

# Data Sheet for Precision Potentiometer

Conductive Plastic Potentiometer

Series MP20/21



The MP20/21 potentiometers in 22 mm housing are for applications where precise long-lasting and compact sensors are important.

- Long life and accuracy
- With or without mechanical end stop (320° / 360°)
- Compact sensor with low installation depth 12 mm
- A potentiometer with many options

The conductive plastic potentiometer MP20/21 (MP21 with mech. end-stop) is a multitalent which is adaptable for a wide range of applications.

Note: The versions MP21 with stop are also used as manual control

| Electrical Data                                | MP20                | MP21 |
|--|---------------------|------|
| Effective electrical angle of rotation 1.)     | 320° ±5°            |      |
| Total resistance 1.)                           | 0.5 up to 100 kOhm  |      |
| Resistance tolerance                           | ±15% (±10%)         |      |
| Independent linearity (best straight line) 1.) | ±1% (±0.5%)         |      |
| Theoretical resolution                         | Nearly infinite     |      |
| Backlash (Hysteresis) 1.)                      | ≤ 0.5°              |      |
| Max. / recommended wiper current 1.)           | 10 µA / 2 µA        |      |
| Power rating @ 70°C (0W @ 105°C)               | 1 W                 |      |
| Insulation Voltage 1.)                         | 500 VAC, 1min       |      |
| Insulation Resistance 1.)                      | 1000 MOhm @ 500 VDC |      |

| Mechanical Data, Environmental Conditions, Miscellaneous | MP20                        | MP21                |
|--|-----------------------------|---------------------|
| Mechanical angle of rotation 1.)                         | 360° without stop           | 320° +10° with stop |
| Lifetime (90% el. eff. angle half sine) 2.)              | 10 Mio. rotations           |                     |
| Max. operational speed                                   | 400 rev. / min.             |                     |
| Bearing  | Sleeve bearing              |                     |
| Operational torque @ ambient temperature 1.) 2.)         | 5 Nmm                       |                     |
| End stop torque 1.) 2.)                                  | -                           | 60 Ncm              |
| Operating temperature range                              | -55 °C up to +105 °C        |                     |
| Storage temperature range                                | -55 °C up to +105 °C        |                     |
| Protection grade (IEC 60529)                             | IP40                        |                     |
| Protection option D shaft sealing (IEC 60529)            | IP65 optional               |                     |
| Vibration (IEC 68-2-6, Test Fc)                          | 15g 10Hz up to 2000Hz x 12h |                     |
| Shock (IEC 68-2-27, Test Ea)                             | 49g @ 11 ms x 18            |                     |
| Housing diameter   | 22 mm                       |                     |
| Housing depth  | 12 mm                       |                     |
| Shaft diameter   | 6.00 mm (optional 6.35 mm)  |                     |
| Shaft type   | Solid shaft                 |                     |

# Data Sheet for Precision Potentiometer

Conductive Plastic Potentiometer

Series MP20/21

| Mechanical Data, Environmental Conditions, Miscellaneous | MP20                       | MP21 |
|--|----------------------------|------|
| 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                       |      |
| 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

# Data Sheet for Precision Potentiometer

Conductive Plastic Potentiometer

Series MP20/21

## Order code

| Description                                   | Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i> |  |              |               |  |  |  |  |  |        |
|---|---|--|--------------|---------------|--|--|--|--|--|--------|
| <b>Series:</b>                                | <b>MP</b>   |  |              |               |  |  |  |  |  |        |
| <b>Angle of rotation with / without stop:</b> |   |  |              |               |  |  |  |  |  |        |
| <b>Without stop</b>                           | <b>20</b>   |  |              |               |  |  |  |  |  |        |
| <b>With stop</b>                              | <b>21</b>   |  |              |               |  |  |  |  |  |        |
| <b>Resistance value / Option Tandem:</b>      |   |  |              | <i>Tandem</i> |  |  |  |  |  |        |
| <i>Option 500 Ohm</i>                         |   |  | <i>R500</i>  | <i>/500</i>   |  |  |  |  |  |        |
| <b>1 kOhm</b>                                 |   |  | <b>R1k</b>   | <b>/1k</b>    |  |  |  |  |  |        |
| <i>Option 2 kOhm</i>                          |   |  | <i>R2k</i>   | <i>/2k</i>    |  |  |  |  |  |        |
| <b>5 kOhm</b>                                 |   |  | <b>R5k</b>   | <b>/5k</b>    |  |  |  |  |  |        |
| <b>10 kOhm</b>                                |   |  | <b>R10k</b>  | <b>/10k</b>   |  |  |  |  |  |        |
| <i>Option 20 kOhm</i>                         |   |  | <i>R20K</i>  | <i>/20K</i>   |  |  |  |  |  |        |
| <i>Option 50 kOhm</i>                         |   |  | <i>R50K</i>  | <i>/50k</i>   |  |  |  |  |  |        |
| <i>Option 100 kOhm</i>                        |   |  | <i>R100K</i> | <i>/100k</i>  |  |  |  |  |  |        |
| <i>Option rear shaft:</i>                     |   |  |              |               |  |  |  |  |  |        |
| <i>Standard Ø6.00 x 20 mm</i>                 |   |  |              |               |  |  |  |  |  |        |
| <i>Shaft length in mm</i>                     |   |  |              |               |  |  |  |  |  |        |
| <i>Shaft diameter in mm (≤6.35 mm)</i>        |   |  |              |               |  |  |  |  |  |        |
| <b>Resistance tolerance:</b>                  |   |  |              |               |  |  |  |  |  |        |
| <b>±15%</b>                                   |   |  |              |               |  |  |  |  |  |        |
| <i>Option ±10%</i>                            |   |  |              |               |  |  |  |  |  |        |
| <b>Independent linearity:</b>                 |   |  |              |               |  |  |  |  |  |        |
| <b>±1%</b>                                    |   |  |              |               |  |  |  |  |  |        |
| <i>Option ±0.5%</i>                           |   |  |              |               |  |  |  |  |  |        |
| <i>Option center tap:</i>                     |   |  |              |               |  |  |  |  |  |        |
|   |   |  |              |               |  |  |  |  |  | CT     |
| <b>Front shaft:</b>                           |   |  |              |               |  |  |  |  |  |        |
| <b>Standard Ø6,00 x 22 mm</b>                 |   |  |              |               |  |  |  |  |  |        |
| <i>Option front shaft diameter 6.35 mm</i>    |   |  |              |               |  |  |  |  |  |        |
| <i>Option shaft length in mm</i>              |   |  |              |               |  |  |  |  |  |        |
| <i>Option shaft diameter in mm (≤6.35 mm)</i> |   |  |              |               |  |  |  |  |  |        |
| <i>Option screwdriver slot:</i>               |   |  |              |               |  |  |  |  |  |        |
|   |   |  |              |               |  |  |  |  |  | B      |
| <b>Shaft sealing:</b>                         |   |  |              |               |  |  |  |  |  |        |
| <b>Standard is without sealing:</b>           |   |  |              |               |  |  |  |  |  |        |
| <i>Option D with shaft sealing</i>            |   |  |              |               |  |  |  |  |  |        |
|   |   |  |              |               |  |  |  |  |  | -<br>D |

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

For Example: Multi ganged potentiometers (max. 10), 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.

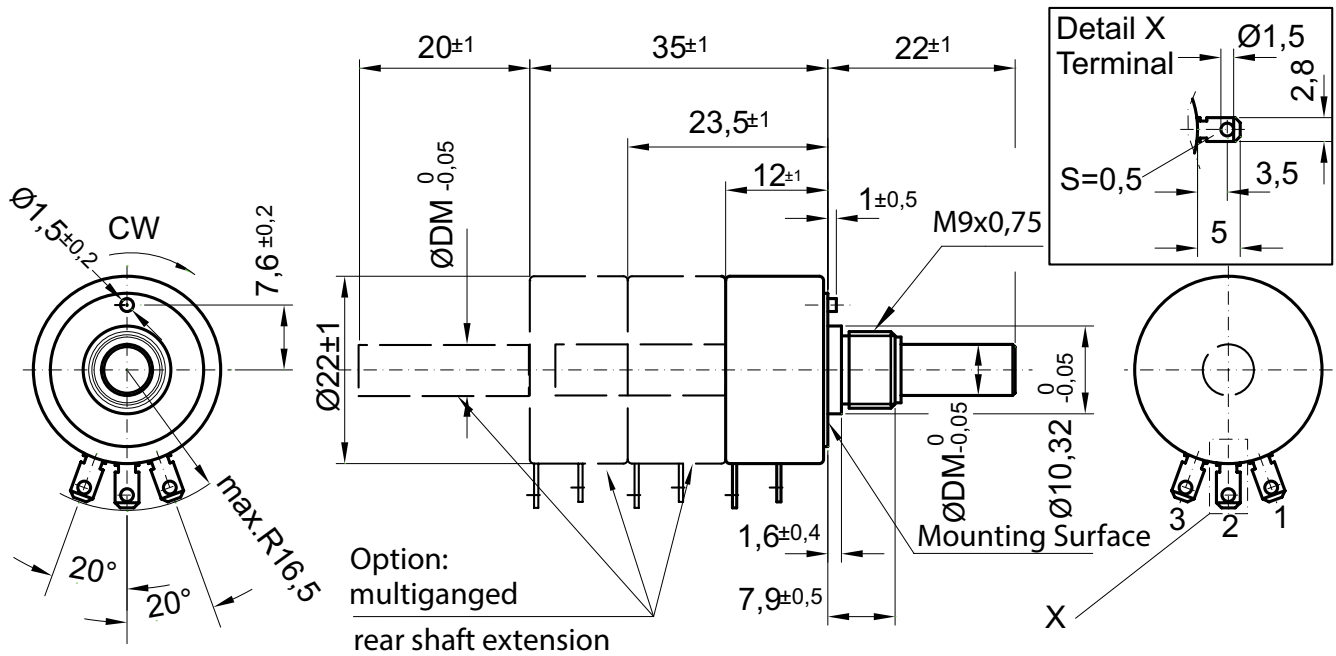
# Data Sheet for Precision Potentiometer



Conductive Plastic Potentiometer

Series MP20/21

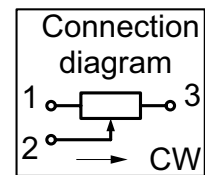
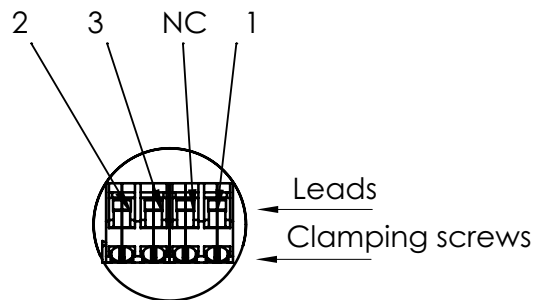
## Drawing



Dimensions in mm

Option DM =  $\varnothing 6,35$   
Standard DM =  $\varnothing 6,00$

Option KA (on request) pin Assignment (rear view)

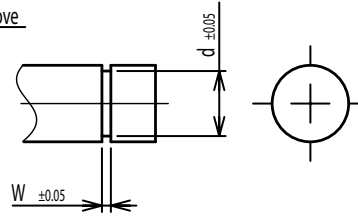


**On Request: Special machining on shaft**

Slot



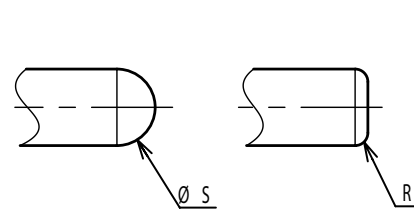
Groove



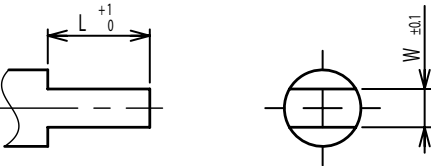
Flat



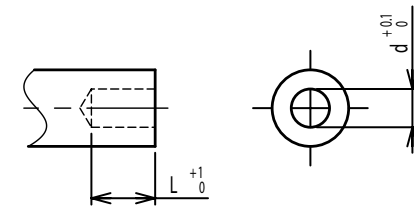
Round top



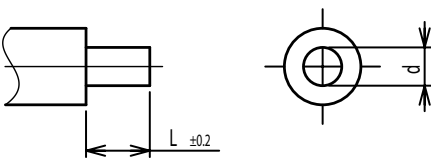
Double side flat



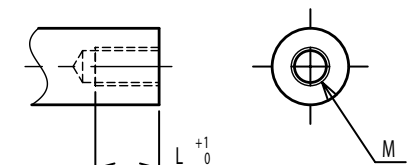
Counterbore hole



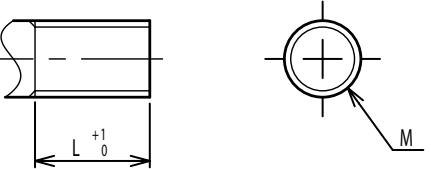
Step



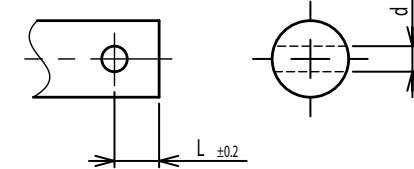
Counterbore screw hole



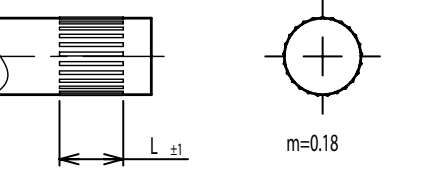
Screw Thread



Pin hole



Knurled(Parallel)



Screw thread inside hole

