

# Data Sheet for Precision Potentiometer

Multiturn Hybrid Potentiometer

Series AL24



The AL24 potentiometers in 20 mm housing are suitable for applications where a long life span and high-resolution multiturn potentiometer is important.

- Very high-resolution and long-lasting due to hybrid technology
- Very clean signal - no winding jumps thanks to hybrid technology
- With many options e.g. limit switch, slipping clutch

The high-resolution precision potentiometers of the AL24 series have a wire-wound resistor element, which is finished with a conductive plastic layer. Thus the so-called winding jumps are omitted and the resolution is almost infinite. Due to the smooth surface of the resistance element, the hybrid potentiometer has a significantly longer life span than wirewound potentiometers.

Electrical Data	3-turn	5-turn	10-turn
Effective electrical angle of rotation 1.)	1080° ±5°	1800° ±5°	3600° ±5°
Total resistance 1.)	1..50 kOhm		2..100 kOhm
Resistance tolerance	±5%		
Independent linearity (best straight line) 1.)	±0,25%	±0,25% (±0,2%)	±0,25% (±0,1%)
Theoretical resolution 1.)	Nearly infinite		
Backlash (Hysteresis) 1.)	≤ 2°		
Max. / recommended wiper current 1.)	10 µA / 2 µA		
Power rating @ 70°C (0W @ 105°C)	0,75 W	1 W	2 W
Insulation Voltage 1.)	1000 VAC, 1min		
Insulation Resistance 1.)	100 MOhm @ 1000 VDC		

Mechanical Data, Environmental Conditions, Miscellaneous	3-turn	5-turn	10-turn
Mechanical angle of rotation	1080° +10°	1800° +10°	3600° +10°
Lifetime (90% el. eff. angle half sine) 2.)	2,5 Mio. rotations	5 Mio. rotations	10 Mio. rotations
Max. operational speed	40 rev. / min.		
Bearing	Sleeve bearing		
Operational torque @ ambient temperature 1.) 2.)	5 Nmm		
End stop torque 1.) 2.)	90 Ncm		
Operating temperature range	-55..+105°C		
Storage temperature range	-55..+105°C		
Protection grade (IEC 60529)	IP40		
Protection option D shaft sealing (IEC 60529)	IP65 optional		
Vibration (IEC 68-2-6, Test Fc)	15g 10..2000Hz x 12h		
Shock (IEC 68-2-27, Test Ea)	49g @ 11 ms x 18		
Housing diameter	20 mm		
Housing depth	18 mm	25,5 mm	
Shaft diameter (HH17/19)	6,35 mm (optional 6,00 mm)		
Shaft type	Solid shaft		

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Mechanical Data, Environmental Conditions, Miscellaneous	3-turn	5-turn	10-turn
Max. radial load	≤1 N		
Max. axial load	≤1 N		
Connection type	Gold plated soldering lugs		
Connection position	Radial		
Sensor mounting	Bushing		
Mass	20 g		25 g
Fastening parts included in delivery	Nut, toothed washer		
Fastening torque mounting nut	150 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

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## Order code

Description		Selection: standard=black/bold, possible options=grey/cursive									
<b>Series</b>	<b>AL24</b>										
<b>Revolutions with stop:</b>											
<i>Option 3-turn</i>		<i>03</i>									
<b>5-turn</b>		<b>05</b>									
<b>10-turn</b>		<b>10</b>									
<b>Slipping clutch:</b>											
<b>Without additional mechanics</b>											
<i>Option with integr. slipping clutch</i>											
<b>Resistance value / Option Tandem:</b>											
<i>Option 1 kOhm (only 3 and 5-turn)</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>Option rear shaft:</i>											
<i>Standard Ø2,00 x 10 mm</i>											
<i>Shaft length in mm</i>											
<i>Shaft diameter in mm (≤6,35 mm)</i>											
<b>Resistance tolerance:</b>											
<b>±5%</b>											
<b>Independent linearity:</b>											
<b>±0,25%</b>											
<i>Option ±0,10% (10 Turn)</i>											
<i>Option ±0,20% (5 Turn)</i>											
<i>Option center tap:</i>											
<b>Front shaft:</b>											
<b>Standard Ø6,35 x 20,6 mm</b>											
<i>Option shaft diameter 6,00 mm</i>											
<i>Option shaft length in mm</i>											
<i>Option shaft diameter in mm (≤6,35 mm)</i>											
<i>Option screwdriver slot:</i>											
<i>Option limit switch - on request:</i>											
<i>Type CW+CCW ("n"=number Turns)</i>											
<i>Type CCW ("n"=number Turns)</i>											
<i>Type CW ("n"=number Turns)</i>											
<b>Shaft sealing:</b>											
<b>Standard is without sealing</b>											
<i>Option D with shaft sealing</i>											

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

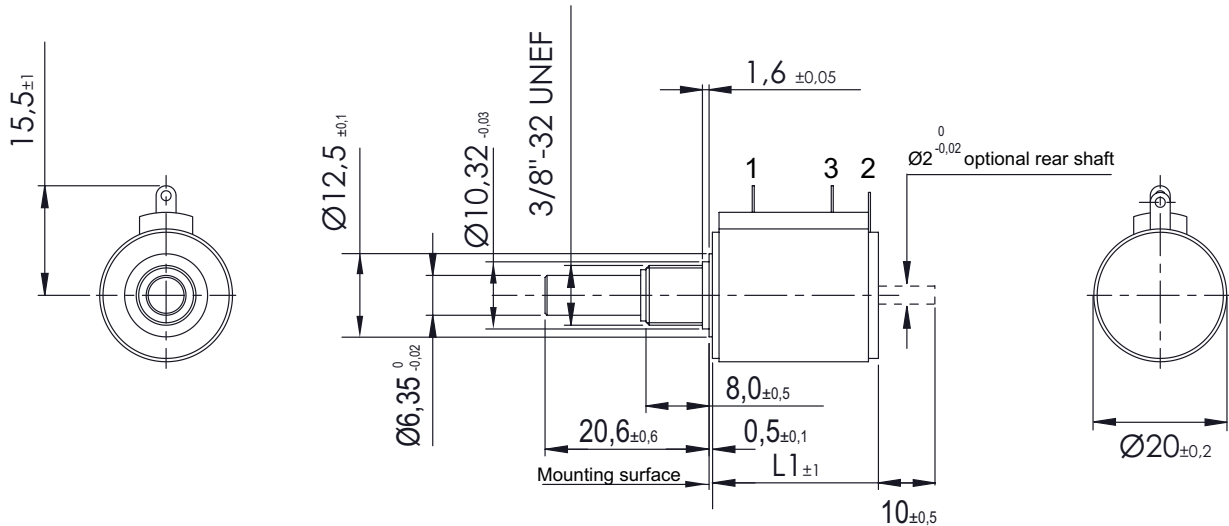
For Example: Multi ganged potentiometers (max. 2), sealed housing case, special electrical and mechanical angles of rotation, and special resistance and linearity tolerances. Furthermore we can mount gear wheels or attach cable assemblies with or without connectors and much more.

# Data Sheet for Precision Potentiometer

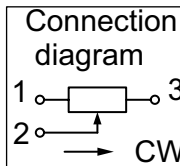
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## Drawing

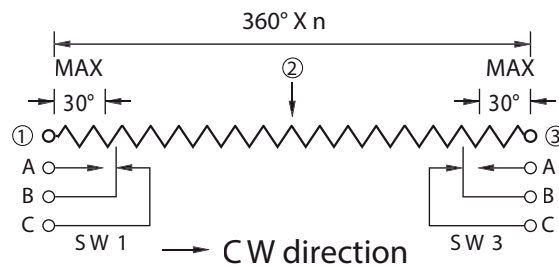
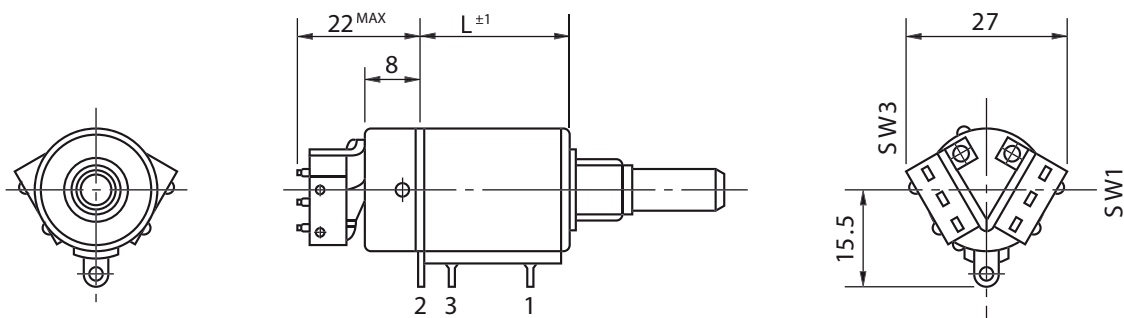


Type	L1	Tandem ±1
AL24 03/05	18	38
AL24 10	25,5	53



Dimensions in mm

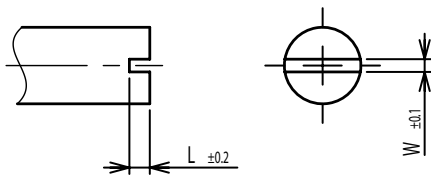
### Option: limit switch



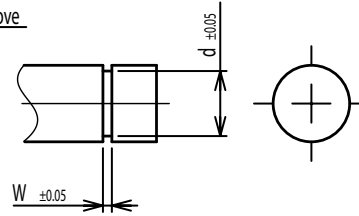
- Unless otherwise specified, the limit-switch is of inscription type on both ends.
- Rating of limit-switch 1A, 125V.A.C. (resistance load)
  - Life expectancy of limit-switch: 50,000 operations
  - Operating temperature range: -55° C..+105°C

### On Request: Special machining on shaft

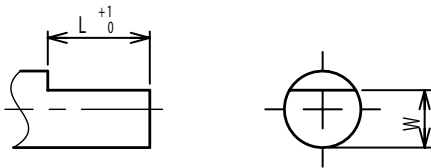
Slot



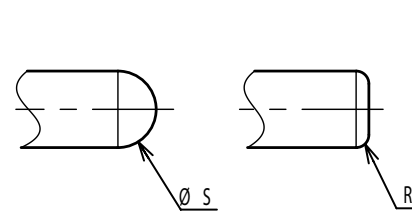
Groove



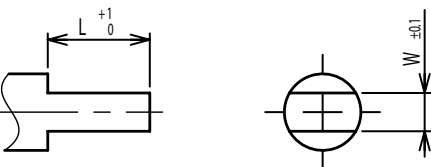
Flat



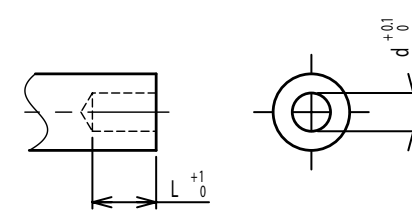
Round top



Double side flat



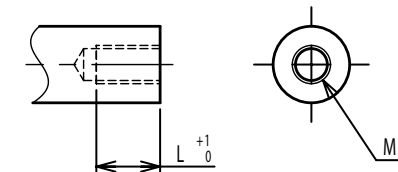
Counterbore hole



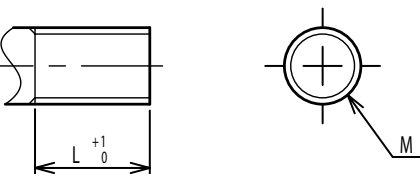
Step



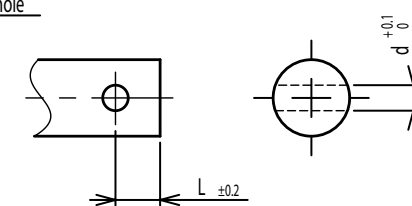
Counterbore screw hole



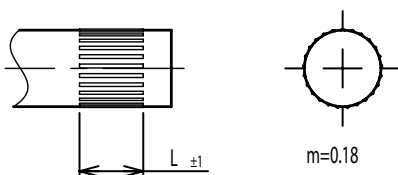
Screw Thread



Pin hole



Knurled(Parallel)



Screw thread inside hole

