# 1 5/16" (33.3 mm) Single Turn Wirewound Precision Potentiometer

## FEATURES

- Gangable up to 6 sections
- Extra taps on request
- Bushing and servo mount types available
- Ohmic value range: 5 Ω up to 35 kΩ
- 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 | Industrial |
| Dimensions | 1 5/16" (33.3 mm) |

## ELECTRICAL SPECIFICATIONS

| PARAMETER | | |
|---|---|---|
| Total resistance:<br>Tolerance: 50 Ω and above<br>Below 50 Ω | **STANDARD**<br>5 Ω to 20 kΩ<br>± 3 %<br>± 5 % | **SPECIAL**<br>to 35 kΩ<br>± 1 %<br>± 3 % |
| 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 | |
| Linearity (independent):<br>5 Ω to 100 Ω<br>100 Ω to 500 Ω<br>500 Ω to 3 kΩ<br>3 kΩ to 15 kΩ<br>15 kΩ and above | **STANDARD**<br>± 1.0 %<br>± 0.5 %<br>± 0.5 %<br>± 0.5 %<br>± 0.5 % | **BEST PRACTICAL**<br>± 0.50 %<br>± 0.35 %<br>± 0.25 %<br>± 0.20 %<br>± 0.15 % |
| Noise | 100 Ω ENR (MIL-R-12934) | |
| Electrical angle | 352° ± 2° | |
| Power rating | 2.75 W at 40 °C ambient | |
| Insulation resistance | 100 MΩ min, 500 $V_{DC}$ | |
| Dielectric strength | 1000 $V_{RMS}$, 60 Hz | |
| Taps (extra) | Up to 13 (position tolerance: ± 1°) | |
| Phasing | CCW taps of multiple sections aligned with CCW tap of section 1 to ± 1° | |
| Absolute minimum resistance | Linearity x total resistance or 0.5 Ω, whichever is greater | |

## ORDERING INFORMATION

| 1 | 0 | 0 | S | 1 | 2 | 0 | 3 | 2 | 0 | 3 | X | X | X | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

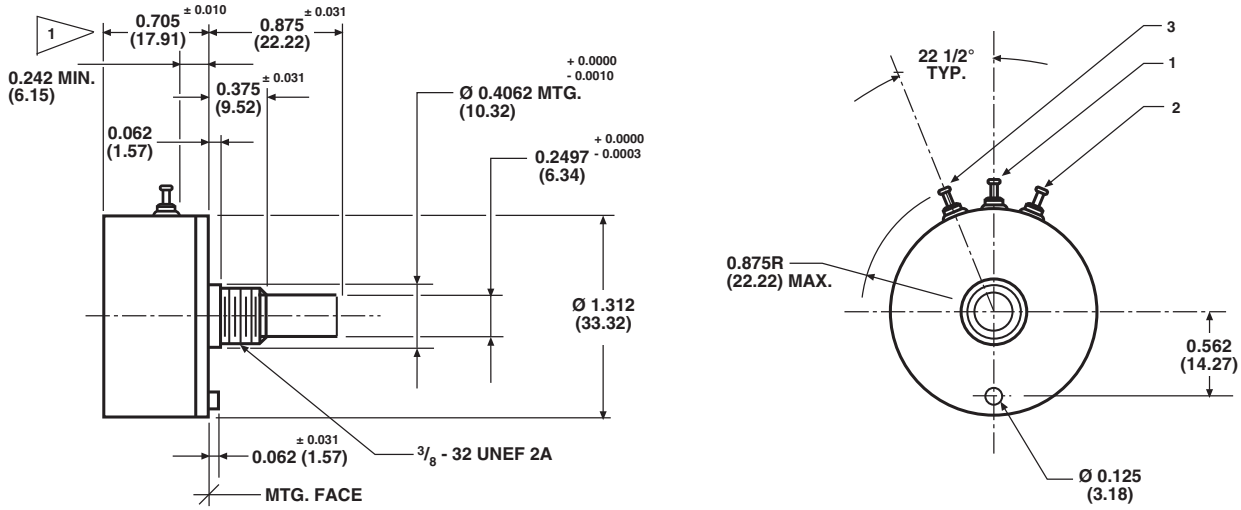
| MODEL | STYLE | GANGS | OHMIC VALUE GANGS Nº 1 | OHMIC VALUE GANGS Nº 2 | SPECIAL REQUEST |
|---|---|---|---|---|---|
| **100** | **B**: bushing<br>**S**: servo | **1**<br>**2**<br>**3**<br>**4**<br>**5**<br>**6** | **470** = 47 Ω<br>**222** = 2.200 Ω<br>**103** = 10 kΩ<br>For ohmic value range see electrical specification | **470** = 47 Ω<br>**222** = 2.200 Ω<br>**103** = 10 kΩ<br>For ohmic value range see electrical specification | **xxxx** |

## PART NUMBER DESCRIPTION (for information only)

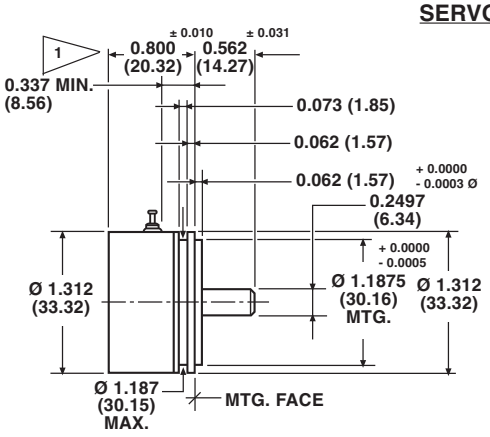
| 100- | 1 | 2 | 103 | 203 | xxxx |
|---|---|---|---|---|---|
| MODEL | STYLE | GANGS | OHMIC VALUE GANGS Nº 1 | OHMIC VALUE GANGS Nº 2 | SPECIAL |
| | **B**: 1<br>**S**: 2 | | | | |

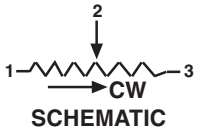
## DIMENSIONS in inches (millimeters)

**BUSHING MOUNT: 100B/100-1...**




**SERVO MOUNT: 100S/100-2...**




SCHEMATIC

1 ADD 0.566 ± 0.002 (14.38) FOR EACH ADDITIONAL SECTION

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

## MECHANICAL SPECIFICATIONS

| PARAMETER | | |
|---|---|---|
| Rotation | 360° (continuous) | |
| Bearing type | Servo mount: ball bearing<br>Bushing mount: sleeve bearing | |
| Ganging | 6 sections maximum, terminal alignment, added sections, within ± 10° of section 1 terminals | |
| Torque (maximums)<br>Servo, 1 section<br>Bushing, 1 section<br>Each additional section | **STARTING**<br>0.60 oz. - in (43.20 g - cm)<br>1.00 oz. - in (72.00 g - cm)<br>0.30 oz. - in (21.60 g - cm) | **RUNNING**<br>0.30 oz. - in (21.60 g - cm)<br>0.75 oz. - in (54.00 g - cm)<br>0.30 oz. - in (21.60 g - cm) |
| Mechanical tolerances (maximums):<br>Shaft runout (TIR/In)<br>Pilot dia. runout (TIR)<br>Lateral runout (TIR)<br>Shaft end play<br>Shaft radial play | **BUSHING**<br>0.002" (0.05 cm)<br>0.002" (0.05 cm)<br>0.005" (0.13 cm)<br>0.005" (0.13 cm)<br>0.004" (0.10 cm) | **SERVO**<br>0.002" (0.05 cm)<br>0.002" (0.05 cm)<br>0.002" (0.05 cm)<br>0.005" (0.13 cm)<br>0.002" (0.05 cm) |
| Moment of inertia | 1.0 g - $cm^2$ per section maximum | |
| Weight<br>Single section<br>Each additional section | 2.0 oz. maximum (56.7 g)<br>0.75 oz. maximum (21.3 g) | |

## MATERIAL SPECIFICATIONS

| | |
|---|---|
| Housing and lids | Aluminum, anodized |
| Shaft | Stainless steel, non-magnetic non-passivated |
| Terminals | Brass, plated for solderability |
| Bushing mount hardware<br>Lockwasher internal tooth:<br>Panel nut: | Steel, nickel plated<br>Brass, nickel plated |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| Vibration | 15 *g* thru 2000 CPS |
| Shock | 50 *g* |
| Salt spray | 96 h |
| Rotational life | 1 million shaft revolutions |
| Load life | 900 h |
| Temperature range | -55 °C to +105 °C |

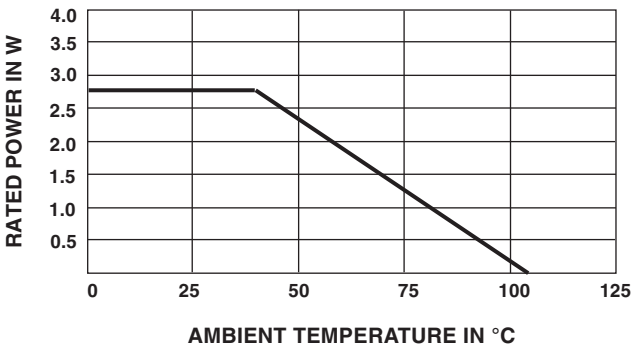
**Note**

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

## MARKING

| | |
|---|---|
| Unit identification | Units shall be marked with Vishay Spectrol name, model number and data code and on each section, resistance, resistance tolerance, linearity and terminal identification.<br>Example of a marking for a standard part: 100-11103 |

## POWER RATING CHART




## RESISTANCE ELEMENT DATA

| RESISTANCE VALUES (Ω) | RESOLUTION (%) | OHMS PER TURN | MAXIMUM CURRENT AT 70 °C AMBIENT (mA) | MAXIMUM VOLTAGE ACROSS COIL (V) | WIRE TEMP. COEF. (ppm/°C) |
|---|---|---|---|---|---|
| 5 | 0.346 | 0.017 | 742 | 3.7 | 800 |
| 10 | 0.298 | 0.030 | 524 | 5.2 | 800 |
| 20 | 0.236 | 0.047 | 371 | 7.4 | 800 |
| 50 | 0.244 | 0.122 | 235 | 12 | 20 |
| 100 | 0.222 | 0.222 | 166 | 17 | 20 |
| 200 | 0.181 | 0.361 | 117 | 23 | 20 |
| 500 | 0.178 | 0.885 | 74 | 37 | 20 |
| 1K | 0.138 | 1.38 | 52 | 52 | 20 |
| 2K | 0.105 | 2.09 | 37 | 74 | 20 |
| 5K | 0.085 | 4.23 | 23 | 117 | 20 |
| 10K | 0.069 | 6.84 | 17 | 166 | 20 |
| 20K | 0.058 | 11.5 | 12 | 235 | 20 |
| 35K | 0.058 | 20.0 | 8.8 | 310 | 20 |

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