

Eingang-Potentiometer
PL 310
ø 22.22 mm
5.000.000 Zyklen
Leitplastik

Singleturn Potentiometers
PL 310
ø 22.22 mm
5.000.000 cycles
Conductive plastic



Mechanische Daten	Mechanical Data	
Durchmesser	Diameter	22.22 mm
Maximales Einstelldrehmoment	Maximum torque	0.7 Ncm
Lebensdauer	Life expectancy	5.000.000 Zyklen/cycles
Elektrische Daten	Electrical Data	
Anschlusswiderstand R	Nominal resistance R	1/5/10K Ω
Widerstandstoleranz	Resistance tolerance	$\pm 20\%$
Linearität	Linearity	$\pm 1\%$
Empf. Betriebsstrom im Schleiferkreis	Recommended wiper current	<0.1 μ A
Maximaler Schleiferstrom im Störfall	Max. wiper curr. in case of malfunct.	10 mA
Belastung P	Power rating P	0.5 W/ 40°C
Maximale Anschlussspannung	Maximum supply voltage	$U_{\max} = \sqrt{PxR}$
Maximaler Übergangswiderstand	Maximum contact resistance	ENR 20 k Ω
Temperaturkoeffizient Spannungsteiler	Temperature coefficient voltage divider	50 ppm/°C
Spannungsfestigkeit	Dielectric strength	1000 VAC/1 min
Isolationswiderstand	Insulating resistance	10 G Ω bei/at 500 VDC
Umgebungsbedingungen	Environmental Conditions	
Lagertemperatur	Storage temperature	-40°C... +105°C
Betriebstemperatur	Operating temperature	-25°C... +85°C
Klimatische Prüfklasse	Climatic rating	25/085/56
Schutzart	Protection rating	IP 50
Vibrationen	Vibration	10 G (30 – 2000 Hz, 0.75 mm)
Schock	Shock	50 G (Halbsinus, 7 ms) 50 G (half sine pulse, 7 ms)
Material	Material	
Gehäuse	Housing	Aluminium eloxiert anodized aluminium
Achse	Shaft	Rostfreier Stahl/Stainless steel
Anschlüsse	Connections	Messing vergoldet/brass gold plated

Optionen

- Linearität $\pm 0.25\%$
- Spezialachse, max. Länge 50 mm
- kugelgelagert
- elektrische Drehwinkel zwischen 15° und 348°
- Andere mechanische Drehwinkel zwischen 45° und 360°
- Wid.-Tol. $\pm 10\%$
- Schutzart IP 65

Options

- Linearity $\pm 0.25\%$
- Customer specific shaft (max. length 50 mm)
- Ball bearing
- Electrical angle from 15° to 348°
- Other mechanical angle from 45° to 360°
- Resistance tolerance $\pm 10\%$
- Protection rating IP 65

**Standard
Potentiometers**

PL310 Series



Special features

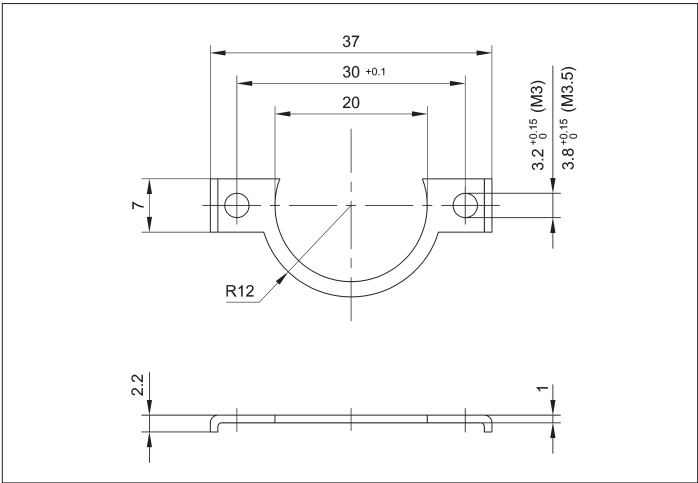
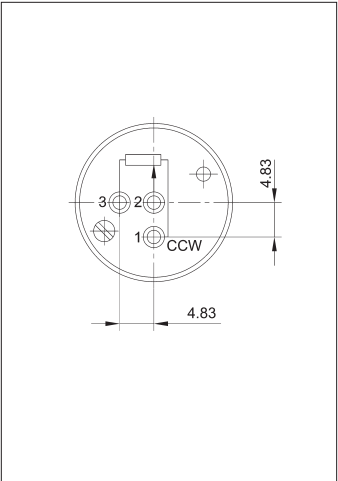
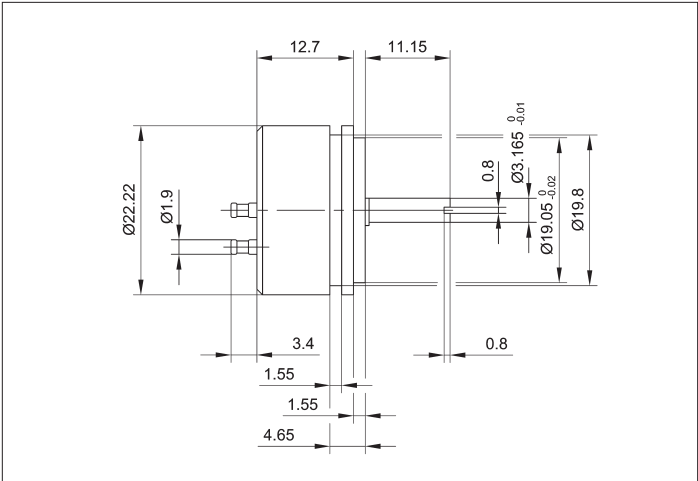
- very small dimensions
- up to 100×10^6 movements
- excellent linearity, up to $\pm 0.25\%$
- very high resolution – better than 0.015°

Precise potentiometer with a conductive plastic resistance element for control electronics and measuring applications.

The PL310 Series provides high precision in a small, 22.22 mm, “servo mount” package for use in servo systems and measuring applications.

Careful selection of materials and high-quality components ensure a constant measurement throughout the entire service life of the sensor.

Special designs with other angular ranges, linearities and shaft dimensions are available on request.



Description	
Size	Synchro 9
Housing	anodized aluminum
Shaft	stainless steel
Bearings	sinter bronze sleeve bearing or ball bearing
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper
Electrical connections	solder pins, gold plated

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

Type designations	PL310...AA-SG	PL310...AA-KG	PL310...AA-KZS373	
Mechanical Data				
Dimensions	see drawing			
Mounting	clamp PL310 (see drawing)			
Mechanical travel	360 continuous			°
Permitted shaft loading (axial and radial) static or dynamic force	1	3	10	N
Torque	≤ 0.7			Ncm
Maximum operational speed	500	2000	2000	RPM
Weight	12			g
Electrical Data				
Actual electrical travel	340 ±3	340 ±3	348 ±3	°
Available resistance values	1; 5; 10	5; 10	5	kΩ
Resistance tolerance	±20			%
Repeatability	0.03 (=0.1°)	0.03 (=0.1°)	0.005 (=0.015°)	%
Effective temperature coefficient of the output-to-applied voltage	50 (typical)			ppm/K
Independent linearity	±1	±0.25	±0.25	%
Max. permissible applied voltage	20			V
Recommended operating wiper current	≤ 1			μA
Max. wiper current in case of malfunction	10			mA
Insulation resistance (500 VDC, 1 bar, 2 s)	≥ 10,000			MΩ
Dielectric strength (AC, 50 Hz, 1 min, 1 bar)	1,000			V
Environmental Data				
Temperature range	-25...+85			°C
Vibration	30...2000 A _{max} = 0.75 a _{max} = 10	30...2000 A _{max} = 0.75 a _{max} = 10	5...2000 A _{max} = 0.75 a _{max} = 20	Hz mm g
Life	10 x 10 ⁶	10 x 10 ⁶	100 x 10 ⁶	movements
Shock (DIN IEC 68 T2-27)	50 7	50 7	50 11	g ms
Protection class (DIN 40050)	IP 50			

Order designations				
Type		Art. no.	R in kΩ	
PL310	1K0	AA111 SG	82059	1
PL310	5K0	AA111 SG	82060	5
PL310	10K0	AA111 SG	82061	10
PL310	5K0	AA111 KG	82834	5
PL310	10K0	AA111 KG	82909	10
PL310	5K0	AA111 KZS373	82831	5

Order designations / Abbreviations

AA: head soldering pin axial
SG: sinter bronze sleeve bearing
KG: ball bearing
KZS373: ball bearing,
backlash-free

Included in delivery

1 clamp PL310

Recommended accessories
MAP process-control indicators
and display. MUP signal condi-
tioner for standardized output
signals.

Subject to changes

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