



# 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](http://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 <sub>DC</sub>  |
| Dielectric Strength         | 1000 V <sub>RMS</sub> , 60 Hz   |
| Electrical Angle            | 320° ± 5°   |
| End Voltage                 | Linearity x total applied voltage for total resistance above 20 Ω;<br>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: | 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 <sub>i</sub> )<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 |

**DIMENSIONS** in inches (millimeters)

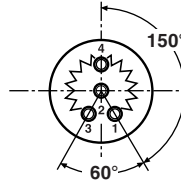


MODEL 140B/140-...

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

**POWER RATING CHART**



**RESISTANCE ELEMENT DATA**

| STD RESISTANCE VALUES (Ω) | RESOLUTION (%) | 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**

|                            |  |
|----------------------------|--|
| <b>Unit Identification</b> | 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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