

# Model 830, 860



Vishay Spectrol

## 1 - 13/16" (46mm) Three and Ten Turn Wirewound Precision Potentiometer



### FEATURES

- 830: 15Ω to 50KΩ, Three-Turn
- 860: 20Ω to 200KΩ, Ten-Turn

### ELECTRICAL SPECIFICATIONS

PARAMETER	MODEL 830	MODEL 860
Total Resistance Standard Range	15Ω to 50KΩ Special to 150KΩ	20Ω to 200KΩ Special to 500KΩ
Tolerance: 200Ω and above Below 200Ω	STANDARD ± 3% ± 5%	SPECIAL ± 1% ± 3%
Linearity (Independent)	± 0.25% standard	
15Ω to 1KΩ	± 0.15%	—
1KΩ to 5KΩ	± 0.10%	—
5KΩ to 25KΩ	± 0.075%	—
25KΩ and above	± 0.05%	—
20Ω to 50Ω	—	± 0.15%
50Ω to 200Ω	—	± 0.10%
200Ω to 5KΩ	—	± 0.05%
5KΩ and above	—	± 0.025%
Noise	100Ω ENR for both models	
Rotation	1080° + 4° - 0°	3600° + 4° - 0°
Power Rating	3.0 watts at 40°C derated to zero at 125°C	8.0 watts at 40°C derated to zero at 125°C
Insulation Resistance	1000MΩ minimum 500VDC	
Dielectric Strength	1000V <sub>RMS</sub> , 60Hz	
Absolute Minimum Resistance	Not to exceed linearity x total resistance or 1Ω, whichever is greater	
End Voltage	0.5% of total applied voltage maximum	
Phasing	CCW End Points sect. 2 phased to sect 1 within 1°	
Taps (Extra)	42 available as special standard tolerance ± 1°	108 available as special standard tolerance ± 1°

### ORDERING INFORMATION

Models 830 and 860 can be ordered from this data sheet with a variety of alternate characteristics, as shown. For most rapid service on your order, please state:

<b>830, 860</b>	<b>1</b>	<b>1</b>	<b>XXX</b>
MODEL	BUSHING MOUNT	NUMBER OF SECTIONS	RESISTANCE OF EACH SECTION
			Beginning with the section nearest the mounting end

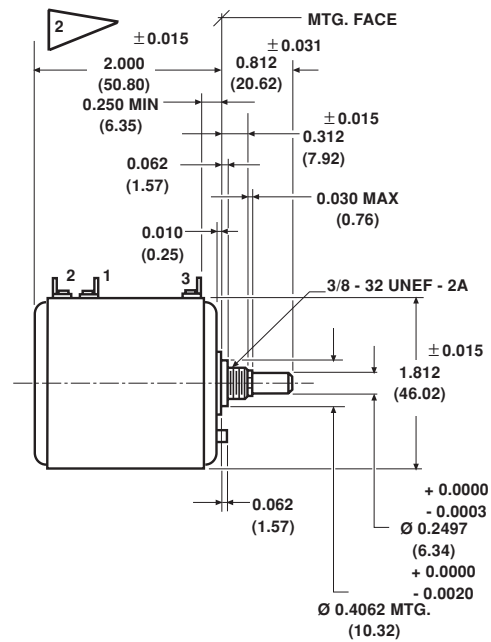
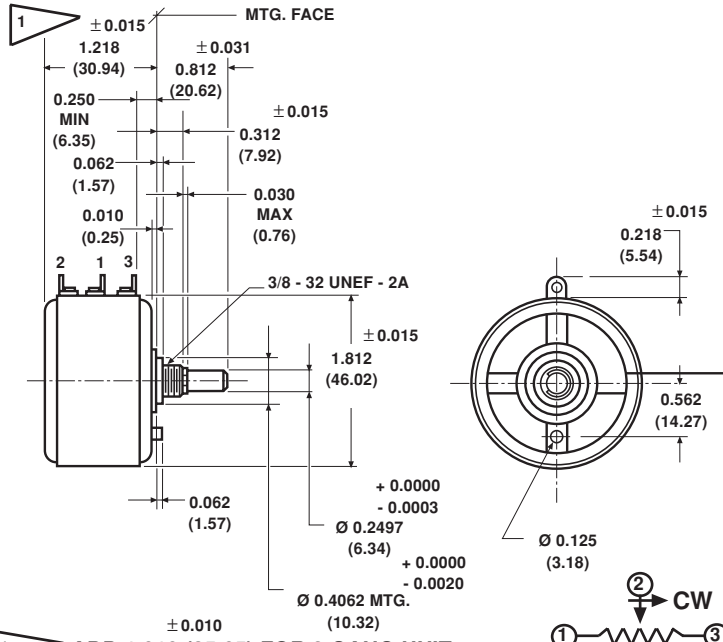
Other characteristics will be standard as described on this data sheet. If special characteristics are required, such as: special linearity tolerance, special resistance tolerance, extra taps, non-linear functions, etc., please state these on your order and allow additional lead time for delivery.



**DIMENSIONS** in inches (millimeters)

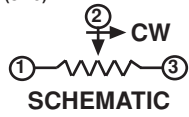
**MODEL 830**

**MODEL 860**



1  $\pm 0.010$  ADD 1.010 (25.65) FOR 2 GANG UNIT

2  $\pm 0.010$  ADD 1.787 (45.39) FOR 2 GANG UNIT



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

<b>MECHANICAL SPECIFICATIONS</b>		
<b>PARAMETER</b>	<b>830</b>	<b>860</b>
Rotation	1080° + 4° - 0°	3600° + 4° - 0°
Bearing Type	Sleeve Bearing	
Torque (maximums): Starting	<b>STARTING</b>	<b>RUNNING</b>
Section 1	1.75 oz - in (126,02gm - cm)	1.26 oz - in (90.01gm - cm)
Section 2	2.55 oz - in (183,62gm - cm)	1.85 oz - in (133,21gm - cm)
Runouts (Maximums)		
Shaft (TIR)	0.002 in (0.05cm)	
Pilot Dia (TIR)	0.002 in (0.05cm)	
Lateral (TIR)	0.005 in (0.13cm)	
Shaft End Play	0.002 in min 0.010 in Maximum (0.05 - 0.25cm)	
Shaft Radial Play	0.003 in Maximum (0.08cm)	
Weight (maximums)		
Single Section	3.0 oz (85.05gm)	4.5 oz (127.58gm)
Additional Section	2.5 oz (70.80gm)	4.0 oz (113.40gm)
Stop Strength	750 oz - in (static) (54.01Kg - cm)	
Gangng	2 sections maximum ears of clamp band between sections positioned 45°, $\pm 10^\circ$ CCW from terminal center line	
Moment Inertia	5.5gm - cm <sup>2</sup> Maximum	15.0gm - cm <sup>2</sup> Maximum

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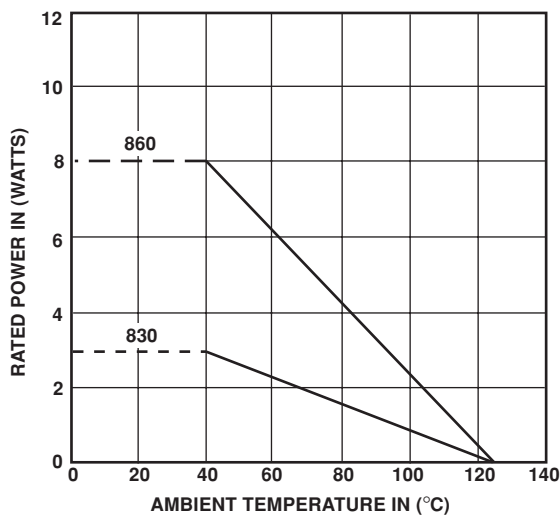
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MATERIAL SPECIFICATIONS	
Bushing	Aluminum, nickel plated
Housing and Front Lid	Molded glass filled thermoset plastic
Rear Lid	Molded glass filled nylon
Shaft	Stainless steel, non magnetic, non-passivated
Terminals	Brass, plated for solderability
Mounting Hardware	Internal tooth Steel, nickel plated
Lock washer:	
Panel nut:	

MARKING	
Unit Identification	Units will be marked with Spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification, and date code

ENVIRONMENTAL SPECIFICATIONS	
Vibration	10g thru 500 CPS
Shock	50g
Rotational Life	500,000 shaft revolution
Load Life	900 Hours
Temperature Range	- 55°C to + 125°C
Moisture Resistant	-
Salt Spray	48 hours

## POWER RATING CHART



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)
<b>MODEL 860</b>					
20	0.044	0.009	632	13	800
50	0.027	0.014	400	20	800
100	0.024	0.024	283	28	800
200	0.028	0.056	200	40	180
500	0.023	0.115	126	63	20
1K	0.018	0.182	89	89	20
2K	0.020	0.402	63	126	110
5K	0.015	0.754	40	200	20
10K	0.013	1.23	28	283	20
20K	0.010	1.97	20	400	20
50K	0.007	3.69	13	632	20
100K	0.007	6.51	8.9	894	20
200K	0.005	9.63	5.0	1,000	20
500K	0.004	20.0	2.0	1,000	20
<b>MODEL 830</b>					
20	0.094	0.019	387	8	800
50	0.074	0.037	245	12	800
100	0.071	0.071	173	17	180
200	0.072	0.145	122	25	20
500	0.064	0.320	77	39	110
1K	0.050	0.500	55	55	110
2K	0.047	0.948	39	77	20
5K	0.035	1.73	24	125	20
10K	0.029	2.92	17	176	20
20K	0.024	4.80	12	250	20
50K	0.017	8.31	8	375	20
100K	0.015	14.5	5	600	20
150K	0.013	20.0	4	750	20



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