

Data Sheet for Precision Potentiometer

Multiturn Wirewound Potentiometer

Series ALI17/19



The ALI(R)17/19 potentiometers in 22 mm housing are suitable for applications where a precise multiturn potentiometer increased radial shaft loads is important.

- Robust design for radial shaft load up to 4N
- Simplified installation due to connector version
- Versions ALIR17/19 with integrated slipping clutch
- With many options

The potentiometer ALI(R)17 / ALI(R)19 (Ø6,35 / Ø6,00 mm) enables operation with a radial shaft load of up to 4N. The low-wear polymer bearing in the lid provides more stability and makes the potentiometer particularly robust. In addition, an optional integrated slipping clutch protects the potentiometer from damage by overrunning the end stops and facilitates the zero point adjustment. There is a screw driver slot at the top of the shaft for adjustment purposes and the potentiometer is available in 3-, 5- and 10-turn versions (optional in 1, 2, 4, 6, 7 or 8 turn). The radial gold-plated connection pins are suitable for flat connectors (2.8 mm according to DIN 46247 part 3) and the connector version simplifies the mounting.

| Electrical Data | 3-turn | 5-turn | 10-turn |
|------------------------------------------------|-----------------------------------------------|--------------|---------------------------------------------|
| Effective electrical angle of rotation 1.) | 1080° ±5° | 1800° ±5° | 3600° ±5° |
| Total resistance 1.) | 0,1..10 kOhm | 0,1..50 kOhm | 0,1..100 kOhm |
| Resistance tolerance | ±5% (±1%) | | |
| Independent linearity (best straight line) 1.) | ±0,25% | ±0,25% | ±0,25% (±0,1% R ≥ 5k / ±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 | 2 W |
| Insulation Voltage 1.) | 1000 VAC, 1min | | |
| Insulation Resistance 1.) | 1000 MOhm @ 500 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.) | 300.000 rotations | 500.000 rotations | 1 Mio. rotations |
| Max. operational speed | 40 rev. / min. | | |
| Bearing | Brass bearing front and polymer bearing rear side | | |
| Operational torque @ ambient temperature 1.) 2.) | 10 Nmm | | |
| End stop torque 1.) 2.) | 35 Ncm | | |
| Operating temperature range | -20..+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 | 22 mm | | |
| Housing depth | 19 mm | | |
| Shaft diameter (AL17/19) | 6,35 mm / 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 | | ≤4 N | |
| Max. axial load | | ≤1 N | |
| Connection type | Gold plated soldering lugs, optional with integrated connector | | |
| Connection position | | Radial | |
| Sensor mounting | | Bushing | |
| Mass | | app. 20 g | |
| Fastening parts included in delivery | | Nut, toothed washer | |
| Fastening torque mounting nut | | < 150 Ncm | |
| Material shaft | | Stainless steel | |
| Material housing | | Reinforced fibreglass PA66 | |

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 (ALI(R)1703/ALI(R)1903) | 820 | 920 | 1270 | 1350 | 1270 | 1990 | 2570 | - | - | - |
| Number of wire turns (ALI(R)1705/ALI(R)1905) | 1240 | 1560 | 2000 | 2510 | 2400 | 3200 | 3900 | 4800 | 5500 | - |
| Number of wire turns (ALI(R)1710/ALI(R)1910) | 2100 | 2480 | 3300 | 4000 | 5020 | 5000 | 6400 | 7800 | 10100 | 11000 |

Resolution in degree E.g. R5k 5-turn = $1800^\circ / 3200 = 0,563^\circ$ per winding resistive wire

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Order code

| Description | | Selection: standard=black/bold, possible options=grey/cursive | | | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------|----------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------|---------------------------|----------------|----|---------------------------|--------|
| Series: | ALI | | | | | | | | | | |
| Slipping clutch: Without additional mechanics With integrated slipping clutch | - R | | | | | | | | | | |
| Shaft diameter: Ø 6,35 mm Ø 6,00 mm | | | 17 19 | | | | | | | | |
| Revolutions with stop: Option 1-turn Option 2-turn 3-turn Option 4-turn 5-turn Option 6-turn Option 7-turn Option 8-turn - on request 10-turn | | | | 01M 02M 03M 04M 05M 06M 07M 08M 10M | | | | | | | |
| Resistance value /Option Tandem: Option 100 Ohm Option 500 Ohm 1 kOhm Option 2 kOhm 5 kOhm 10 kOhm Option 20 kOhm (only 5 to 10 Turn) Option 50 kOhm (only 5 to 10 Turn) Option 100 kOhm (only 10 Turn) | | | | | R100 R500 R1k R2k R5k R10k R20K R50K R100K | | | | | | |
| Resistance tolerance: ±5% Option ±1% | | | | | | W5% W1% | | | | | |
| Independent linearity: ±0,25% (3 to 10-turn) Option ±0,15% (10-turn) R < 5kOhm Option ±0,10% (10-turn) R ≥ 5kOhm | | | | | | | L0,25% L0,15% L0,1% | | | | |
| Electrical connection: With soldering lugs With connector | | | | | | | | - ST | | | |
| Option center tap: (only 10-turn, not with connector) | | | | | | | | | CT | | |
| Front shaft: ALI(R)17 = Ø6,35 x 20,6 mm ALI(R)19 = Ø6,00 x 20,6 mm Option shaft length in mm Option shaft diameter in mm (≤6,35 mm) | | | | | | | | | | - - Ax,xx DMx,xx | |
| Screwdriver slot standard: | | | | | | | | | | | - |
| Shaft sealing: Standard is without sealing Option D with shaft sealing | | | | | | | | | | | - D |

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

For Example: Sealed housing case, with high torque, 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.

Note: For versions as manual adjuster - the potentiometer is available on request with plastic bushing (versions without "M" = metal @ description "revolutions with stop").

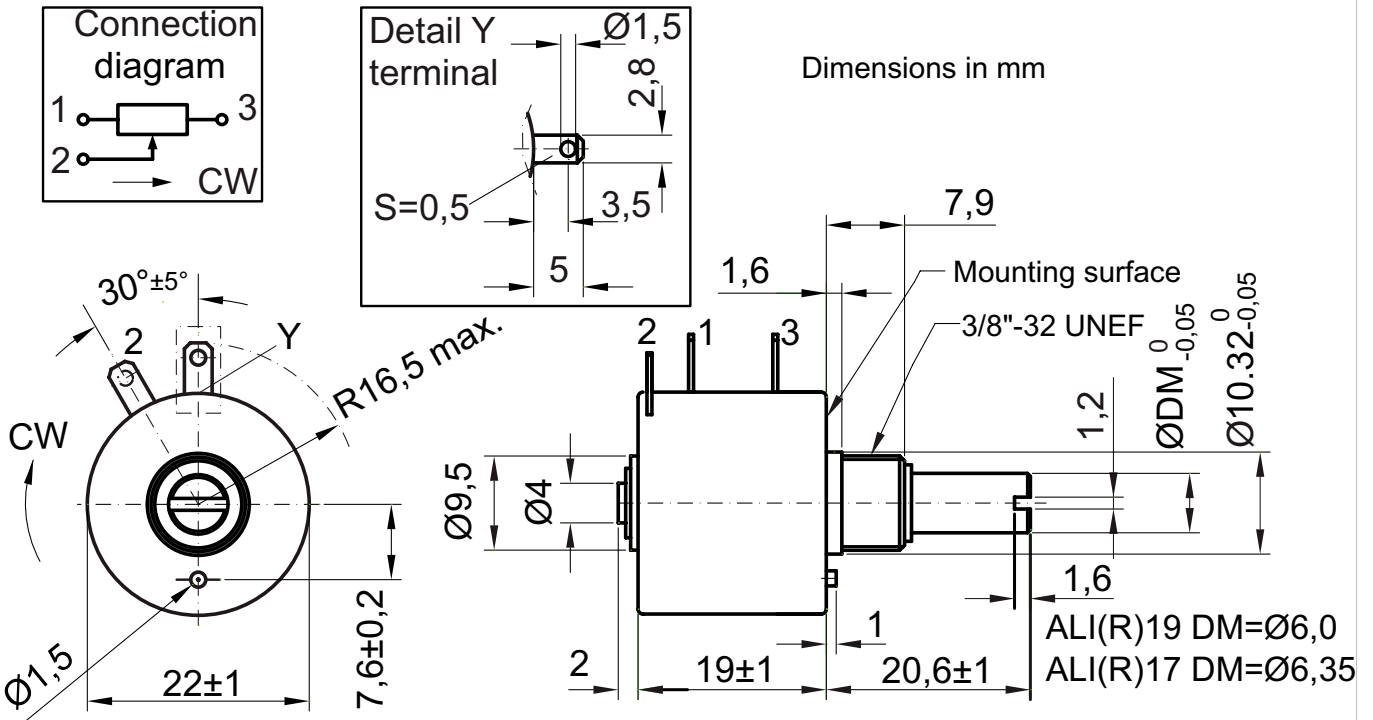
Data Sheet for Precision Potentiometer



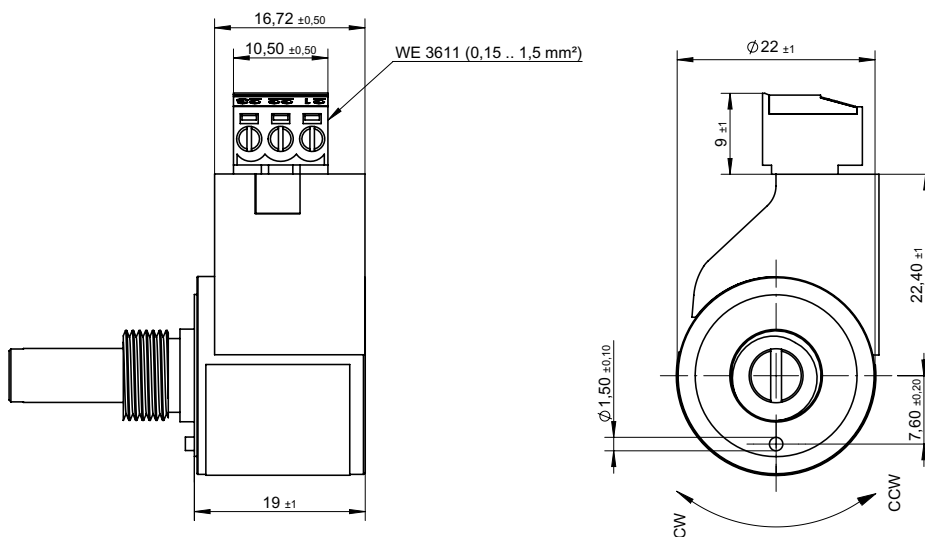
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Drawing

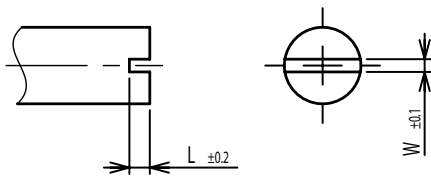


Connector Version

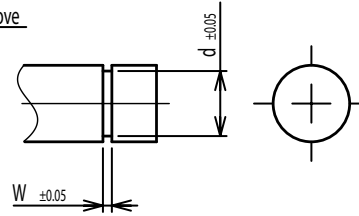


On Request: Special machining on shaft

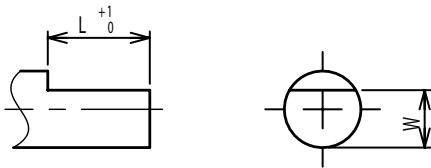
Slot



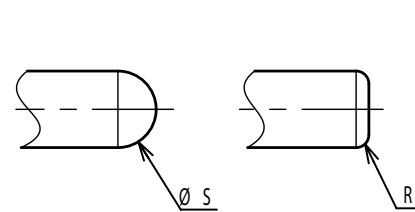
Groove



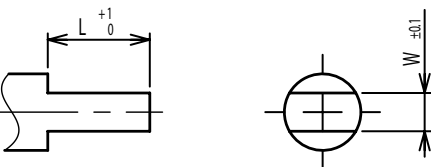
Flat



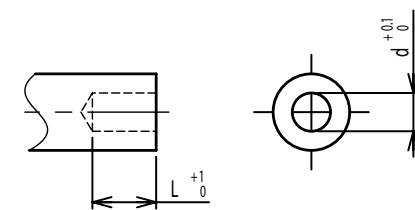
Round top



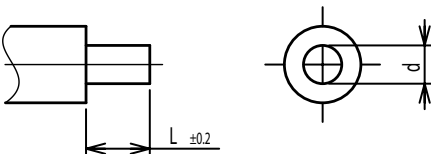
Double side flat



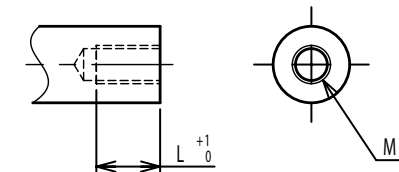
Counterbore hole



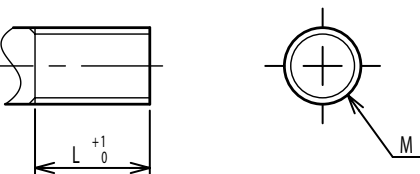
Step



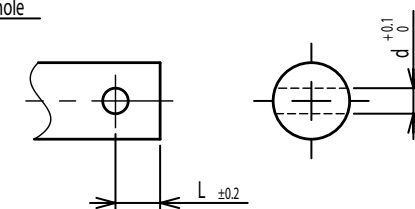
Counterbore screw hole



Screw Thread



Pin hole



Knurled(Parallel)



Screw thread inside hole

