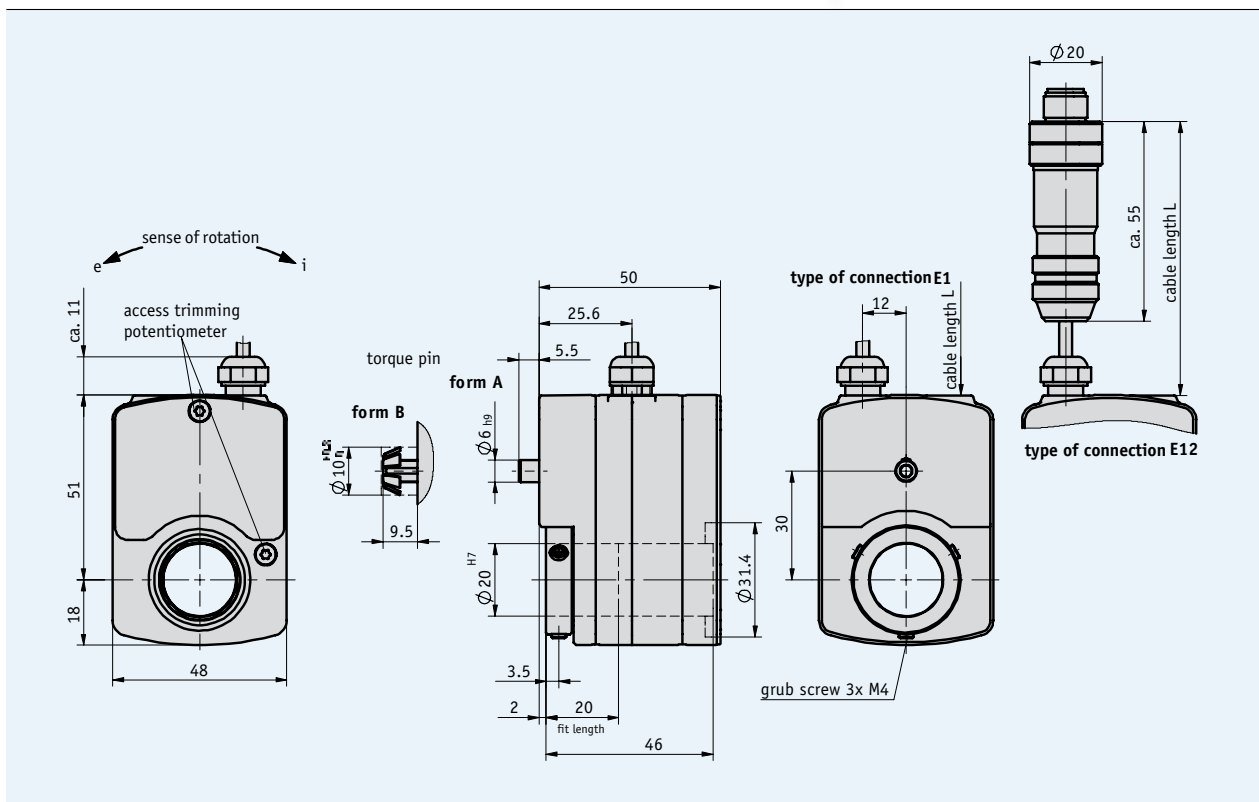


### Profile

- Resistant to external influences
- Through hollow shaft  $\varnothing$  20 mm
- Adaptation to various measurement paths owing to a wide range of gear ratios
- Integrated friction clutch to protect the potentiometer
- Compact design
- Potentiometer, power or voltage output
- IP68 protection category with oil filling possible
- Easy mounting



2.3

### Mechanical data

| Feature                        | Technical data                             | Additional information    |
|--------------------------------|--|---------------------------|
| Gear ratio                     | 0.184 ... 150.036                          |                           |
| Speed                          | max. 500 rpm                               | depending on gear ratio   |
| Operating temperature          | -20 ... +80 °C                             |                           |
| Condensation                   | inadmissible                               |                           |
| Service life of axial movement | 1 x 10 <sup>6</sup><br>2 x 10 <sup>6</sup> | with P01, P02<br>with P03 |
| Protection category            | IP52, IP65, IP68                           | according to DIN VDE 0470 |
| Maximum shaft load             | radial 400 N<br>axial 150 N                |                           |
| Shaft                          | stainless steel, $\varnothing$ 20 mm       |                           |
| Housing                        | zinc die-cast                              |                           |

### Electrical data

| Feature                       | Technical data | Additional information |
|-------------------------------|----------------|------------------------|
| Interference protection class | 3              | according to IEC 801   |

#### Analog outputs

| Feature              | Technical data  | Operating voltage                                 |
|----------------------|---|---|
| Potentiometer output | 0 ... 1 k $\Omega$ , 0 ... 5 k $\Omega$ , 0 ... 10 k $\Omega$<br>depending on the potentiometer type used |   |
| Power output         | 4 ... 20 mA   | 24 V DC $\pm$ 20 %, with load $\leq$ 500 $\Omega$ |
| Voltage output       | 0 ... 10 V  | 24 V DC $\pm$ 20 %                                |

#### Potentiometer type

| Characteristic/Specification                                     | 01   | 02  | 03  |
|--|--|---|---|
| Design   | hybrid   | wire  | hybrid                                      |
| Resistance   | 1 k $\Omega$ , 5 k $\Omega$ , 10 k $\Omega$      | 1 k $\Omega$ , 5 k $\Omega$ , 10 k $\Omega$ | 1 k $\Omega$ , 5 k $\Omega$ , 10 k $\Omega$ |
| Resistance tolerance   | $\pm$ 5 %  | $\pm$ 5 %                                   | $\pm$ 5 %                                   |
| Linearity tolerance  | $\pm$ 0.25                                       | $\pm$ 0.25 %                                | $\pm$ 0.1 %                                 |
| Load rating  | 1 W at 70 °C                                     | 1 W at 70 °C                                | 2 W at 70 °C                                |
| Range of rotation  | 340° $\pm$ 5°<br>(mechanically straight-through) | 3600° $\pm$ 10°                             | 3600° $\pm$ 10°                             |
| Standard terminal resistor<br>(the higher value is always valid) | 0.5 % or 1 $\Omega$                              | 0.5 % or 1 $\Omega$                         | 0.5 % or 1 $\Omega$                         |

Note: Characters highlighted in orange color are order features.

### Pin assignment

#### Potentiometric outputs P01, P05, P10

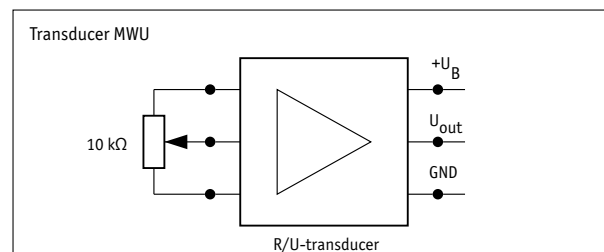
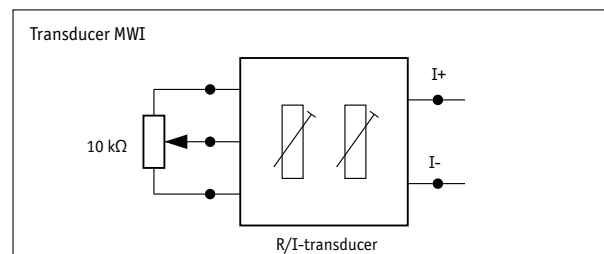
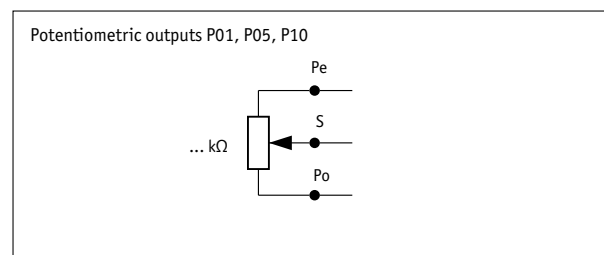
| Signal | E1 (Cable color) | E12 (Connector pin) |
|--------|------------------|---------------------|
| Po     | brown            | 3                   |
| Pe     | white            | 1                   |
| S      | green            | 2                   |
| N.C.   |                  | 4                   |

#### Transducer MWI

| Signal | E1 (Cable color) | E12 (Connector pin) |
|--------|------------------|---------------------|
| I+     | brown            | 3                   |
| I-     | white            | 1                   |
| N.C.   |                  | 2                   |
| N.C.   |                  | 4                   |

#### Transducer MWU

| Signal           | E1 (Cable color) | E12 (Connector pin) |
|------------------|------------------|---------------------|
| +24 V DC         | brown            | 3                   |
| GND              | white            | 1                   |
| U <sub>out</sub> | green            | 2                   |
| N.C.             |                  | 4                   |



### Order

#### Ratio calculation (order table, feature A)

$$\text{Formula: } i_1 = \frac{n \times 360^\circ}{\alpha}$$

n = number of revolutions on the driving shaft  
 α = potentiometer angle of rotation  
 340° with 1-coil potentiometer  
 3600° with 10-coil potentiometer  
 i1 = order feature for gear ratio

If the calculated ratio "i1" is the same as a value in the ordering table for the "ratio" feature, but this is not available, select the next highest ratio.

#### Order table

| Feature                     | Order data   | Specifications   | Additional information   |
|-----------------------------|--|--|--|
| Gear ratio                  | ...<br><b>A</b>  | 0.184, 0.27, 0.361, 0.740, 1, 2, 2.503, 3.048, 4, 5.213, 6, 8.003, 10, 12, 15.238, 20, 24.167, 40.034, 45.494, 53.333, 58.333, 76.190, 100.392, 150.036<br>others on request |  |
| Torque support              | <b>A</b><br><b>B</b>   | <b>B</b> form A, cylindric pin<br>form B for tolerance compensation  |  |
| Potentiometer type          | <b>01</b><br><b>02</b><br><b>03/0,1</b>                            | <b>C</b> 1 coil, hybrid<br>10 coils, wire<br>10 coils, hybrid, linear tolerance 0.1  |  |
| Analog output               | <b>MWI</b><br><b>MWU</b><br><b>P01</b><br><b>P05</b><br><b>P10</b> | <b>D</b> transducer 4 ... 20 mA<br>transducer 0 ... 10 V<br>potentiometer 1 kΩ<br>potentiometer 5 kΩ<br>potentiometer 10 kΩ  | only with potentiometer type 02<br>only with potentiometer type 02   |
| Sense of rotation           | <b>ODR</b><br><b>e</b><br><b>i</b>                                 | <b>E</b> without indication of sense of rotation<br>counter-clockwise ascending values<br>clockwise ascending values   | with P01, P05 or P10<br>with MWI or MWU<br>with MWI or MWU   |
| Type of connection          | <b>E1</b><br><b>E12</b>  | <b>F</b> flying leads<br>connector, M12  |  |
| Cable length L (m)          | ...<br><b>G</b>  | <b>G</b> 0.2 ... 20 m, in steps of 0.1 m   |  |
| Protection category         | <b>IP52</b><br><b>IP65</b><br><b>IP68</b>                          | <b>H</b><br>with oil filling, against condensation   |  |
| Max. number of revolutions* | <b>OAU</b><br>...<br><b>I</b>                                      | <b>I</b> customer-adjustable<br>0.17, 0.25, 0.333, 0.6, 1, 2.5, 4, 5, 10, 12, 20, 24, 40, 60, 75, 100<br>others on request   | except with IP68<br>only with IP68 prot. categ. and analog output MWI, MWU<br>only with IP68 prot. categ. and analog output MWI, MWU |

\*The max. number of revolutions must be ≤ the measuring range.

#### Order code



Scope of delivery: GP09, User information

#### Accessories:

Mating connectors Page 106  
 Self-aligning coupling Page 112  
 Electronic display MA50 Page 92

#### Additional information:

General information and areas of application Page 64 cont.