



# 1/2" (12.7 mm) Ten Turn Wirewound Servo Mount Precision Potentiometer



### FEATURES

- Large range of ohmic values: 100 Ω to 100 kΩ
- Smallest size available on the market
- Very easy and accurate adjustment
- 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, multi turn wirewound |
| Output type          | Output by turrets                |
| Market appliance     | Professional                     |
| Dimensions           | 1/2" (2.7 mm)                    |

| ELECTRICAL SPECIFICATIONS   |  |                       |
|-----------------------------|--|-----------------------|
| PARAMETER                   |  |                       |
| Total Resistance            | <b>STANDARD</b>  | <b>SPECIAL</b>        |
| Standard Range              | 100 Ω to 100 kΩ  | 115 kΩ                |
| Tolerance                   | ± 5 %  | ± 1 %                 |
| Linearity (independent)     | <b>STANDARD</b>  | <b>BEST PRACTICAL</b> |
|                             | ± 0.30 %   | ± 0.15 %              |
| Noise                       | 100 Ω ENR  |                       |
| Rotation                    | 3600° + 15° - 0°   |                       |
| Power Rating:<br>Section 1: | 2.0 W at 40 °C ambient, derated to zero at 125 °C  |                       |
| Insulation Resistance       | 100 MΩ minimum, 500 V <sub>DC</sub>  |                       |
| Dielectric Strength         | 500 V <sub>RMS</sub> , 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 total applied voltage for 20 Ω and below |                       |

| MATERIAL SPECIFICATIONS |   |
|-------------------------|---|
| Housing and Lids        | Molded, glass filled, thermoset plastic |
| Front Lid               | Aluminum, anodized                      |
| Shaft                   | Stainless steel, non-passivated         |
| Terminals               | Brass, plated for solderability         |

| ENVIRONMENTAL SPECIFICATIONS |                           |
|------------------------------|---------------------------|
| Vibration                    | 15 g thru 2000 Hz         |
| Shock                        | 50 g                      |
| Salt Spray                   | 48 h                      |
| Rotational Life              | 500 000 shaft revolutions |
| Temperature Range            | - 55 °C to + 125 °C       |

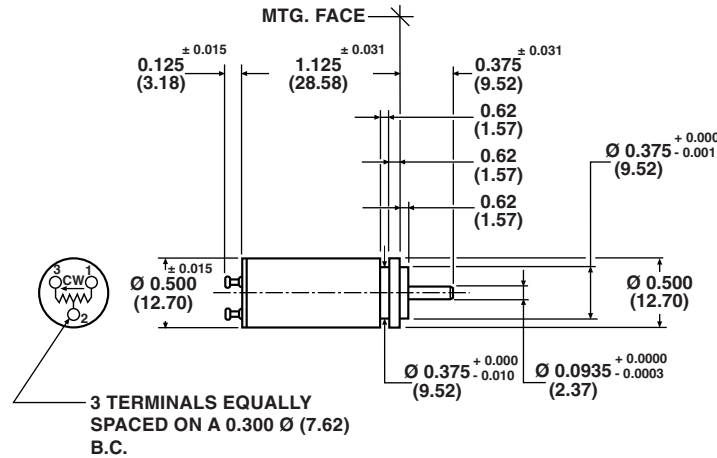
| MARKING             |   |
|---------------------|---|
| Unit Identification | Units shall be marked with Vishay Spectrol name and model no, resistance and resistance tolerance, linearity, terminal identification and date code |

| ORDERING INFORMATION/DESCRIPTION  |                              |                                |                         |
|---|------------------------------|--------------------------------|-------------------------|
| The Model 164 can be ordered from this datasheet with a variety of alternate characteristics, as shown. For most rapid service on your order, please state:   |                              |                                |                         |
| <b>164</b><br>MODEL   | <b>S</b><br>STYLE<br>(SERVO) | <b>10K</b><br>TOTAL RESISTANCE | <b>B05</b><br>PACKAGING |
| Other characteristics will be standard as described on this datasheet. If special characteristics are required, such as: special linearity tolerance, special resistance tolerance, extra taps, non-linear functions, etc., please state these on your order and allow additional lead time for delivery. |                              |                                |                         |

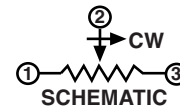
| SAP PART NUMBERING GUIDELINES |                   |                           |                         |
|-------------------------------|-------------------|---------------------------|-------------------------|
| <b>164</b><br>MODEL           | <b>S</b><br>STYLE | <b>103</b><br>OHMIC VALUE | <b>B05</b><br>PACKAGING |

**DIMENSIONS** in inches (millimeters)

**MODEL 164S/164-2...**

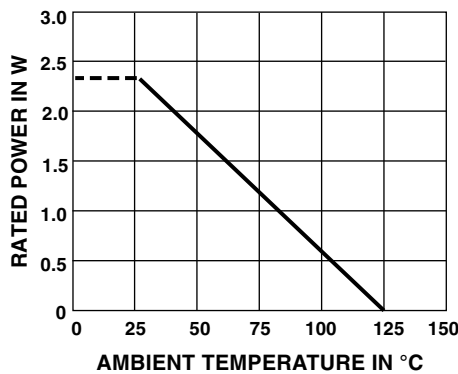


TOLERANCES: UNLESS OTHERWISE NOTED.  
DECIMALS ± 0.005 ANGLES ± 2°



| MECHANICAL SPECIFICATIONS      |   |
|--------------------------------|---|
| PARAMETER                      |   |
| Mechanical Rotation            | 3600°, + 15° - 0°   |
| Bearing Type                   | <b>Ball</b>   |
| Torque (maximum)               | <b>STARTING</b><br>0.4 oz. - in (28.80 g - cm)<br><b>RUNNING</b><br>0.3 oz. - in (21.60 g - cm) |
| Mechanical Runouts (maximums): |   |
| Shaft (TIR)                    | 0.002" (0.05 cm)  |
| Pilot Dia. (TIR)               | 0.003" (0.08 cm)  |
| Lateral (TIR)                  | 0.003" (0.08 cm)  |
| Shaft End Play                 | 0.005" (0.13 cm)  |
| Shaft Radial Play              | 0.002" (0.05 cm)  |
| Weight                         | 0.3 oz. (8.50 g) maximum  |
| Stop Strength                  | 20 oz. - in (static) (1.44 kg - cm)   |

**POWER RATING CHART**



| RESISTANCE ELEMENT DATA        |                |               |                                       |                                 |                           |
|--------------------------------|----------------|---------------|---------------------------------------|---------------------------------|---------------------------|
| STANDARD RESISTANCE VALUES (Ω) | RESOLUTION (%) | OHMS PER TURN | MAXIMUM CURRENT AT 40 °C AMBIENT (mA) | MAXIMUM VOLTAGE ACROSS COIL (V) | WIRE TEMP. COEF. (ppm/°C) |
| 100                            | 0.092          | 0.092         | 141                                   | 14                              | 20                        |
| 200                            | 0.069          | 0.138         | 100                                   | 20                              | 20                        |
| 500                            | 0.049          | 0.245         | 63                                    | 32                              | 20                        |
| 1K                             | 0.047          | 0.470         | 45                                    | 45                              | 20                        |
| 2K                             | 0.038          | 0.763         | 32                                    | 64                              | 20                        |
| 5K                             | 0.031          | 1.56          | 20                                    | 100                             | 20                        |
| 10K                            | 0.025          | 2.55          | 14                                    | 140                             | 20                        |
| 20K                            | 0.020          | 3.94          | 10                                    | 200                             | 20                        |
| 30K                            | 0.018          | 5.34          | 8.2                                   | 246                             | 20                        |
| 50K                            | 0.015          | 7.64          | 6.3                                   | 315                             | 20                        |
| 100K                           | 0.013          | 13.2          | 4.5                                   | 450                             | 20                        |

| MARKING   |
|---|
| Example of a marking for a standard part: 164-21502 |



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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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