

Standard Potentiometers

Series P 6500

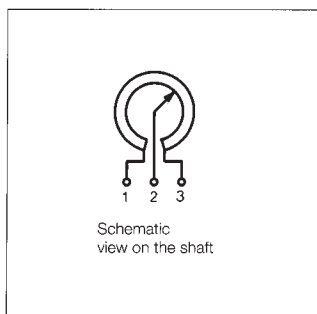
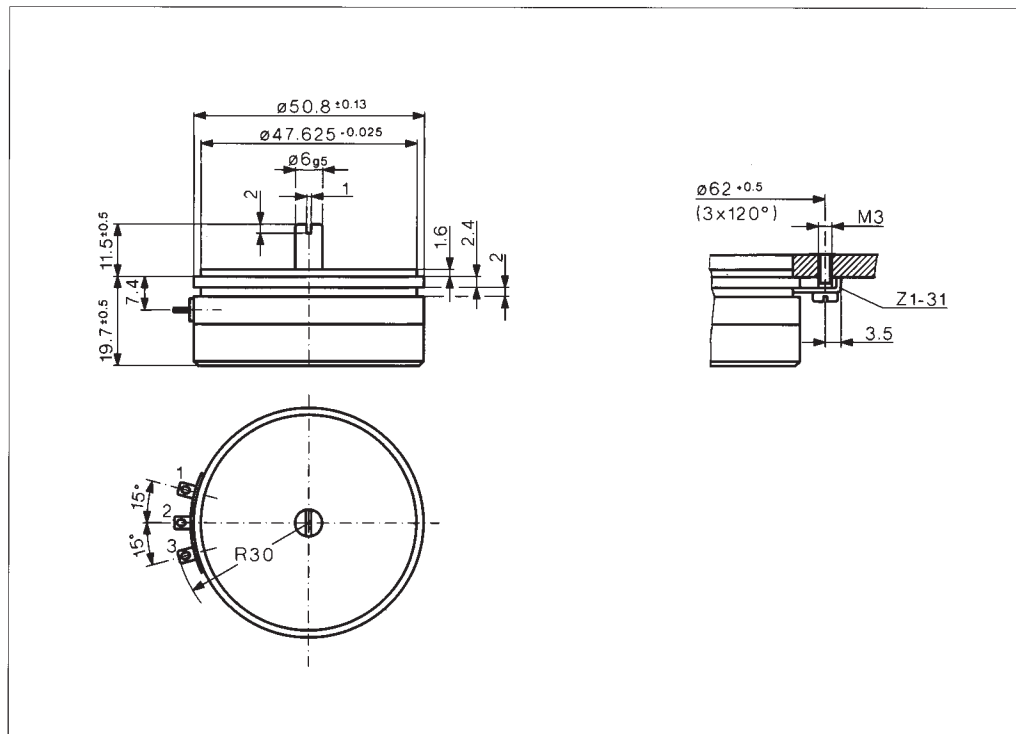


Special features

- very long life - 100×10^6 shaft revolutions
- very good independent linearity standard $\pm 0.075\%$, on request $\pm 0.025\%$
- very high resolution - better than 0.007°
- high admissible operating speed $10\,000\text{ min}^{-1}$
- unrestricted continuous rotation

Precision potentiometer with conductive plastic resistance track for measuring, control and instrumentation applications. The distinguishing features of the P 6500 include an all metal case, ball-bearings, and elastomer-damped wiper for resistance- and collector track. As a high-precision angular displacement transducer this potentiometer meets all kinds of analog applications. Together with an A/D converter it serves as a low-cost digital-absolute-encoder for precision setting or pick-up and thus opens a multitude of digital applications.

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



| Description | |
|------------------------|---|
| Size | Servo size 20 |
| Case | two part, anodized aluminium case and cover |
| Shaft | stainless steel |
| Bearings | stainless steel ball bearings |
| Resistance element | conductive plastic |
| Wiper assembly | precious metal multi-finger wiper |
| Electrical connections | gold-plated brass terminals |

| Mechanical Data | | |
|---|--------------------------|-------------------|
| Dimensions | see drawing | |
| Mounting | with 3 clamps Z 1 - 31 | |
| Mechanical travel | 360, continuous | ° |
| Permitted shaft loading (axial and radial) static or dynamic force | 45 | N |
| Torque | ≤0,15 | Ncm |
| Maximum operational speed | 10 000 | min ⁻¹ |
| Weight | 80 | g |
| Electrical Data | | |
| Actual electrical travel | 355 ±2 | ° |
| Available resistance values | 1; 2; 5; 10 | kΩ |
| Resistance tolerance | ±20 | % |
| Repeatability | 0.002 (± 0.007°) | % |
| Effective temperature coefficient of the output-to-applied voltage ratio | typical 5 | ppm/°C |
| Independent linearity | ±0.05 (0.025 on request) | % |
| 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 A _{max} = 0.75 a _{max} = 20 | Hz mm g |
| Shock | 50 11 | g ms |
| Life | >100 x 10 ⁶ | rev. |
| Protection class | IP 40 (DIN 400 50 / IEC 529) | |

| Order designations | | |
|--------------------|---------|---------|
| Type | Art.no. | R in kΩ |
| P6501a102 | 008001 | 1 |
| P6501a202 | 008002 | 2 |
| P6501a502 | 008003 | 5 |
| P6501a103 | 008010 | 10 |

| Additional models available | | |
|-----------------------------|--------|--|
| P6501s0049 | 008024 | ± 60°± 2°, indep. Lin. ± 0,2%; R= 1kΩ ±50% |
| P6501g252 | 008021 | ± 90°± 2°, indep. Lin. ± 0,3%; R= 2,5kΩ ±20% |
| P6501r252 | 009012 | ± 180°± 2°, indep. Lin. ± 0,15%; R= 2,5kΩ ±20% |

Type designations for non-standard models will be specified upon receipt of order.

Included in delivery

3 mounting clamps Z 1 - 31

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

Important

All the values given in this data sheet for linearity, lifetime, micro-linearity, resistance to external disturbances 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_e ≤ 1 μA).