

Geared Potentiometers

Series GP



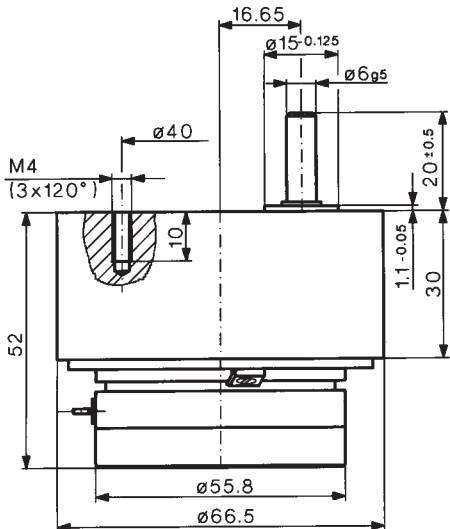
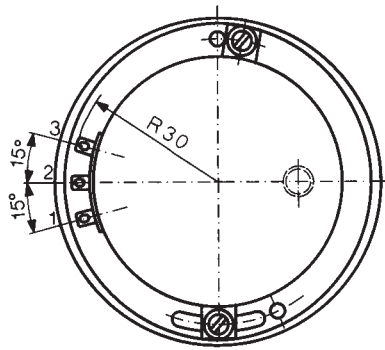
Geared potentiometers of this series supply an analogue output signal proportional to the number of turns.

The potentiometer section is made up of standard elements from series P 6500 as shown in this catalogue. The gear mechanism comprises precision gear wheels, and the shaft is mounted in double ball bearings.

The gear mechanism and the potentiometer are mounted and pinned in the factory for minimum backlash. The shaft side of the gear mechanism case is provided with three M4 threaded holes offset by 120° for mechanical fixture of the transducer.

Special features

- reduction gearing
3:1, 5:1, 10:1
- very good linearity
0.1 % (standard)
- very long life typically
100 x 10⁶ cycles



Schematic view on the shaft

Description	
Potentiometer case	aluminium anodized
Gearing case	Aluminium anodized
Gearing	gearing exhibiting low backlash
Shaft	stainless steel
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper
Electrical connections	brass, gold-flashed

Type designations	GP3P6501a502	GP5P6501a502	GP10P6501a502	
Mechanical Data				
Dimensions	see drawing			
Mechanical travel	360, continuous			°
Permitted shaft loading (axial and radial) static or dynamic force	45			N
Starting torque	<1			Ncm
Maximum operational speed	3000			min ⁻¹
Weight	approx. 320			g
Reduction ratio	3.11:1	5.19:1	10.77:1	
Electrical Data				
Actual electrical travel	1095 + 15	1830 + 20	3800 + 45	°
Nominal resistance	5			kΩ
Resistance tolerance	±20			%
Independent linearity	±0.1 (0.05 on request)			%
Repeatability	typ. 0.002			%
Max. permissible applied voltage	42			V
Max. wiper current in case of malfunction	10			mA
Recommended operating wiper current	<1			μA
Effective temperature coefficient of the output- to-applied voltage ratio	typ. 5			ppm/°C
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	100×10^6	rev.
Protection class	IP 40 (DIN 400 50 / IEC 529)	

Recommended accessories

Fork coupling Z 104 g 6

(backlash free),

Fork coupling Z 105 g 6

(backlash-free),

Process-controlled indicators

MAP... with display,

Signal conditioner MUP.../

MUK ... for standardized

output signals

Order designations

Type	Art.no.	Ratio
GP10P6501a502	000893	Reduction 10:1
GP5P6501a502	000892	Reduction 5:1
GP3P6501a502	000891	Reduction 3:1

Important

All the values given in this data sheet for linearity, life-time, 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 ($I_e \leq 1 \mu A$).