

# Data Sheet for Precision Potentiometer

## Multiturn Wirewound Potentiometer

## Series SMT



The SMT potentiometers in 10,5 mm housing are suitable for applications where a miniaturized and precise multiturn potentiometer is important.

- Smallest 10-turn potentiometer in the world
- Only Ø10.5 mm
- 5 or 10 turn version
- With many options

The precision potentiometers of the series SMT are the smallest multiturn wirewound potentiometers in the world. The potentiometer is as a 5 or 10 turn version and optionally with rear shaft available.

Electrical Data	5-turn	10-turn
Effective electrical angle of rotation 1.)	1800° ±5°	3600° ±5°
Total resistance 1.)	100 Ohm..50 kOhm	100 Ohm..100 kOhm
Resistance tolerance	±3% (±1%)	
Independent linearity (best straight line) 1.)	±0,3% (±0,2%) [±0,25% R < 5k]	±0,25% (±0,1%) [±0,15% R < 5k]
Theoretical resolution 1.)	Depends on resistance value (see table below)	
Backlash (Hysteresis) 1.)	≤ 2°	
Rotational noise (ENR) 1.) (Method C)	100 Ohm	
Max. / recommended wiper current 1.)	35 mA / 2 µA	
Power rating @ 70°C (0W @ 105°C)	0,5 W	1 W
Insulation Voltage 1.)	500 VAC, 1min	
Insulation Resistance 1.)	100 MOhm @ 500 VDC	

Mechanical Data, Environmental Conditions, Miscellaneous	5-turn	10-turn
Mechanical angle of rotation	1800° +30°	3600° +30°
Lifetime (90% el. eff. angle half sine) 2.)	1 Mio. rotations	2 Mio. rotations
Max. operational speed	40 rev. / min.	
Bearing	Sleeve bearing	
Operational torque @ ambient temperature 1.) 2.)	3 Nmm	
End stop torque 1.) 2.)	10 Ncm	
Operating temperature range	-55..+105°C	
Storage temperature range	-55..+105°C	
Protection grade (IEC 60529)	IP40	
Vibration (IEC 68-2-6, Test Fc)	15g 10..2000Hz x 12h	
Shock (IEC 68-2-27, Test Ea)	49g bei 11 ms x 18	
Housing diameter	10,5 mm	
Housing depth	19,2 mm	25,5 mm
Shaft diameter	4,00 mm	
Shaft type	Solid shaft	

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Mechanical Data, Environmental Conditions, Miscellaneous	5-turn	10-turn
Max. radial load	≤1 N	
Max. axial load	≤1 N	
Connection type	Soldering lugs	
Connection position	Axial	
Sensor mounting	Bushing	
Mass	app. 10 g	
Fastening parts included in delivery	Nut, toothed washer	
Fastening torque mounting nut	< 100 Ncm	
Material shaft	Stainless steel	
Material housing	Plastic	

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Please note: Max. permissible supply voltage <75 VDC respectively <50 VAC in addition the max. power rating must be observed

Number of wire turns / resolution										
Resistance value Ohm	100	200	500	1k	2k	5k	10k	20k	50k	100k
Number of wire turns (SMT10-5-turn)	750	620	830	1050	1330	1820	2300	2940	3900	-
Number of wire turns (SMT10-10-turn)	1200	1500	1350	1670	2100	2860	3640	4550	6250	7850

Resolution in degree E.g. R5k 5-turn =  $1800^\circ / 1820 = 0,989^\circ$  per winding resistive wire

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## Order code

Description	Selection: standard=black/bold, possible options=grey/cursive								
<b>Series:</b>	<b>SMT</b>								
<b>Housing material:</b> Plastic		<b>P</b>							
<b>Revolutions with stop:</b> 5-turn 10-turn			<b>10/5</b> <b>10/10</b>						
<b>Resistance value:</b> <i>Option 100 Ohm</i> <i>Option 200 Ohm</i> <i>Option 500 Ohm</i> <i>Option 1 kOhm</i> <i>Option 2 kOhm</i> <b>5 kOhm</b> <b>10 kOhm</b> <i>Option 20 kOhm</i> <i>Option 50 kOhm</i> <i>Option 100 kOhm (only 10 Turn)</i>				<i>R100</i> <i>R200</i> <i>R500</i> <i>R1k</i> <i>R2k</i> <b>R5k</b> <b>R10k</b> <i>R20K</i> <i>R50K</i> <i>R100K</i>					
<i>Option rear shaft:</i> <i>Standard Ø0,8 x 10 mm</i> <i>Shaft length in mm</i> <i>Shaft diameter in mm (≤6,35 mm)</i>					<i>RA</i> <i>RAxx,xx</i> <i>RADMx,xx</i>				
<b>Resistance tolerance:</b> <b>±3%</b> <i>Option ±1%</i>						<b>W3%</b> <i>W1%</i>			
<b>Independent linearity:</b> <b>±0,3% (5-turn)</b> <i>Option ±0,25% (5-turn R &lt; 5kOhm)</i> <i>Option ±0,2% (5-turn)</i> <b>±0,25% (10-turn)</b> <i>Option ±0,15% (10-turn R &lt; 5kOhm)</i> <i>Option ±0,1% (10-turn)</i>							<b>L0,3%</b> <i>L0,25%</i> <i>L0,2%</i> <b>L0,25%</b> <i>L0,15%</i> <i>L0,1%</i>		
<b>Front shaft:</b> <b>Standard Ø4 x 25 mm</b> <i>Option Ø3,175 x 25 mm</i> <i>Option shaft length in mm</i> <i>Option shaft diameter in mm (≤4 mm)</i> <i>Option screwdriver slot:</i>								- <i>DM3,175</i> <i>Ax,xx</i> <i>DMx,xx</i>	<i>B</i>

### For higher quantities or on-going demand, additional options are available as described below on request

For Example: Sealed housing case, special electrical and mechanical angles of rotation, and special resistance and linearity tolerances. Furthermore we can mount gear wheels or attach cable assemblies with or without connectors and much more.

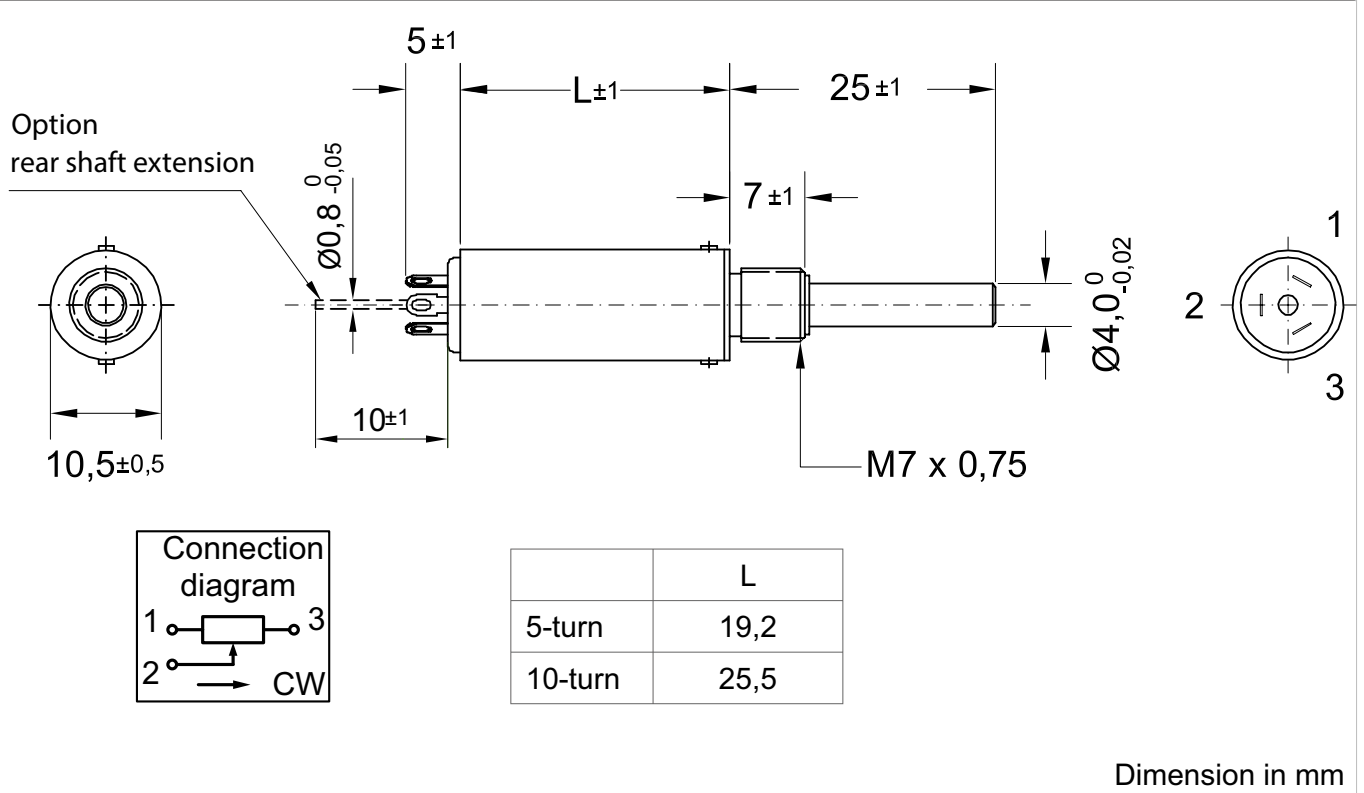
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## Drawing



**On Request: Special machining on shaft**

Slot



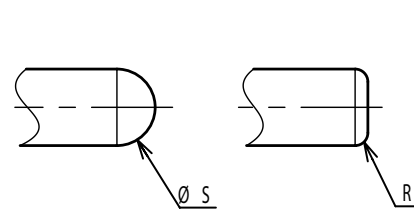
Groove



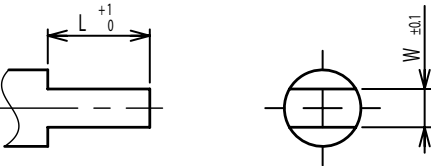
Flat



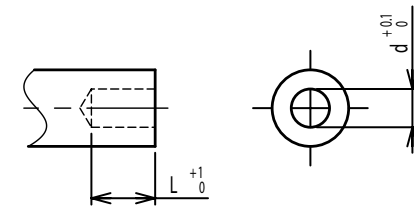
Round top



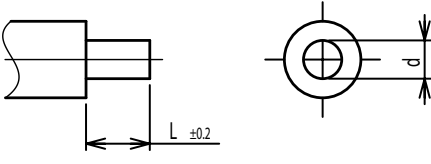
Double side flat



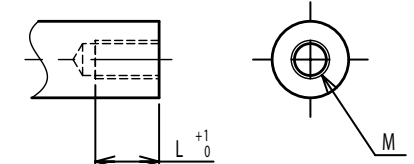
Counterbore hole



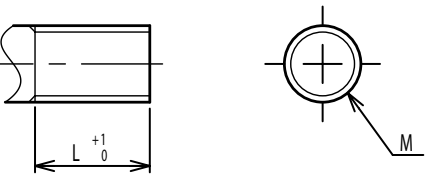
Step



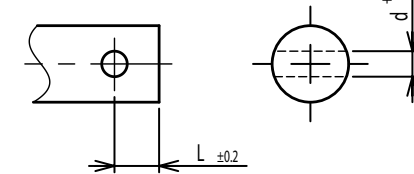
Counterbore screw hole



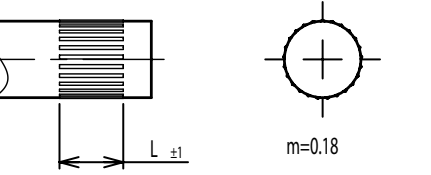
Screw Thread



Pin hole



Knurled(Parallel)



Screw thread inside hole

