

# Low-Torque Potentiometers

## P2200 Series



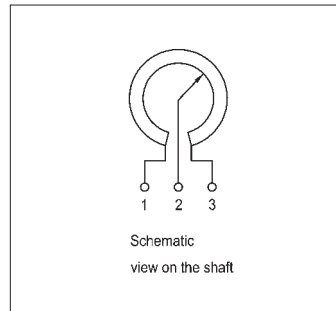
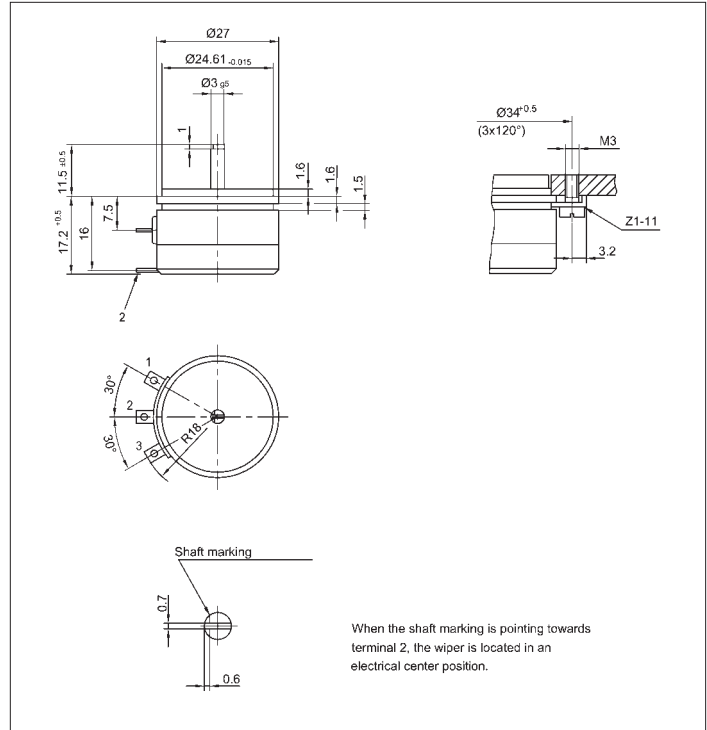
### Special features

- extremely low torque – 0.003 Ncm
- very long life –  $100 \times 10^6$  movements
- excellent linearity – standard  $\pm 0.1\%$  up to  $\pm 0.07\%$  on request
- very good repeatability better than  $0.01^\circ$
- single integrated main bearing
- shaft with screwdriver slot and marking
- unrestricted continuous rotation

The distinctive features of conductive plastic potentiometers are a single integrated main bearing with very close tolerances and shaft with screwdriver slot combined with a shaft marking for easy identification of the wiper position. Because of its extremely low torque, this potentiometer is particularly suitable for applications where the repercussions of the driving shaft could lead to measuring faults.

The standard version P2201 A502 has a nominal resistance of  $5 \text{ k}\Omega$ .

Special versions with different electrical travels are available.



Description	
Size	servo size 11
Case	anodized aluminum, cover plastic
Shaft	stainless steel with screwdriver slot and marking
Bearings	stainless integrated steel ball bearings, dust-protected
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wipers
Electrical connections	terminals gold-plated brass

<b>Mechanical Data</b>		
Dimensions	see drawing	
Mounting	with 3 clamps Z 1 - 11	
Mechanical travel	360, continuous	°
Permitted shaft loading (axial and radial) static or dynamic force	15	N
Maximum torque	≤0.003	Ncm
Maximum operational speed	600	RPM
Weight	20	g
<b>Electrical Data</b>		
Actual electrical travel	345 ±2	°
Nominal resistance	5	kΩ
Resistance tolerance	±20	%
Repeatability	0.0012 (Δ 0.004°)	%
Effective temperature coefficient of the output-to-applied voltage ratio	5 (typical)	ppm/K
Independent linearity	±0.1	%
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

<b>Environmental Data</b>		
Temperature range	-40...+100	°C
Vibration	5...2000 A <sub>max</sub> = 0.75 a <sub>max</sub> = 5	Hz mm g
Shock	10 11	g ms
Life	100 million	movem.
Protection class	IP 50 (DIN 400 50 / IEC 529)	

<b>Order designations</b>	
Type	Art. no.
P2201 A502	014203

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

#### Included in delivery

3 clamps Z 1-11

#### Recommended accessories

Fork coupling Z 103 G 3  
(backlash-free),  
MAP process-control indicators  
and display. MUP or MUK signal  
conditioner for standardized  
output signals.

#### Important

All values given for this series – including linearity, lifetime, micro-linearity, resistance to external disturbances and temperature coefficient in voltage dividing mode – are quoted for the device operating with the wiper voltage driving an operational amplifier working as a voltage follower where virtually no load is applied to the wiper ( $I_e \leq 1 \mu A$ ).