# 1/2" (12.7 mm) Single - Turn Wirewound Bushing Mount Type Precision Potentiometer

## FEATURES

- Ohmic value range: 50 Ω up to 20 kΩ
- Smallest size available: 12.7 mm
- Mechanical stops on request
- High torque and sealed versions available
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

| QUICK REFERENCE DATA | |
|---|---|
| Sensor type | ROTATIONAL, single turn wirewound |
| Output type | Output by turrets |
| Market appliance | Professional |
| Dimensions | 1/2" (12.7 mm) |

| ELECTRICAL SPECIFICATIONS | |
|---|---|
| **PARAMETER** | |
| Total Resistance | 50 Ω to 20 kΩ |
| Tolerance | ± 5 % |
| Absolute Minimum Resistance | Linearity x total resistance or 0.5 Ω, whichever is greater |
| Linearity (Independent) | ± 1.0 % |
| Noise | 100 Ω ENR |
| Power Rating | 2 W at 40 °C ambient derating linearly to zero at 125 °C |
| Insulation Resistance | 1000 MΩ min. 500 $V_{DC}$ |
| Dielectric Strength | 1000 $V_{RMS}$, 60 Hz |
| Electrical Angle | 320° ± 5° |
| End Voltage | Linearity x total applied voltage for total resistance above 20 Ω; 2.0 % of total applied voltage for 20 Ω and below |

| MATERIAL SPECIFICATIONS | |
|---|---|
| Shaft | Stainless steel, non magnetic non-passivated |
| Housing | Aluminum, anodized |
| Rear Lid | Molded glass filled thermoset plastic |
| Terminals | Brass, gold plated |
| Mounting Hardware<br>Lockwasher Internal Tooth:<br>Panel Nut: | <br>Steel, nickel plated.<br>Brass, nickel plated |

| ENVIRONMENTAL SPECIFICATIONS | |
|---|---|
| Vibration | 20 *g* thru 2000 Hz |
| Shock | 50 *g* |
| Salt Spray | 96 h |
| Rotational Life | 500 000 shaft revolutions |
| Load Life | 900 h |
| Temperature Range | - 55 °C to + 125 °C (operating) |

## ORDERING INFORMATION/DESCRIPTION

| 140B | 0 | 0 | 20K | BO10 |
|---|---|---|---|---|
| MODEL | MECHANICAL OPTIONS | SPECIAL FEATURE | OHMIC VALUE | PACKAGING |
| | **0.** Stops, slotted shaft (std)<br>**1.** Plain shaft<br>**2.** Shaft lock<br>**3.** Continuous rotation<br>**4.** Combination 1 and 2<br>**5.** Combination 1 and 3<br>**6.** Combination 2 and 3<br>**7.** Combination 1, 2 and 3 | **0.** Standard torque<br>**1.** Center tap (10K max. $R_t$)<br>**2.** High torque<br>**3.** Sealed construction<br>**4.** Combination 1 and 2<br>**5.** Combination 1 and 3<br>**6.** Combination 2 and 3<br>**7.** Combination 1, 2 and 3 | | Box of 10 pieces |

## SAP PART NUMBERING GUIDELINES

| 140B | 7 | 0 | 103 | B10 |
|---|---|---|---|---|
| MODEL | MECHANICAL OPTION | FEATURE | OHMIC VALUE | PACKAGING |
| | From 0 to 7 | From 0 to 7 | 103 = 10K | Box of 10 pieces |



For technical questions, contact: sferprecisionpot@vishay.com
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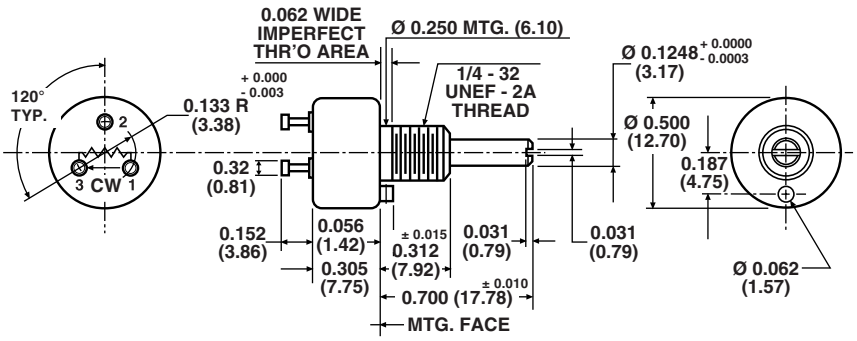
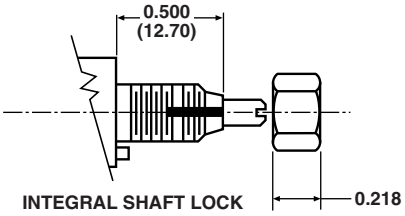
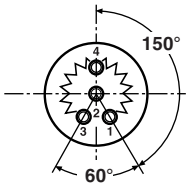
**DIMENSIONS** in inches (millimeters)




**SHAFT LOCK OPTION**




**CENTER TAP OPTION**



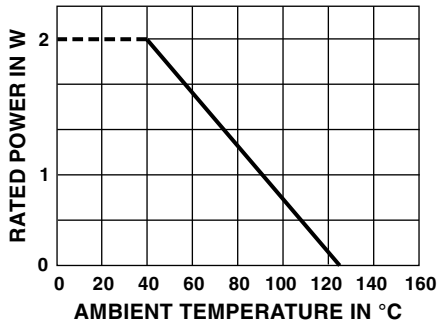

TOLERANCES: UNLESS OTHERWISE NOTED. DECIMALS ± 0.005 ANGLES ± 2 °

CENTER TAP AVAILABLE AS SPEC STANDARD FEATURE

## MECHANICAL SPECIFICATIONS

| PARAMETER | |
|---|---|
| Rotation | 330° ± 5° |
| Bearing Type<br>Torque (maximums)<br>Starting<br>Running<br>Dead Zone | **SLEEVE BEARING**<br><br>0.2 oz. - in (14.40 g - cm)<br>0.2 oz. - in (14.40 g - cm)<br>Not applicable |
| Weight | 0.1 oz. maximum (2.84 g) |
| Stop Strength | 5 in - lbs (5.76 kg - cm) static |
| Runouts (maximum)<br>Shaft (TIR)<br>Pilot Dia. (TIR)<br>Lateral (TIR)<br>Shaft End Play<br>Shaft Radial Play | <br>0.002" (0.05 cm)<br>0.002" (0.05 cm)<br>0.003" (0.08 cm)<br>0.006" (0.15 cm)<br>0.003" (0.08 cm) |

## POWER RATING CHART




## RESISTANCE ELEMENT DATA

| STD RESISTANCE VALUES (Ω) | RESO-LUTION (%) | OHMS PER TURN | MAXIMUM CURRENT AT 40 °C AMBIENT (mA) | MAXIMUM VOLTAGE ACROSS COIL (V) | WIRE TEMP. COEF. (ppm/°C) |
|---|---|---|---|---|---|
| 50 | 0.542 | 0.271 | 200.0 | 10.0 | 20 |
| 100 | 0.431 | 0.431 | 141.0 | 14.1 | 20 |
| 200 | 0.361 | 0.722 | 100.0 | 20.0 | 20 |
| 500 | 0.312 | 1.56 | 63.2 | 31.6 | 20 |
| 1K | 0.255 | 2.55 | 44.7 | 44.7 | 20 |
| 2K | 0.197 | 3.94 | 31.6 | 63.2 | 20 |
| 5K | 0.170 | 8.50 | 20.0 | 100.0 | 20 |
| 10K | 0.147 | 14.7 | 14.1 | 141.0 | 20 |
| 20K | 0.105 | 21.0 | 10.0 | 200.0 | 20 |

## MARKING

| | |
|---|---|
| **Unit Identification** | Units shall be marked with manufacturer's name, model number, resistance value and tolerance, circuit diagram, terminal identification, linearity and data code. Example of a marking for a standard part: 140-1-2-103 |



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