

# 1 13/16" (46 mm) Three Turn Wirewound Potentiometer Bushing Mount



## FEATURES

- Gangable up to 2 sections
- Large range of ohmic values: 15 Ω to 50 kΩ
- Extra taps available upon request
- Ideally suits for all industry applications

## QUICK REFERENCE DATA

|                  |                                  |
|------------------|----------------------------------|
| Sensor type      | ROTATIONAL, multi turn wirewound |
| Output type      | Output by turrets                |
| Market appliance | Industrial                       |
| Dimensions       | 1 13/16" (46 mm)                 |

## ELECTRICAL SPECIFICATIONS

| PARAMETER  | MODEL 830   |   |
|--|---|---|
| Total resistance<br>Standard range<br>Tolerance:<br>200 Ω and above<br>Below 200 Ω | 15 Ω to 50 kΩ<br><b>STANDARD</b><br>± 3 %<br>± 5 %                      | <b>SPECIAL</b><br>to 150 kΩ<br><b>SPECIAL</b><br>± 1 %<br>± 3 % |
| Linearity (independent)  | ± 0.25 % standard   |   |
| 15 Ω to 1 kΩ<br>1 kΩ to 5 kΩ<br>5 kΩ to 25 kΩ<br>25 kΩ and above                   | ± 0.15 %<br>± 0.10 %<br>± 0.075 %<br>± 0.05 %                           |   |
| Noise  | 100 Ω ENR   |   |
| Electrical rotation  | 1080° +4° -0°   |   |
| Power rating   | 3.0 W at 40 °C derated to zero at 125 °C                                |   |
| Insulation resistance  | 1000 MΩ minimum 500 V <sub>DC</sub>                                     |   |
| Dielectric strength  | 1000 V <sub>RMS</sub> , 60 Hz   |   |
| Absolute minimum resistance  | Not to exceed linearity x total resistance or 1 Ω, 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)   | Available as special standard tolerance ± 1°                            |   |

## ORDERING INFORMATION/DESCRIPTION

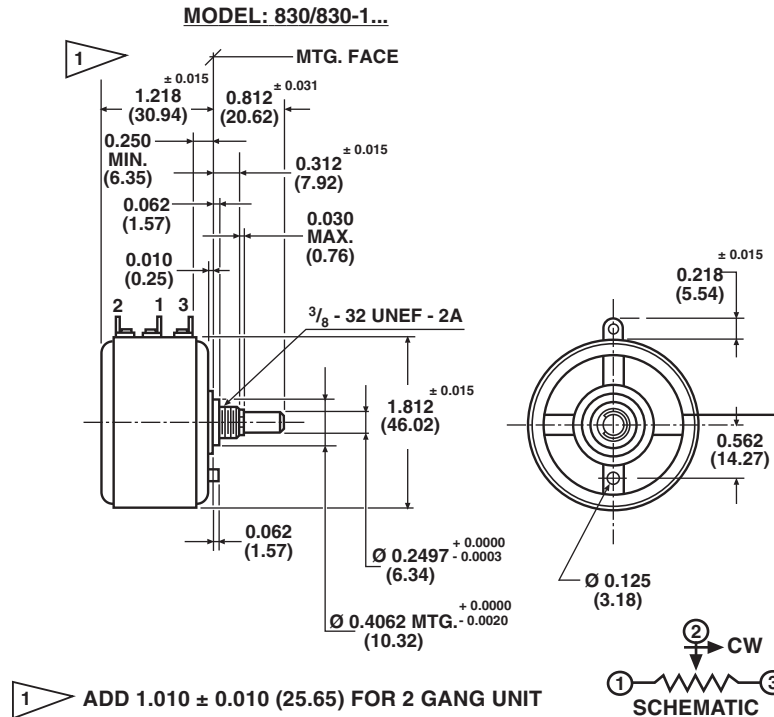
Model 830 can be ordered from this datasheet with a variety of alternate characteristics, as shown. For most rapid service on your order, please state:

|            |               |  |  |                               |
|------------|---------------|--|--|-------------------------------|
| <b>830</b> | <b>B</b>      | <b>1</b>   | <b>20K</b>   | <b>BO10</b>                   |
| MODEL      | BUSHING MOUNT | NUMBER OF SECTIONS<br>From 1 up to 2 sections<br>(maximum) | RESISTANCE OF EACH SECTION<br>Beginning with the section nearest<br>the mounting end | PACKAGING<br>Box of 10 pieces |

## SAP PART NUMBERING GUIDELINES

|            |          |                   |                             |            |
|------------|----------|-------------------|-----------------------------|------------|
| <b>830</b> | <b>B</b> | <b>1</b>          | <b>203</b>                  | <b>B10</b> |
| MODEL      | STYLE    | NUMBER OF SECTION | OHMIC VALUE OF SECTION N° 1 | PACKAGING  |

## DIMENSIONS in inches (millimeters)



## MECHANICAL SPECIFICATIONS

| PARAMETER                   |  |                               |
|-----------------------------|--|-------------------------------|
| Rotation                    | 1080° +4° -0°  |                               |
| Bearing type                | Sleeve bearing   |                               |
| Torque (maximums): starting | <b>STARTING</b>  | <b>RUNNING</b>                |
| Section 1                   | 1.75 oz. - in (126.02 g - cm)  | 1.26 oz. - in (90.01 g - cm)  |
| Section 2                   | 2.55 oz. - in (183.62 g - cm)  | 1.85 oz. - in (133.21 g - cm) |
| Runouts (maximums)          |  |                               |
| Shaft (TIR)                 | 0.002" (0.05 cm)   |                               |
| Pilot dia. (TIR)            | 0.002" (0.05 cm)   |                               |
| Lateral (TIR)               | 0.005" (0.13 cm)   |                               |
| Shaft end play              | 0.002" min. 0.010" max. (0.05 cm to 0.25 cm)   |                               |
| Shaft radial play           | 0.003" max. (0.08 cm)  |                               |
| Weight (maximums)           |  |                               |
| Single section              | 3.0 oz. (85.05 g)  |                               |
| Additional section          | 2.5 oz. (70.80 g)  |                               |
| Stop strength               | 750 oz. - in (static) (54.01 kg - cm)  |                               |
| Ganging                     | 2 sections maximum ears of clamp band between sections positioned 45°, ± 10° CCW from terminal center line |                               |
| Moment inertia              | 5.5 g - cm <sup>2</sup> maximum  |                               |



| 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<br>Lockwasher:<br>Panel nut: | Internal tooth steel, nickel plated<br>Brass, nickel plated |

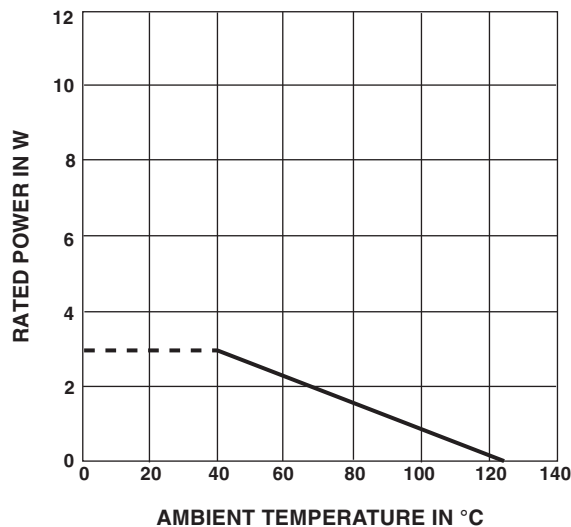
| ENVIRONMENTAL SPECIFICATIONS |                          |
|------------------------------|--------------------------|
| Vibration                    | 10 g thru 500 CPS        |
| Shock                        | 50 g                     |
| Rotational life              | 500 000 shaft revolution |
| Load life                    | 900 h                    |
| Temperature range            | -55 °C to +125 °C        |
| Salt spray                   | 48 h                     |

**Note**

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

| MARKING             |  |
|---------------------|--|
| Unit identification | Units will be marked with Spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification, and date code.<br>Example of a marking for a standard part: 830-11103 |

**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) |
| 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                              | 20                        |
| 1K                             | 0.050          | 0.500         | 55                                    | 55                              | 20                        |
| 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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