Precision potentiometer for measuring, control and instrumentation applications.

The distinguishing features of the P 4500 include an all metal case, ball-bearings, a conductive resistance element and elastomer-damped wipers.

Because of its reliability, long life, good linearity, high resolution, high operational speed and corrosion resistance, this component opens applications hitherto closed to conventional potentiometers.

Special versions with different electrical travels and shaft dimensions are available.

Special features
- industry standard size offering top performance at reasonable cost
- very long life - $100 \times 10^6$ movements
- very good linearity - standard $\pm 0.075\%$
- very high resolution - better than $0.008^\circ$
- high admissible operating speed - $10\,000\,\text{min}^{-1}$
- unrestricted continuous rotation

Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>servo size 13</td>
</tr>
<tr>
<td>Case</td>
<td>two-part; flange anodized aluminium; cover high-grade, temperature-resistant plastic</td>
</tr>
<tr>
<td>Shaft</td>
<td>stainless steel</td>
</tr>
<tr>
<td>Bearings</td>
<td>stainless steel ball bearings</td>
</tr>
<tr>
<td>Resistance element</td>
<td>conductive plastic</td>
</tr>
<tr>
<td>Wiper assembly</td>
<td>precious metal multi-finger wipers</td>
</tr>
<tr>
<td>Electrical connections</td>
<td>gold-plated brass terminals</td>
</tr>
</tbody>
</table>
Mechanical Data

Dimensions: see drawing
Mounting: with 3 clamps Z1-15
Mechanical travel: 360°, continuous
Permitted shaft loading: (axial and radial) static or dynamic force 45 N
Torque: ≤0.1 N cm
Maximum operational speed: 10,000 min⁻¹
Weight: 45 g

Electrical Data

Actual electrical travel: 350 ±2°
Available resistance values: 1; 2; 5 kΩ
Resistance tolerance: ±20%
Repeatability: 0.002 (±0.007°) %
Effective temperature coefficient of the output-to-applied voltage ratio: typical 5 ppm/K
Independent linearity: ±0.075%
Max. permissible applied voltage: 42 V
Recommended operating wiper current: ≤1 µA
Max. wiper current in case of malfunction: 10 mA
Insulation resistance (500 VDC, 1 bar, 2 s): ≥10 MΩ
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC): ≤100 µA

Environmental Data

Temperature range: -40...+100 °C
Vibration: 5...2000 Hz
A_max < 0.75 mm
A_max = 20 g
Shock: 50 g
11 ms
Life: 100 x 10⁶ moves
Protection class: IP 40 (DIN 400 50 / IEC 529)

Order Designations

<table>
<thead>
<tr>
<th>Type</th>
<th>Art.no.</th>
<th>R in kΩ</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4501 A102</td>
<td>006201</td>
<td>1</td>
</tr>
<tr>
<td>P4501 A202</td>
<td>006202</td>
<td>2</td>
</tr>
<tr>
<td>P4501 A502</td>
<td>006203</td>
<td>5</td>
</tr>
</tbody>
</table>

Important:

All the values given in this data sheet for linearity, lifetime and temperature coefficient in the voltage dividing mode are quoted for the device operating with the wiper voltage driving on operational amplifier working as a voltage follower, where virtually no load is applied to the wiper (I_w ≤ 1 µA).

Included in delivery:

3 mounting clamps Z1-15

Recommended accessories:

Fork coupling Z 104 G 6, Fork coupling Z 105 G 6 (backlash-free), Process-controlled indicators MAP... with display, Signal conditioner MUP.../MUK... for standardized output signals.

Included in delivery

3 mounting clamps Z1-15

Important

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