	S: 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)	STARTING	RUNNING
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)	SERVO AND SCREWING	BUSHING
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 ² per section maximum	
Weight (maximums)		
Single section:	4.0 oz. (113.40 g)	
Each additional section:	1.2 oz. (34.02 g)	



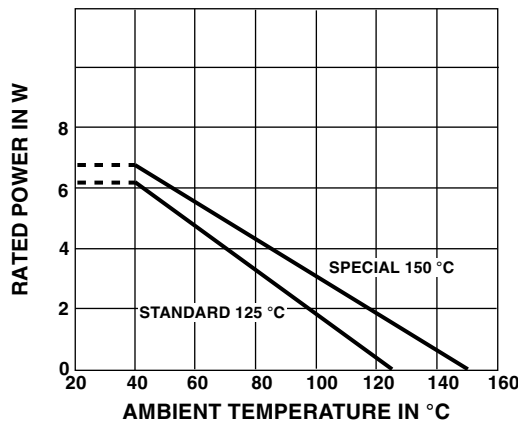
MATERIAL SPECIFICATIONS	
Housing and lids	Aluminum, anodized
Shaft and clamp rings	Stainless steel, non-magnetic non-passivated
Terminals	Brass, plated for solderability
Bushing mount hardware Lockwasher internal tooth: Panel nut:	Steel, nickel plated Brass, nickel plated

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

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

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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