

# 1 13/16" (46 mm) Ten Turn Wirewound Upper Grade Precision Potentiometer


**FEATURES**

- Large range of ohmic values: 20 Ω to 200 kΩ
- Bushing mount, servo mount and screw mount versions
- Gangable up to 3 sections
- Extra taps available upon request

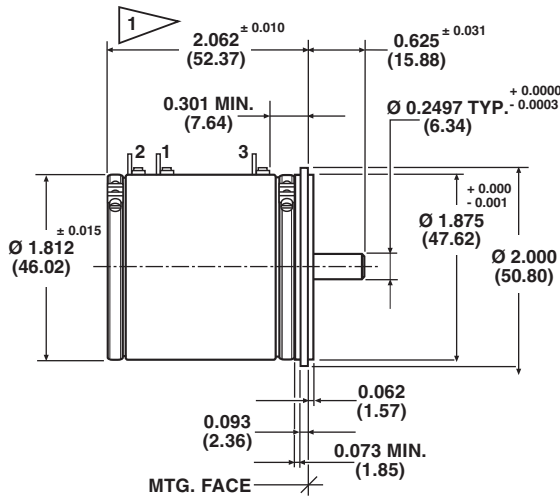
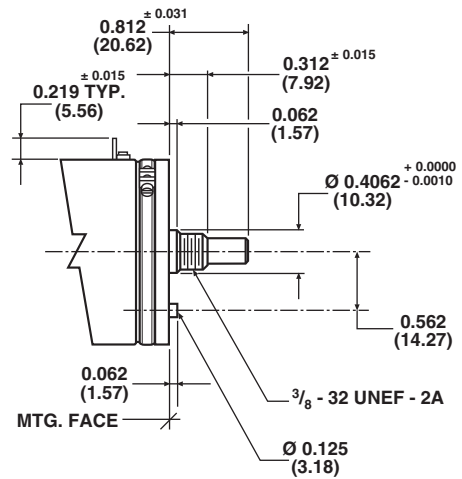
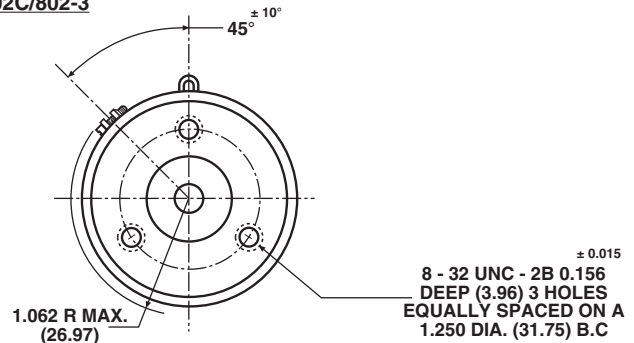
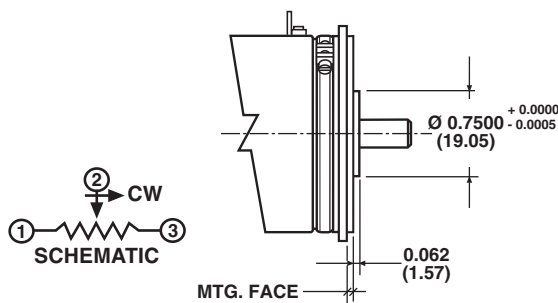
QUICK REFERENCE DATA	
Sensor type	ROTATIONAL, multi turn wirewound
Output type	Output by turrets
Market appliance	Professional
Dimensions	1 13/16" (46 mm)

ELECTRICAL SPECIFICATIONS		
PARAMETER	STANDARD	SPECIAL
Total resistance Tolerance: 200 Ω and above Below 200 Ω	20 Ω to 200 kΩ ± 3 % ± 5 %	500 kΩ ± 1 % ± 3 %
Linearity (independent) 20 Ω to 50 Ω 50 Ω to 200 Ω 200 Ω and above	STANDARD ± 0.25 % ± 0.25 % ± 0.25 %	SPECIAL ± 0.15 % ± 0.10 % ± 0.05 %
Noise	100 Ω ENR	
Electrical rotation	3600° +4° -0°	
Power rating Section 1 Each additional sections:	5.00 Ω 70 °C ambient, derated to zero at 125 °C 75 % of the rating of section 1 (3.8 W at 70 °C)	
Insulation resistance	1000 MΩ minimum, 500 V <sub>DC</sub>	
Dielectric strength	1000 V <sub>RMS</sub> , 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 total applied voltage for 20 and below	
Phasing (CCW end points)	Additional sections phased to section 1 within ± 1°	
Taps (extra)	Available as special, standard tolerance ± 1°	

ORDERING INFORMATION														
8	0	2	B	2	1	0	3	2	0	3				
MODEL		STYLE		GANGS		OHMIC VALUE GANGS N° 1		OHMIC VALUE GANGS N° 2		SPECIAL REQUEST				
802		B: bushing S: servo C: screw		1 2 3 4		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		xxxx				

PART NUMBER DESCRIPTION (for information only)					
802-	1	1	103	203	xxxx
MODEL	STYLE	GANGS	OHMIC VALUE GANGS N° 1	OHMIC VALUE GANGS N° 2	SPECIAL
	B: 1 S: 2 C: 3				

**DIMENSIONS** in inches (millimeters)

**SERVO MOUNT: 802S/802-2**

**BUSHING MOUNT: 802B/802-1**

**SCREW MOUNT: 802C/802-3**


TOLERANCES: UNLESS OTHERWISE NOTED.  
 DECIMALS  $\pm 0.005$  ANGLES  $\pm 2^\circ$

**1** ADD 1.770  $\pm 0.010$  (44.96) FOR EACH ADDITIONAL SECTION

**MECHANICAL SPECIFICATIONS**

PARAMETER			
Rotation	3600° +10° -0°		
Bearing type	<b>SERVO</b> Ball bearing	<b>BUSHING</b> Sleeve	<b>SCREW</b> Ball bearing
Torque (maximums)	<b>MAX. STARTING</b>		<b>MAX. RUNNING</b>
Servo or screw section 1	1.20 oz. - in (86.4 g - cm)		0.80 oz. - in (57.6 g - cm)
Bushing section 1	1.75 oz. - in (126.0 g - cm)		1.25 oz. - in (90.0 g - cm)
Each additional section	0.80 oz. - in (57.6 g - cm)		0.60 oz. - in (43.2 g - cm)
Mechanical runouts (maximums):	<b>SERVO OR SCROLL</b>		<b>BUSHING</b>
Shaft (TIR/in)	0.002" (0.05 cm)		0.002" (0.05 cm)
Pilot dia. runout (TIR)	0.002" (0.05 cm)		0.002" (0.05 cm)
Lateral runout (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)
Weight:			
Single section	5.5 oz. (156 g)		
Each additional section	3.7 oz. (105 g)		
Stop strength	1000 oz. - in, static (72 kg - cm)		
Ganging	3 sections maximum terminal alignment, added sections within $\pm 10^\circ$ of section 1 terminals		
Moment of inertia	15 g - cm <sup>2</sup> per section maximum		

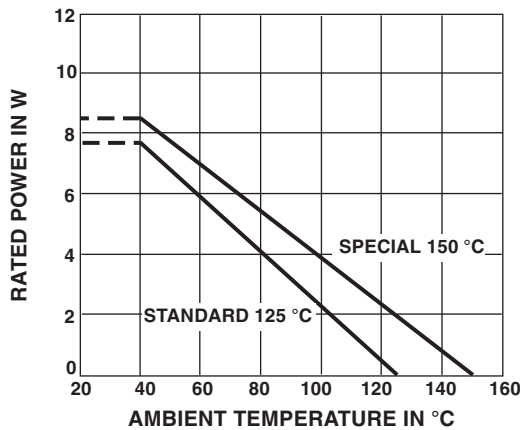


MATERIAL SPECIFICATIONS	
Housing	Glass filled thermoset plastic
Lids	Aluminum, anodized
Shaft	Stainless steel, non-magnetic, non-passivated
Terminals	Brass, plated for solderability
Clamp ring	Stainless steel
Bushing mount hardware Lockwasher: Panel nut:	Internal tooth steel, nickel plated Brass, nickel plated

MARKING	
Unit identification	Units shall be marked with Spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification, and date code. Example of a marking for a standard part: 802-31502

**POWER RATING CHART**

(Ratings for cup N° 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)	RESOLUTION (%)	OHMS PER TURN	MAXIMUM CURRENT AT 70 °C AMBIENT (mA)	MAXIMUM VOLTAGE ACROSS COIL (V)	WIRE TEMP. COEF. (ppm/°C)
20	0.044	0.009	500	10.0	800
50	0.027	0.014	316	15.8	800
100	0.024	0.024	224	22.4	800
200	0.028	0.056	158	31.6	180
500	0.023	0.115	100	50.0	20
1K	0.018	0.182	70.7	70.7	20
2K	0.020	0.402	50.0	100	20
5K	0.015	0.754	31.6	158	20
10K	0.013	1.229	22.4	224	20
20K	0.010	1.970	15.8	316	20
50K	0.007	3.686	10.0	500	20
100K	0.007	6.507	7.07	707	20
200K	0.005	6.929	5.00	1000	20
500K	0.004	19.987	2.00	1000	20



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