$^{7}/_{8}$" (22.2 mm) Ten Turn Wirewound Upper Grade Precision Potentiometer



FEATURES

- Bushing mount and servo mount designs are available
- Large ohmic value range: 15 Ω to 100 kΩ
- Dual gang configuration
- Improved linearity available
- Long life > 2 million shaft revolutions
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

QUICK REFERENCE DATA

Sensor type	ROTATIONAL, multi turn wirewound
Output type	Output by turrets
Market appliance	Professional
Dimensions	$^{7}/_{8}$" (22.2 mm)

ELECTRICAL SPECIFICATIONS

PARAMETER		
Total resistance Tolerance: 100 Ω and above Below 100 Ω	**STANDARD** 15 Ω to 100 kΩ ± 3 % ± 5 %	**SPECIAL** 15 Ω to 150 kΩ ± 1 % ± 3 %
Linearity (independent) 15 Ω to 50 Ω 50 Ω to 1 kΩ 1 kΩ to 5 kΩ 5 kΩ and above	**STANDARD** ± 0.25 % ± 0.25 % ± 0.25 % ± 0.25 %	**BEST PRACTICAL** ± 0.15 % ± 0.10 % ± 0.075 % ± 0.05 %
Noise	100 Ω ENR	
Electrical rotation	3600° +4° -0°	
Power rating: Additional sections	2.0 W at 70 °C ambient derated to zero at 125 °C 75 % of the rating of section 1 (1.5 W at 70 °C)	
Insulation resistance	1000 MΩ minimum 500 V_{DC}	
Dielectric strength	1000 V_{RMS}, 60 Hz	
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 applied voltage for 20 Ω and below	
Phasing (CCW end points)	Additional sections phased to section 1 within ± 2°	
Taps (extra)	54 available as special, standard tolerance ± 2°	

ORDERING INFORMATION

5	0	2	S	1	2	0	3	2	0	3	X	X	X	X

MODEL	STYLE	GANGS	OHMIC VALUE GANGS Nº 1	OHMIC VALUE GANGS Nº 2	SPECIAL REQUEST
500 **501** **502**	**B**: bushing **S**: servo	**1** **2**	**470** = 47 Ω **222** = 2.200 Ω **103** = 10 kΩ For ohmic value range see electrical specification	**470** = 47 Ω **222** = 2.200 Ω **103** = 10 kΩ For ohmic value range see electrical specification	Custom reference

PART NUMBER DESCRIPTION (for information only)

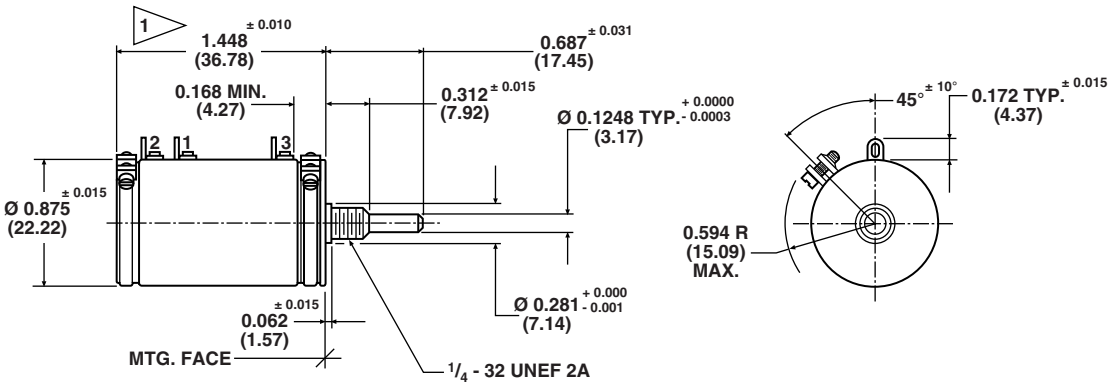
502-	2	1	203	203	XXXX
MODEL	STYLE	GANGS	OHMIC VALUE GANGS Nº 1	OHMIC VALUE GANGS Nº 2	SPECIAL
	B = **1** S = **2**				

For technical questions, contact: sferprecisionpot@vishay.com

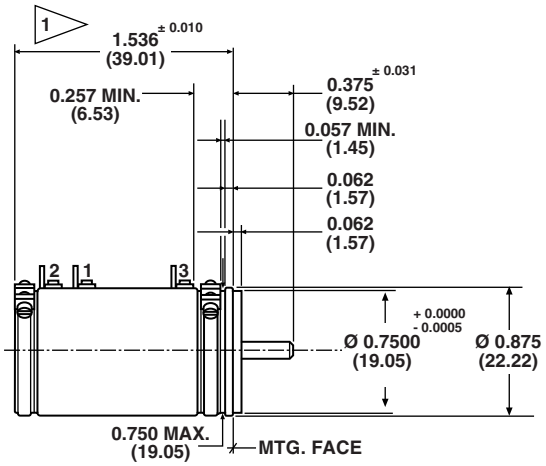
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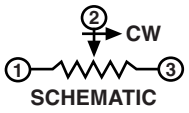
DIMENSIONS in inches (millimeters)

BUSHING MOUNT: 502B/502-1



SERVO MOUNT: 502S/502-2





1 ADD 1.282 ± 0.002 (32.56) FOR EACH ADDITIONAL SECTION

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

MECHANICAL SPECIFICATIONS

PARAMETER		
Rotation	3600° +10° -0°	
Bearing type	**SERVO** Ball bearing	**BUSHING MOUNT** Sleeve bearing
Torque (maximums) Servo section 1 Bushing section 1 Each additional section	**STARTING** 0.4 oz. - in (28.8 g - cm) 0.5 oz. - in (36.0 g - cm) 0.3 oz. - in (21.6 g - cm)	**RUNNING** 0.3 oz. - in (21.6 g - cm) 0.4 oz. - in (28.8 g - cm) 0.2 oz. - in (14.4 g - cm)
Mechanical runout (maximums): Shaft runout (TIR) Pilot dia. runout (TIR) Lateral runout (TIR) Shaft end play Shaft radial play	**SERVO** 0.002" (0.05 cm) 0.002" (0.05 cm) 0.002" (0.05 cm) 0.005" (0.13 cm) 0.002" (0.05 cm)	**BUSHING** 0.002" (0.05 cm) 0.002" (0.05 cm) 0.005" (0.13 cm) 0.005" (0.13 cm) 0.003" (0.08 cm)
Weight: Single section Each additional section	1.20 oz. (34.0 g) 0.80 oz. (22.7 g)	
Stop strength	100 oz. - in, static (7.2 kg - cm)	
Ganging	2 sections, terminal alignment, added sections, within ± 10° of section 1 terminals	
Moment of inertia	0.45 g - cm^2 per section maximum	

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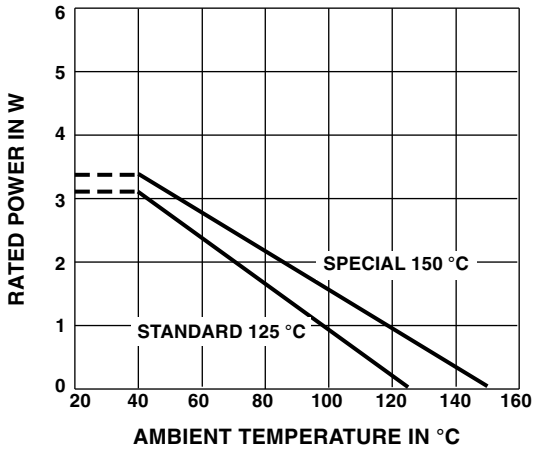
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MATERIAL SPECIFICATIONS	
Housing	Phenolic (black) glass filled
Lids	Aluminum, anodized
Shaft	Stainless steel, non-magnetic, non-passivated
Terminals	Brass, plated for solderability
Clamp ring	Stainless steel
Bushing mounting hardware Lockwasher internal tooth: Panel nut:	 Steel, nickel plated Brass, nickel plated

MARKING	
Unit identification	Units shall be marked with Vishay spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification, and date code. Example of a marking for a standard part: 502-11050

POWER RATING CHART

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



ENVIRONMENTAL SPECIFICATIONS	
Vibration	15 *g* thru 2000 CPS
Shock	50 *g*
Salt Spray	96 h
Rotational Life	2 million shaft revolutions
Load Life	900 h
Operating Temperature Range	-55 °C to +125 °C

Note

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

RESISTANCE ELEMENT DATA

STANDARD RESISTANCE VALUES (Ω)	RESO-LUTION (%)	OHMS PER TURN	MAXIMUM CURRENT AT 70 °C AMBIENT (mA)	MAXIMUM VOLTAGE ACROSS COIL (V)	WIRE TEMP. COEF. (ppm/°C)
15	0.088	0.013	365	5.48	800
20	0.066	0.013	316	6.32	800
50	0.050	0.025	200	10.0	800
100	0.050	0.050	141	14.1	180
200	0.049	0.098	100	20.0	20
500	0.037	0.185	63.2	31.6	20
1K	0.034	0.339	44.7	44.7	20
2K	0.029	0.571	31.6	63.2	20
5K	0.023	1.173	20.0	100	20
10K	0.017	1.731	14.1	141	20
20K	0.016	3.142	10.0	200	20
50K	0.011	5.639	6.32	316	20
100K	0.010	10.325	4.47	447	20
150K	0.010	14.170	3.65	548	20

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