Industrial-Grade Potentiometers

Series IP6000

Special features

- excellent linearity - standard ± 0.075%, on request ± 0.025%
- long life - 100 x 10^6 movements typ.
- very good repeatability 0.007°
- mechanical continuous rotation
- protection class IP 65

This „industrial-grade“ potentiometer has been specially designed for the severe working conditions often encountered in industrial applications. The housing is waterprotected and of sturdy construction. The shaft passage is sealed by a means of a gland, and the connector comes up to the degree of protection IP 65 with the conformable plug. 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.

If the operating wiper current is installed via connection 5, a protective resistance prevents a short circuit between the wiper and the supply voltage, as it can happen when wiring.

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

Description

<table>
<thead>
<tr>
<th>Case</th>
<th>aluminium anodized, shaft passage sealed</th>
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</thead>
<tbody>
<tr>
<td>Shaft</td>
<td>stainless steel</td>
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<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 wiper</td>
</tr>
<tr>
<td>Electrical connections</td>
<td>5-pin connector (see „Accessories“)</td>
</tr>
</tbody>
</table>
Mechanical Data

Dimensions see drawing
Mounting with 3 clamps Z 3-31
Mechanical travel 360, continuous °
Permitted shaft loading (axial and radial) static or dynamic force 45 N
Starting torque <1.5 Nm
Maximum operational speed 2 000 min⁻¹
Weight 180 g

Electrical Data
Actual electrical travel 355 ±2 °
Nominal resistance 5 kΩ
Resistance tolerance ±20 %
Independent linearity ±0.075 (<0.05 on request) %
Repeatability 0.002 (≤ 0.007°) %
Effective temperature coefficient of the output-to-applied voltage ratio typical 5 ppm/K
Max. permissible applied voltage 42 V
Max. wiper current in case of malfunction 10 mA
Protective resistance 5.6 kΩ between connection 2 and 5
Recommended operating wiper current ≤ 1 µA
Insulation resistance (500 VDC) ≥ 10 MΩ
Dielectric strength (500 VAC, 50 Hz) ≤ 100 µA

Environmental Data
Temperature range -40...+100 °C
Vibration 5...2000 Hz
Amax = 0.75 mm
Amax = 20 g
Shock 50 g
11 ms
Life 100 x 10⁶ movem.
Protection class IP 65 (DIN 400 50 / IEC 529) (with plug EEM 33-70)

Included in delivery
3 mounting clamps Z3-31

Recommended accessories
Fork coupling Z 104 G 6 (backlash free),
Fork coupling Z 105 G 6 (backlash-free),
Mating plug EEM 33-70 protection class IP 67,
Right-angled plug EEM 33-72 protection class IP 40,
Process-controlled indicators MAP... with display,
Signal conditioner MUP... / MUK ... for standardized output signals

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 (Iₜ ≤ 1 µA).