

## 2" (50.8 mm) Single Turn Conductive Plastic Precision Potentiometer



### FEATURES

- Bushing mount and servo mount types available
- Virtually infinite resolution
- Up to 6 sections available
- Rotational life exceeds 20 million shaft revolutions
- Co-molded track and multi-finger wiper provide low noise signal
- Large ohmic value range: 500 Ω to 100 kΩ
- 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, conductive plastic |
| Output type      | Output by turrets              |
| Market appliance | Professional                   |
| Dimensions       | 2" (50.8 mm)                   |

### ELECTRICAL SPECIFICATIONS

| PARAMETER  |   |                            |
|--|---|----------------------------|
| Total resistance standard range                  | 500 Ω to 100 kΩ   |                            |
| Tolerance  | <b>STANDARD</b><br>± 10 %   | <b>SPECIAL</b><br>± 5 %    |
| Linearity (independent)                          | <b>STANDARD</b><br>± 0.25 %   | <b>SPECIAL</b><br>± 0.05 % |
| Electrical angle                                 | 350° ± 2°   |                            |
| Power rating<br>Section 1<br>Additional sections | 2.0 W at 70 °C ambient derated to zero at 125 °C (400 V <sub>DC</sub> maximum)<br>75 % of the rating of section 1 |                            |
| Output smoothness                                | 0.1 % maximum   |                            |
| Insulation resistance                            | 1000 MΩ minimum, 500 V <sub>DC</sub>  |                            |
| Dielectric strength                              | 1000 V <sub>RMS</sub> , 60 Hz   |                            |
| Taps (extra)                                     | Extra taps available as special   |                            |
| Phasing  | Points at which output ratio is 0.5 aligned ± 1° (ref. to section 1)  |                            |
| Temperature coefficient of resistance            | ± 600 ppm/°C maximum  |                            |

### ORDERING INFORMATION

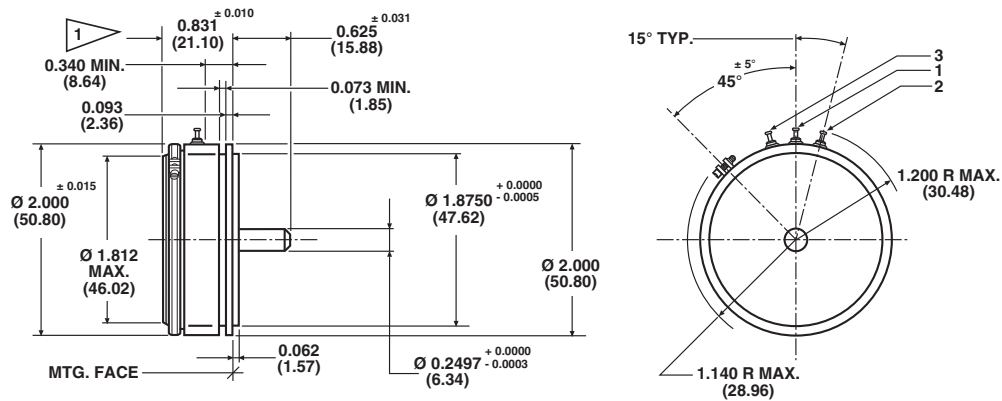
|       |   |   |                        |   |                            |   |   |  |   |  |  |                 |  |  |
|-------|---|---|------------------------|---|----------------------------|---|---|--|---|--|--|-----------------|--|--|
| 3     | 0 | 8 | S                      | 1 | 2                          | 0 | 3 | 2  | 0 | 3  |  |                 |  |  |
| MODEL |   |   | STYLE                  |   | GANGS                      |   |   | OHMIC VALUE GANGS N° 1   |   | OHMIC VALUE GANGS N° 2   |  | SPECIAL REQUEST |  |  |
| 308   |   |   | 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)

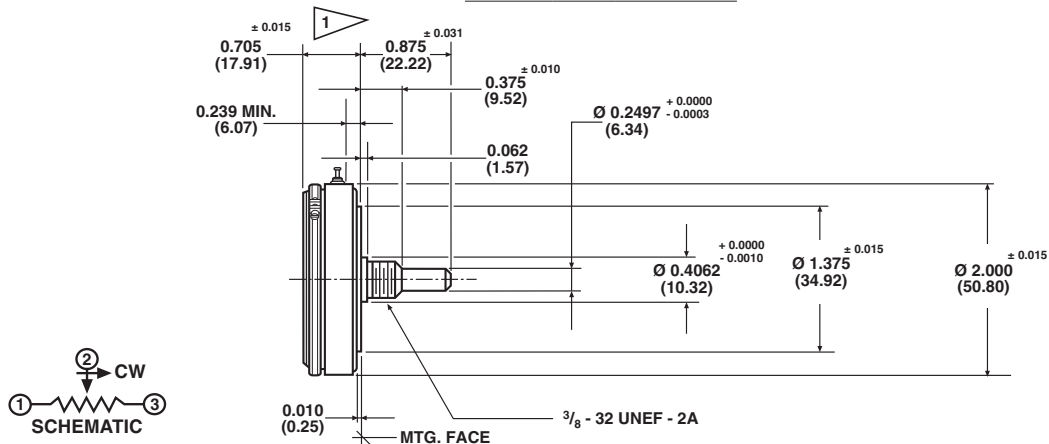
|       |              |       |                        |                        |         |
|-------|--------------|-------|------------------------|------------------------|---------|
| 308-  | 1            | 2     | 103                    | 203                    | xxxx    |
| MODEL | STYLE        | GANGS | OHMIC VALUE GANGS N° 1 | OHMIC VALUE GANGS N° 2 | SPECIAL |
|       | B: 1<br>S: 2 |       |                        |                        |         |

**DIMENSIONS** in inches (millimeters)

**SERVO MOUNT: 308S/308-2**



**BUSHING MOUNT: 308B/308-1**



1 ADD 0.500 ± 0.002 (12.70) FOR EACH ADDITIONAL SECTION

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

**MECHANICAL SPECIFICATIONS**

| PARAMETER               |   |   |
|-------------------------|---|---|
| Rotation                | 360° (continuous)   |   |
| Bearing type            | Ball bearing  |   |
| Servo mount:            | Ball bearing  |   |
| Bushing mount:          | Sleeve bearing  |   |
| Ganging                 | 6 sections maximum. Terminal alignment, added sections, within ± 10° of section 1 terminals |   |
| Torque (maximums)       |   |   |
| Mounting                |   |   |
| Servo, 1 section        | <b>STARTING</b><br>1.0 oz. - in (72.00 g - cm)  | <b>RUNNING</b><br>0.5 oz. - in (36.00 g - cm) |
| Bushing, 1 section      | 1.7 oz. - in (122.40 g - cm)  | 1.0 oz. - in (72.00 g - cm)                   |
| Each additional section | 0.6 oz. - in (43.20 g - cm)   | 0.4 oz. - in (28.80 g - cm)                   |
| Runouts (maximums)      |   |   |
| Shaft (TIR/in)          | <b>SERVO</b><br>0.002" (0.05 cm)  | <b>BUSHING</b><br>0.002" (0.05 cm)            |
| Pilot dia. (TIR)        | 0.002" (0.05 cm)  | 0.002" (0.05 cm)                              |
| Lateral (TIR)           | 0.003" (0.08 cm)  | 0.005" (0.13 cm)                              |
| Shaft end Play          | 0.005" (0.13 cm)  | 0.005" (0.13 cm)                              |
| Shaft Radial play       | 0.002" (0.05 cm)  | 0.003" (0.08 cm)                              |
| Moment of inertia       | 2.0 g - cm <sup>2</sup> per section maximum   |   |
| Weight                  |   |   |
| Single section          | 4.0 oz. (127.57 g)  |   |
| Each additional section | 1.2 oz. (34.02 g)   |   |

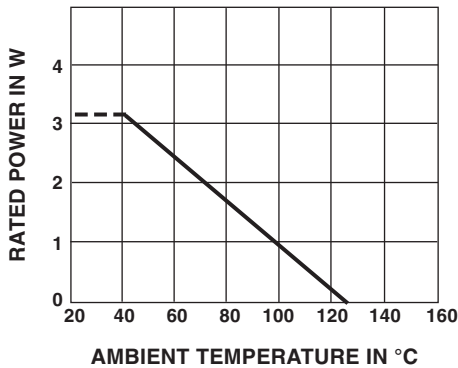


| MATERIAL SPECIFICATIONS  |  |
|--|--|
| Housing and lids   | Aluminum, anodized                           |
| Shaft and clamp rings  | Stainless steel, non-magnetic non-passivated |
| Terminals  | Brass, gold plated for solderability         |
| Bushing mount hardware<br>Lockwasher internal tooth: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

| MARKING             |   |
|---------------------|---|
| Unit identification | Units shall be marked with Spectrol name, model no, and data code, and on each section, resistance, resistance tolerance, linearity and terminal identification.<br>Example of a marking for a standard part: 308-21503 |

**POWER RATING CHART**

(Ratings for cup No. 1. Additional cups 75 % of values shown)



| ENVIRONMENTAL SPECIFICATIONS |   |
|------------------------------|---|
| Vibration                    | 15 g thru 2000 Hz   |
| Shock                        | 50 g  |
| Salt spray                   | 96 h  |
| Rotational life              | Servo: 20 million shaft revolutions<br>Bushing: 5 million shaft revolutions |
| Load life                    | 900 h   |
| Temperature range            | -55 °C to +125 °C   |

**Note**

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

| RESISTANCE ELEMENT DATA |                                |
|-------------------------|--------------------------------|
| RESISTANCE VALUES (Ω)   | MAXIMUM VOLTAGE APPLICABLE (V) |
| 500                     | 32                             |
| 1K                      | 45                             |
| 2K                      | 71                             |
| 5K                      | 100                            |
| 10K                     | 141                            |
| 20K                     | 224                            |
| 50K                     | 316                            |
| 100K                    | 350 <sup>(1)</sup>             |

**Note**

- <sup>(1)</sup> Maximum voltage allowable



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