

## Standard Potentiometers

Series P4500



### Special features

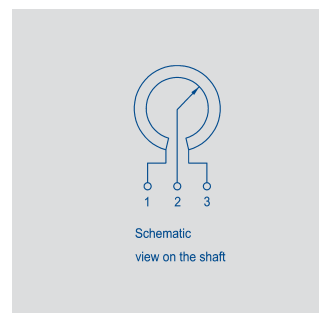
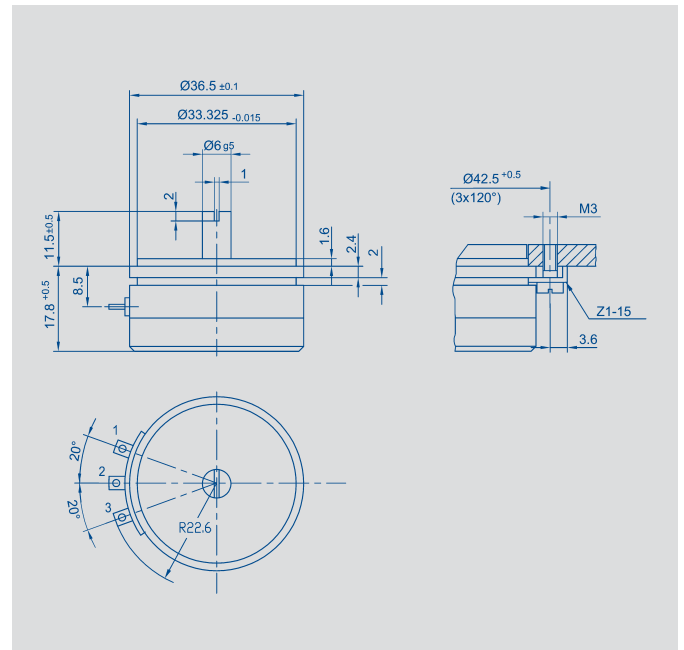
- industry standard size offering top performance at reasonable cost
- very long life -  $100 \times 10^6$  movements
- very good linearity - standard  $\pm 0.075\%$
- very high resolution - better than  $0.008^\circ$
- high admissible operating speed -  $10\,000 \text{ min}^{-1}$
- unrestricted continuous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

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.



### Description

Size	servo size 13
Case	two-part; flange anodized aluminium; cover high-grade, temperature-resistant plastic
Shaft	stainless steel
Bearings	stainless steel ball bearings
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wipers
Electrical connections	gold-plated brass terminals

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#### Mechanical Data

Dimensions	see drawing	
Mounting	with 3 clamps Z 1 - 15	
Mechanical travel	360, continuous	°
Permitted shaft loading (axial and radial) static or dynamic force	45	N
Torque	≤0,1	Ncm
Maximum operational speed	10 000	min <sup>-1</sup>
Weight	45	g

#### Electrical Data

Actual electrical travel	350 ±2	°
Available resistance values	1; 2; 5	kΩ
Resistance tolerance	±20	%
Repeatability	0.002 (Δ 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 A <sub>max</sub> = 0.75 a <sub>max</sub> = 20	Hz mm g
Shock	50 11	g ms
Life	100 x 10 <sup>6</sup>	move.
Protection class	IP 40 (DIN 400 50 / IEC 529)	

#### Order designations

Type	Art.no.	R in kΩ
P4501 A102	006201	1
P4501 A202	006202	2
P4501 A502	006203	5

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

#### 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 out-  
 put 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 opera-  
 ting with the wiper voltage  
 driving on operational amplifier  
 working as a voltage follower,  
 where virtually no load is ap-  
 plied to the wiper ( $I_e \leq 1 \mu A$ ).