

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 _{RMS} , 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:

| | | | |
|-----------------|---------------|--------------------|-----------------------------------------------------|
| 830, 860 | 1 | 1 | XXX |
| MODEL | BUSHING MOUNT | NUMBER OF SECTIONS | RESISTANCE OF EACH SECTION |
| | | | Beginning with the section nearest the mounting end |

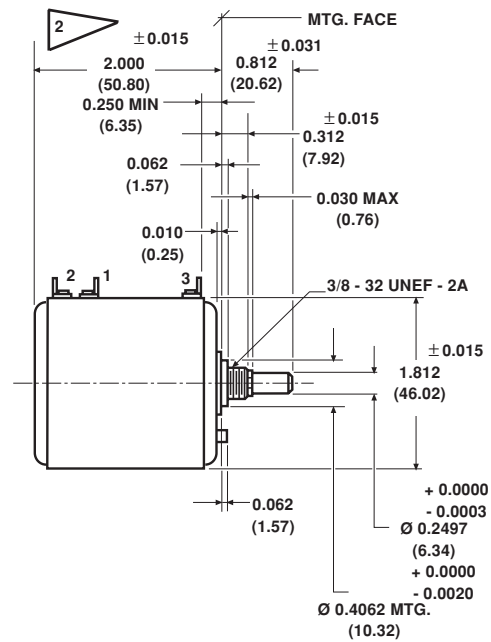
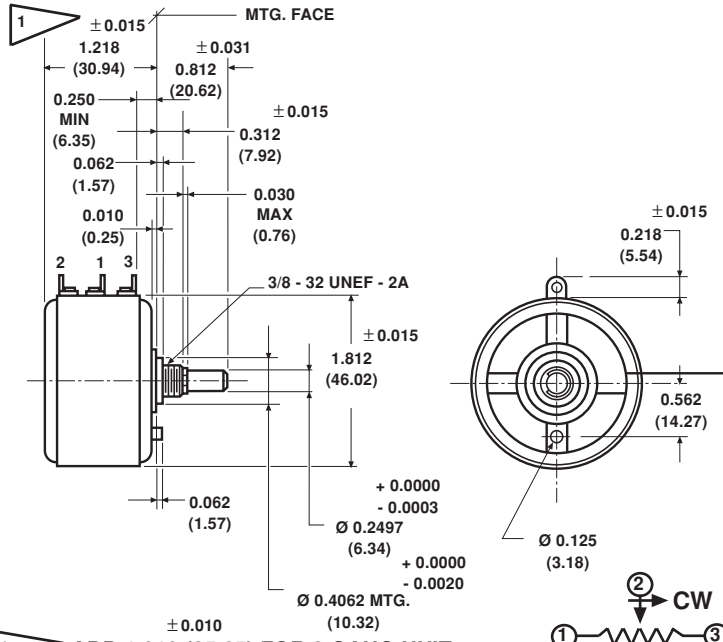
Other characteristics will be standard as described on this data sheet. If special characteristics are required, such as: special linearity tolerance, special resistance tolerance, extra taps, non-linear functions, etc., please state these on your order and allow additional lead time for delivery.



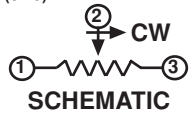
DIMENSIONS in inches (millimeters)

MODEL 830

MODEL 860



1 ± 0.010 ADD 1.010 (25.65) FOR 2 GANG UNIT
 2 ± 0.010 ADD 1.787 (45.39) FOR 2 GANG UNIT



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

| MECHANICAL SPECIFICATIONS | | |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------|
| PARAMETER | 830 | 860 |
| Rotation | 1080° + 4° - 0° | 3600° + 4° - 0° |
| Bearing Type | Sleeve Bearing | |
| Torque (maximums): Starting | STARTING | RUNNING |
| 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 ² Maximum | 15.0gm - cm ² Maximum |

Model 830, 860



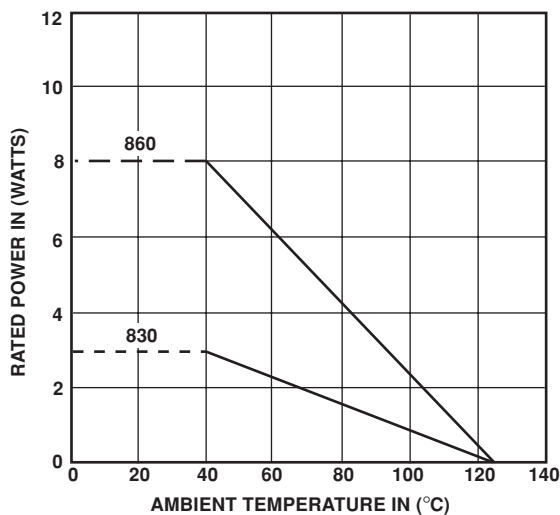
Vishay Spectrol 1 - 13/16" (46mm) Three and Ten Turn Wirewound Precision Potentiometer

| 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) |
| MODEL 860 | | | | | |
| 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 |
| MODEL 830 | | | | | |
| 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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