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Rotary Sensor Multi-Turn Geared Heavy Duty Potentiometer

Series IGP

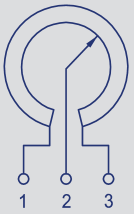
Special features

- angular range - 3 turns (~1,080°), 5 turns (~1,800°), or 10 turns (~3,600°)
- robust construction - with 10 mm shaft and high allowable loads
- very good linearity - 0.1 %
- excellent repeatability - 0.002 %
- very long life - typically 100 million movements
- sealed to IP67

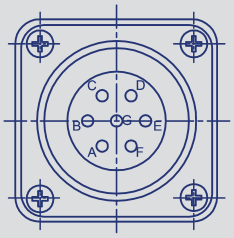
The IGP series multiple-turn geared potentiometer offer an analog voltage output signal that is proportional to the angle, over the specified number of turns.
This heavy-duty sensor is designed to measure angular displacement under the most difficult of environmental conditions.

The potentiometer section is based on Novotechnik's high precision P6500 series, while the mechanism is comprised of precision gears, mounted with stainless steel ball bearings.

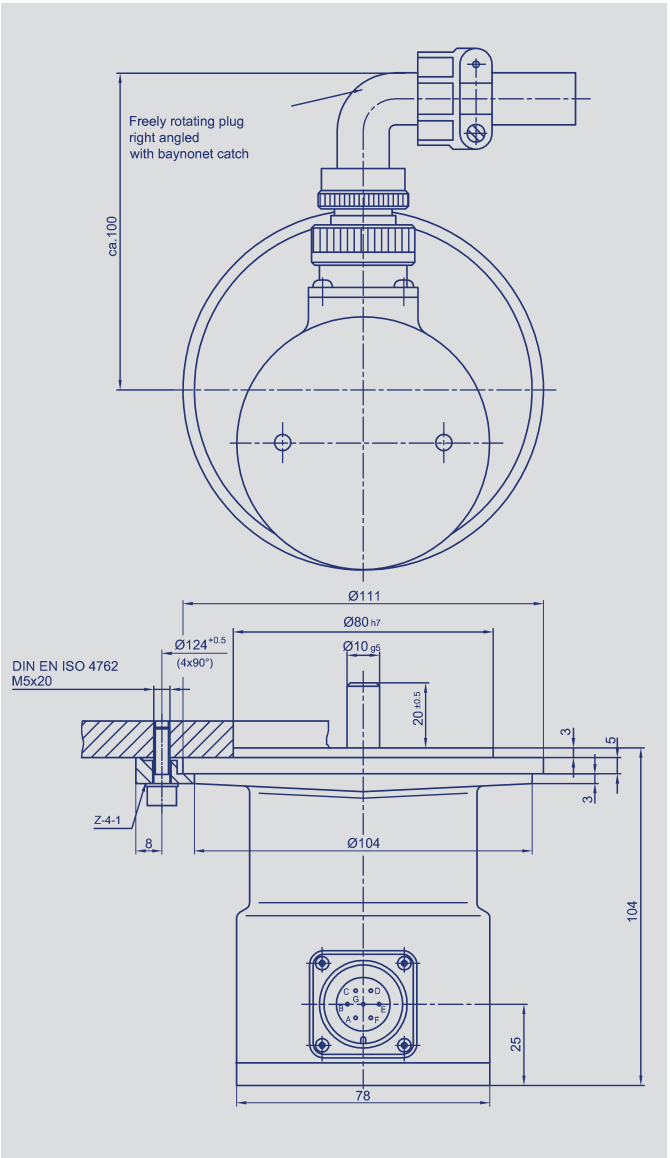
The sensor is sealed to IP67 and the single-stage gearing is exceptionally backlash-free. Heavy-duty bearings allow for high axial loading on the shaft, allowing gears, or even chain drives, to be mounted directly to the sensor shaft.



Schematic
view on the shaft



Connector pin assignment



Description	
Case	varnished aluminium
Shaft	stainless steel
Bearings	stainless ball bearings
Reduction gearing	single-stage low-backlash
Resistance element	conductive plastic
Wier assembly	precious metal multi-finger wiper
Mounting	any optional orientartion
Electrical Connections	7pin all-metall plug and socket, freely rotatable, 90° right-angled, protection class IP67, bayonet-type

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Novotechnik U.S., Inc.
155 Northboro Road
Southborough, MA 01772

Phone 508 485 2244
Fax 508 485 2430
info@novotechnik.com
www.novotechnik.com

Type designations	IGP-3-P-6501-A502	IGP-5-P-6501-A502	IGP-10-P-6501-A502	
Mechanical Data				
Dimensions	see drawing			
Mounting	with 4 clamps Z-4-1			
Mechanical travel	360, continuos			°
Permitted shaft loading (axial and radial) static or dynamic force	300			N
Starting torque	< 10			Ncm
Weight	approx. 1300			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/K
Insulation resistance (500 VDC)	≥ 10			MΩ
Dielectric strength (500 VAC, 50 Hz)	≤ 100			µA
Environmental Data				
Temperature range	-40...+100			°C
Vibration	5...2000 Amax = 0.75 amax = 20			Hz mm g
Shock	50 11			g ms
Life	100 x 10^6			movements
Protection class	IP67 (DIN 400 50 / IEC 529)			

Order designations

Type	P/N	Ratio
IGP-3-P-6501-A502	009121	Reduction 3:1
IGP-5-P-6501-A502	009122	Reduction 5:1
IGP-10-P6501-A502	009123	Reduction 10:1

Included in delivery

4 mounting clamps Z-4-1,
1 right-angle plug Cannon Nr. CA 08 COM-E16S-1S-B,
1 anti-kink sleeve

Recommended accessories

Spring operated backlash free coupling Z-110-G10.
MAP process control indicator 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 <= 1 µA)