

7/8" (22.2 mm) Ten Turn Wirewound Upper Grade Precision Potentiometer


FEATURES

- Bushing mount and servo mount designs are available
- Large ohmic value range: 15 Ω to 100 kΩ
- Dual gang configuration
- Improved linearity available
- Long life > 2 million shaft revolutions
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

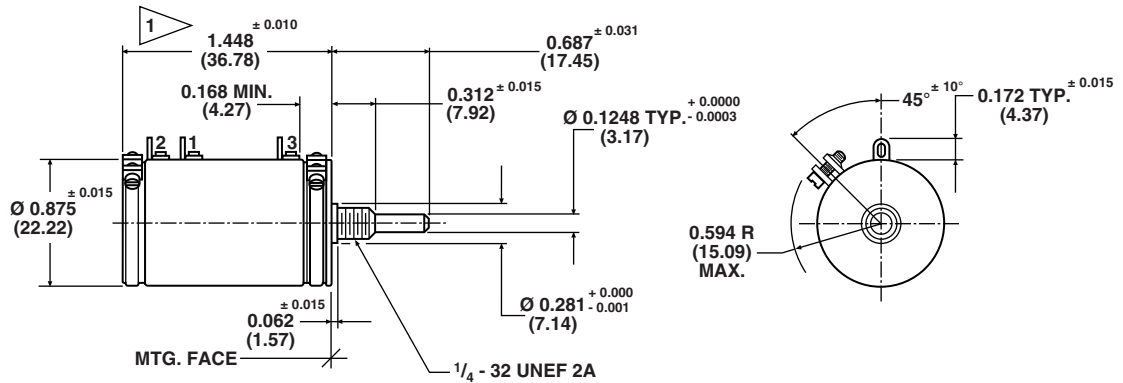
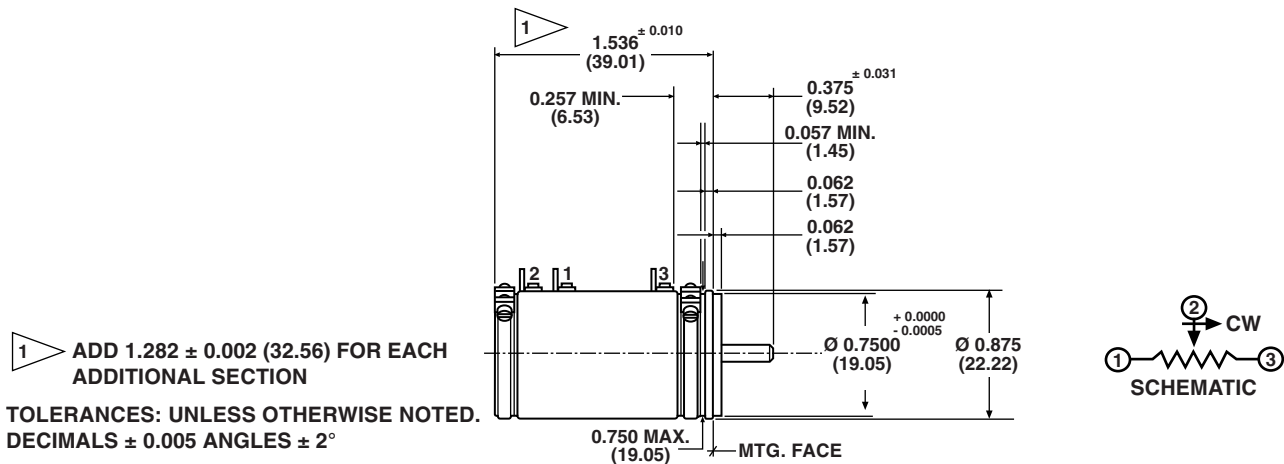
| QUICK REFERENCE DATA | |
|----------------------|----------------------------------|
| Sensor type | ROTATIONAL, multi turn wirewound |
| Output type | Output by turrets |
| Market appliance | Professional |
| Dimensions | 7/8" (22.2 mm) |

| ELECTRICAL SPECIFICATIONS | | |
|---|--|--|
| PARAMETER | STANDARD | SPECIAL |
| Total resistance Tolerance: 100 Ω and above Below 100 Ω | 15 Ω to 100 kΩ ± 3 % ± 5 % | 15 Ω to 150 kΩ ± 1 % ± 3 % |
| Linearity (independent) 15 Ω to 50 Ω 50 Ω to 1 kΩ 1 kΩ to 5 kΩ 5 kΩ and above | STANDARD ± 0.25 % ± 0.25 % ± 0.25 % ± 0.25 % | BEST PRACTICAL ± 0.15 % ± 0.10 % ± 0.075 % ± 0.05 % |
| Noise | 100 Ω ENR | |
| Electrical rotation | 3600° +4° -0° | |
| Power rating: Additional sections | 2.0 W at 70 °C ambient derated to zero at 125 °C 75 % of the rating of section 1 (1.5 W at 70 °C) | |
| Insulation resistance | 1000 MΩ minimum 500 V _{DC} | |
| Dielectric strength | 1000 V _{RMS} , 60 Hz | |
| Absolute minimum resistance | Linearity x total resistance or 0.5 Ω whichever is greater | |
| End Voltage | Linearity x total applied voltage for total resistance above 20 Ω, 2.0 % of applied voltage for 20 Ω and below | |
| Phasing (CCW end points) | Additional sections phased to section 1 within ± 2° | |
| Taps (extra) | 54 available as special, standard tolerance ± 2° | |

| ORDERING INFORMATION | | | | | | | | | | | | | | |
|----------------------|---|------------------------|---|--------|---|---|---|---|---|--------------------|---|---|---|---|
| 5 | 0 | 2 | S | 1 | 2 | 0 | 3 | 2 | 0 | 3 | X | X | X | X |
| MODEL | | STYLE | | GANGS | | OHMIC VALUE GANGS N° 1 | | OHMIC VALUE GANGS N° 2 | | SPECIAL REQUEST | | | | |
| 500 501 502 | | B: bushing S: servo | | 1 2 | | 470 = 47 Ω 222 = 2.200 Ω 103 = 10 kΩ For ohmic value range see electrical specification | | 470 = 47 Ω 222 = 2.200 Ω 103 = 10 kΩ For ohmic value range see electrical specification | | Custom reference | | | | |

| PART NUMBER DESCRIPTION (for information only) | | | | | |
|--|----------------|-------|---------------------------|---------------------------|---------|
| 502- | 2 | 1 | 203 | 203 | XXXX |
| MODEL | STYLE | GANGS | OHMIC VALUE GANGS N° 1 | OHMIC VALUE GANGS N° 2 | SPECIAL |
| | B = 1 S = 2 | | | | |

DIMENSIONS in inches (millimeters)

BUSHING MOUNT: 502B/502-1

SERVO MOUNT: 502S/502-2

MECHANICAL SPECIFICATIONS

| PARAMETER | | |
|-------------------------------|---|--|
| Rotation | 3600° +10° -0° | |
| Bearing type | SERVO Ball bearing | BUSHING MOUNT Sleeve bearing |
| Torque (maximums) | STARTING | RUNNING |
| Servo section 1 | 0.4 oz. - in (28.8 g - cm) | 0.3 oz. - in (21.6 g - cm) |
| Bushing section 1 | 0.5 oz. - in (36.0 g - cm) | 0.4 oz. - in (28.8 g - cm) |
| Each additional section | 0.3 oz. - in (21.6 g - cm) | 0.2 oz. - in (14.4 g - cm) |
| Mechanical runout (maximums): | SERVO | BUSHING |
| Shaft runout (TIR) | 0.002" (0.05 cm) | 0.002" (0.05 cm) |
| Pilot dia. runout (TIR) | 0.002" (0.05 cm) | 0.002" (0.05 cm) |
| Lateral runout (TIR) | 0.002" (0.05 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) |
| Weight: | | |
| Single section | 1.20 oz. (34.0 g) | |
| Each additional section | 0.80 oz. (22.7 g) | |
| Stop strength | 100 oz. - in, static (7.2 kg - cm) | |
| Ganging | 2 sections, terminal alignment, added sections, within ± 10° of section 1 terminals | |
| Moment of inertia | 0.45 g - cm ² per section maximum | |

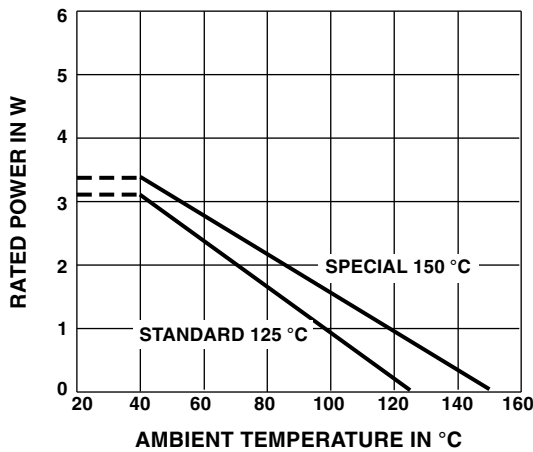


| MATERIAL SPECIFICATIONS | |
|----------------------------|---|
| Housing | Phenolic (black) glass filled |
| Lids | Aluminum, anodized |
| Shaft | Stainless steel, non-magnetic, non-passivated |
| Terminals | Brass, plated for solderability |
| Clamp ring | Stainless steel |
| Bushing mounting hardware | Steel, nickel plated |
| Lockwasher internal tooth: | Brass, nickel plated |
| Panel nut: | Brass, nickel plated |

| MARKING | |
|---------------------|--|
| Unit identification | Units shall be marked with Vishay spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification, and date code. Example of a marking for a standard part: 502-11050 |

POWER RATING CHART

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



| ENVIRONMENTAL SPECIFICATIONS | |
|------------------------------|-----------------------------|
| Vibration | 15 g thru 2000 CPS |
| Shock | 50 g |
| Salt Spray | 96 h |
| Rotational Life | 2 million shaft revolutions |
| Load Life | 900 h |
| Operating Temperature Range | -55 °C to +125 °C |

Note

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

| 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) |
| 15 | 0.088 | 0.013 | 365 | 5.48 | 800 |
| 20 | 0.066 | 0.013 | 316 | 6.32 | 800 |
| 50 | 0.050 | 0.025 | 200 | 10.0 | 800 |
| 100 | 0.050 | 0.050 | 141 | 14.1 | 180 |
| 200 | 0.049 | 0.098 | 100 | 20.0 | 20 |
| 500 | 0.037 | 0.185 | 63.2 | 31.6 | 20 |
| 1K | 0.034 | 0.339 | 44.7 | 44.7 | 20 |
| 2K | 0.029 | 0.571 | 31.6 | 63.2 | 20 |
| 5K | 0.023 | 1.173 | 20.0 | 100 | 20 |
| 10K | 0.017 | 1.731 | 14.1 | 141 | 20 |
| 20K | 0.016 | 3.142 | 10.0 | 200 | 20 |
| 50K | 0.011 | 5.639 | 6.32 | 316 | 20 |
| 100K | 0.010 | 10.325 | 4.47 | 447 | 20 |
| 150K | 0.010 | 14.170 | 3.65 | 548 | 20 |



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