

Geared Potentiometers

Series GP



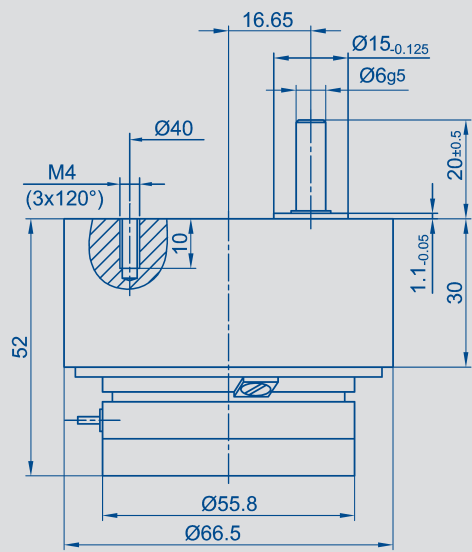
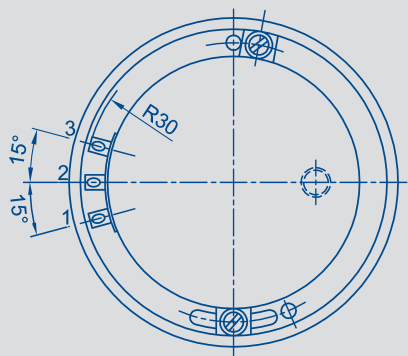
Geared potentiometers of this series supply an analogue output signal proportional to the number of turns.

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
 100×10^6 movements



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	GP3P6501 A502	GP5P6501 A502	GP10P6501 A502
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	%	
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/K
Insulation resistance (500 VDC, 1 bar, 2 s)	≥10		MΩ
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC)	≤100		μA

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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	movem.
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 out-
put signals

Order designations		
Type	Art.no.	Ratio
GP3 P6501 A502	009111	Reduction 3:1
GP5 P6501 A502	009112	Reduction 5:1
GP10 P6501 A502	009113	Reduction 10:1

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 ($I_e \leq 1 \mu A$).