

## 7/8" (22.2mm) Ten-Turn Wirewound Precision Potentiometer



**FEATURES**

- 15Ω to 100K
- Bushing Mount and Servo Mount

ELECTRICAL SPECIFICATIONS		
PARAMETER	STANDARD	SPECIAL
Total Resistance Tolerance: 100Ω and above Below 100Ω	15Ω to 100KΩ ± 3% ± 5%	15Ω to 150KΩ ± 1% ± 3%
Linearity (Independent) 15Ω to 50Ω 50Ω to 1KΩ 1K to 5KΩ 5K and above	STANDARD ± 0.25% ± 0.25% ± 0.25% ± 0.25%	BEST PRACTICAL ± 0.15% ± 0.10% ± 0.075% ± 0.05%
Noise	100Ω ENR	
Electrical Rotation	3600° + 4° -0°	
Power Rating: Additional Sections	2.0 watts @ 70°C ambient derated to zero @ 125°C 75% of the rating of sections 1 (1.5W at 70°C)	
Insulation Resistance	1000MΩ minimum 500V <sub>DC</sub>	
Dielectric Strength	1000V <sub>RMS</sub> , 60Hz	
Absolute Minimum Resistance	Linearity x total resistance or 0.5Ω whichever is greater	
End Voltage	Linearity x total applied voltage for total resistance above 20Ω, 2.0% of applied voltage for 20 and below	
Phasing (CCW End Points)	Additional sections phased to section 1 within ± 2°	
Taps (Extra)	54 available as special, standard tolerance ± 2°	

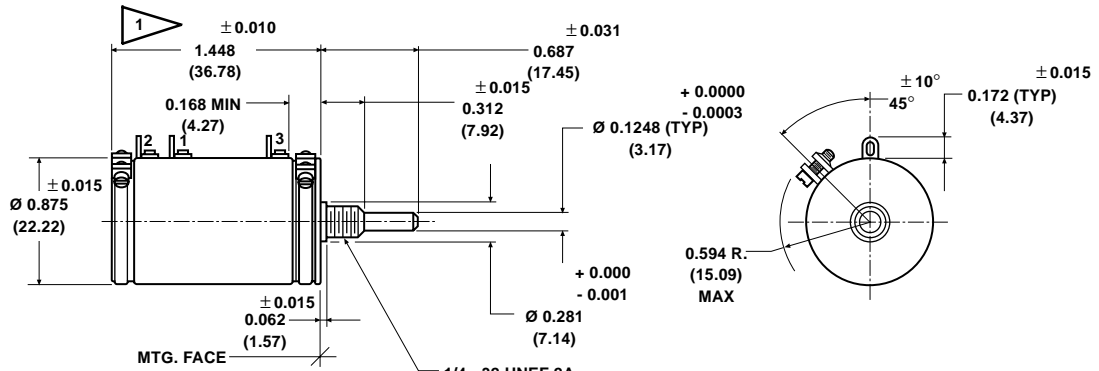
ORDERING INFORMATION			
The Model 502 can be ordered from this data sheet with a variety of alternate characteristics, as shown above. For most rapid service on your order, please state:			
<b>502</b>	<b>1</b>	<b>2</b>	<b>XXX</b>
MODEL	MOUNTING	TOTAL RESISTANCE OF EACH SECTION	NUMBER OF SECTION IN GANG
	1. Servo 2. Bushing	Beginning with the section nearest the mounting end	
Example: Model 502, Servo, 10K/30K, 2 section			
Example: Model 502, Bushing, 5K, single section			
Example: <b>502 - 1 - 2 - XXX</b>			
Other characteristics will be standard as described on this data sheet. 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.			

# Model 502

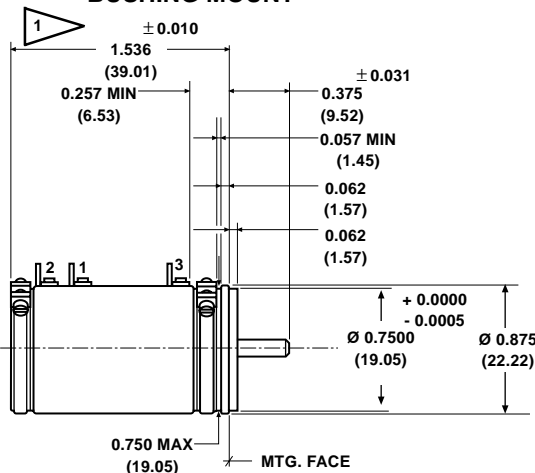
Spectrol

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DIMENSIONS in inches (millimeters)



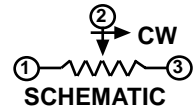
## BUSHING MOUNT



## SERVO MOUNT

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	<b>SERVO</b> Ball Bearing	<b>BUSHING MOUNT</b> Sleeve bearing
Torque (Maximums)	<b>STARTING</b>	<b>RUNNING</b>
Servo Section 1	0.4oz - in (28.8gm - cm)	0.3 oz - in (21.6gm - cm)
Bushing Section 1	0.5 oz - in (36.0gm - cm)	0.4 oz - in (28.8gm - cm)
Each Additional Section	0.3 oz - in (21.6gm - cm)	0.2 oz - in (14.4gm - cm)
Mechanical Runouts (Maximums):	<b>SERVO</b>	<b>BUSHING</b>
Shaft Runout (TIR)	0.002 in (0.05cm)	0.002 in (0.05cm)
Pilot Dia. Runout (TIR)	0.002 in (0.05cm)	0.002 in (0.05cm)
Lateral Runout (TIR)	0.002 in (0.05cm)	0.005 in (0.13cm)
Shaft End Play	0.005 in (0.13cm)	0.005 in (0.13cm)
Shaft Radial Play	0.002 in (0.05cm)	0.003 in (0.08cm)
Weight:		
Single Section	1.20 oz (34.0gm)	
Each Additional Section	0.80 oz (22.7gm)	
Stop Strength	100 oz - in, static (7.2Kgm - cm)	
Ganging	2 sections, terminal alignment, added sections, within ± 10° of section 1 terminals	
Moment of Inertia	0.45gm - cm <sup>2</sup> per section maximum	

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Vishay Spectrol

MATERIAL SPECIFICATIONS	
Housing	Diallyl phthalate
Lids	Aluminum, anodized
Shaft	Stainless steel, non-magnetic, non-passivated
Terminals	Brass, plated for solderability
Clamp Ring	Stainless steel
Bushing Mount Hardware	Internal tooth: Steel, nickel plated Brass, nickel plated
Lockwasher:	
Panel Nut:	

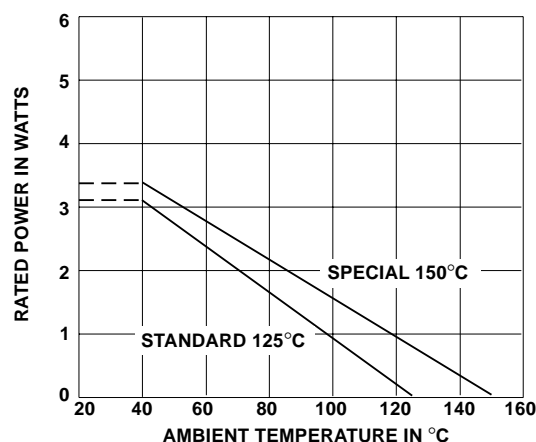
MARKING	
<b>Unit Identification</b>	Units shall be marked with spectrol name and model No, resistance and resistance tolerance, linearity, terminal identification, and date code

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

### POWER RATING CHART

Ratings for cup No. 1.

Additional cups 75% of values shown



RESISTANCE ELEMENT DATA					
STANDARD RESISTANCE VALUES (Ω)	RESOLUTION (%)	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