

## Rotary Sensor Industrial-Grade Potentiometer

Series IP6000

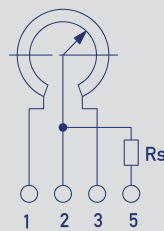


If the operating voltage is applied via connection 5, a protective resistance prevents a short circuit between the wiper and the supply voltage, as it may happen during wiring.

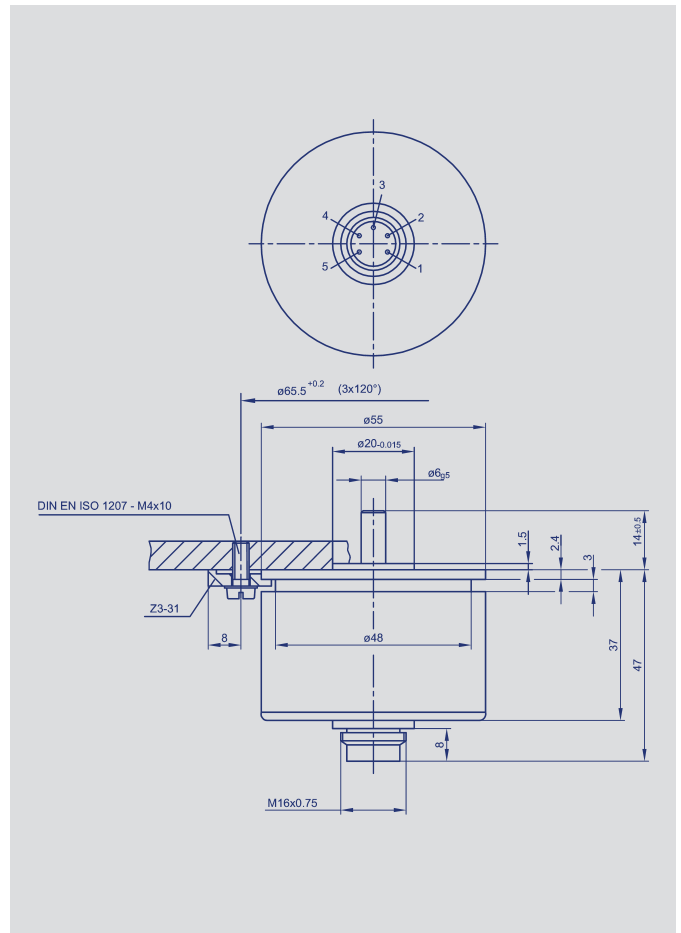
Special versions with different electrical angles and shaft dimensions are available.

### Special features

- excellent linearity -  $\pm 0.075\%$  standard,  $\pm 0.025\%$  on request
- long life -  $100 \times 10^6$  movements
- excellent repeatability -  $0.007^\circ$
- continuous rotation allowed
- sealed to IP65



Schematic, using PINS of the EEM connector



### Description

|                        |                                      |
|------------------------|--------------------------------------|
| Case                   | aluminium, anodized, with shaft seal |
| Shaft                  | stainless steel                      |
| Bearings               | stainless steel ball bearings        |
| Resistance element     | conductive plastic                   |
| Wiper assembly         | precious metal multi-finger wiper    |
| Electrical connections | 5-pin connector (see „Accessories“)  |

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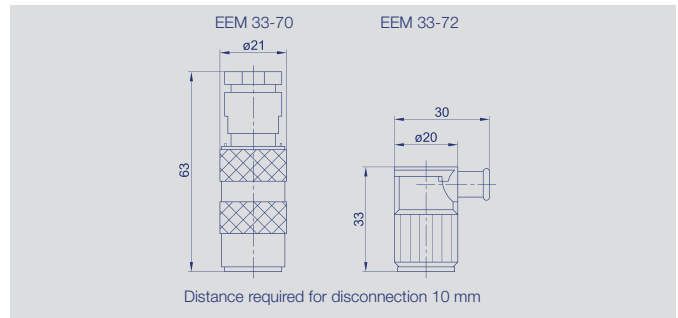
| Mechanical Data  |   |           |
|--|---|-----------|
| Dimensions   | see drawing   |           |
| Mounting   | with 3 clamps Z 3-31                                  |           |
| Mechanical travel  | 360, continuous                                       | °         |
| Permitted shaft loading (axial and radial) static or dynamic force       | 45  | N         |
| Starting torque  | <1.5  | Ncm       |
| Maximum operational speed  | 2,000   | RPM       |
| Weight   | 180   | g         |
| Electrical Data  |   |           |
| Defined 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 RS   | 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        |
|  | A <sub>max</sub> = 0.75                               | mm        |
|  | a <sub>max</sub> = 20                                 | g         |
| Shock  | 50  | g         |
|  | 11  | ms        |
| Life   | 100 x 10 <sup>6</sup>                                 | movements |
| Protection class   | IP 65 (DIN 400 50 / IEC 529)<br>(with plug EEM 33-70) |           |

#### Order designations

| Type         | P/N    |
|--------------|--------|
| IP-6501-A502 | 010001 |

#### Additional models available

|              |        |   |
|--------------|--------|---|
| IP-6501-G252 | 010004 | ↗ 90° ±2°, indep. lin ± 0.3 %<br>R = 2.5 kΩ ±20 % |
|--------------|--------|---|



**Included in delivery**  
3 mounting clamps Z3-31

**Recommended accessories**  
Fork coupling Z-104-G06 (backlash free), P/N 005690;  
Fork coupling Z-105-G06 (backlash-free), P/N 005691;  
Mating plug EEM 33-70, protection class IP 67, P/N 005611;  
Rightangled plug EEM 33-72, protection class IP 40, P/N 005613;  
MAP Process control indicators with display;  
MUP/MUK signal conditioners for standardized voltage and current 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 ( $I \leq 1 \mu A$ )