

**Position Transducers**  
**Pivot head Mounting**  
**potentiometric**  
**up to 300 mm, IP67**

## Series TX2



## Special features

- compact dimensions  
Ø 16 mm
- protection class IP67
- easy to assemble via low-backlash pivot heads with a large angle of freedom (up to  $\pm 12,5^\circ$ )
  - very long life (depending on application) up to 50 million movements
- resolution better than 0.01 mm
- outstanding linearity up to  $\pm 0.05\%$
- suitable for harsh environmental conditions (humidity, oil, dust)
- cable or plug connection optional

High protection class and very compact dimensions characterize this inexpensive transducer.

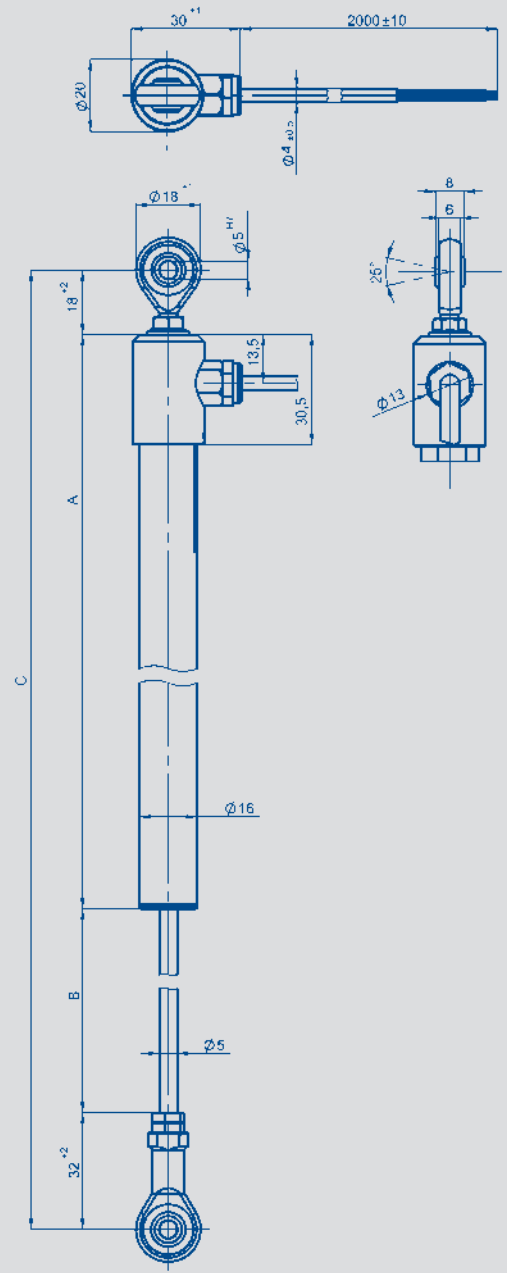
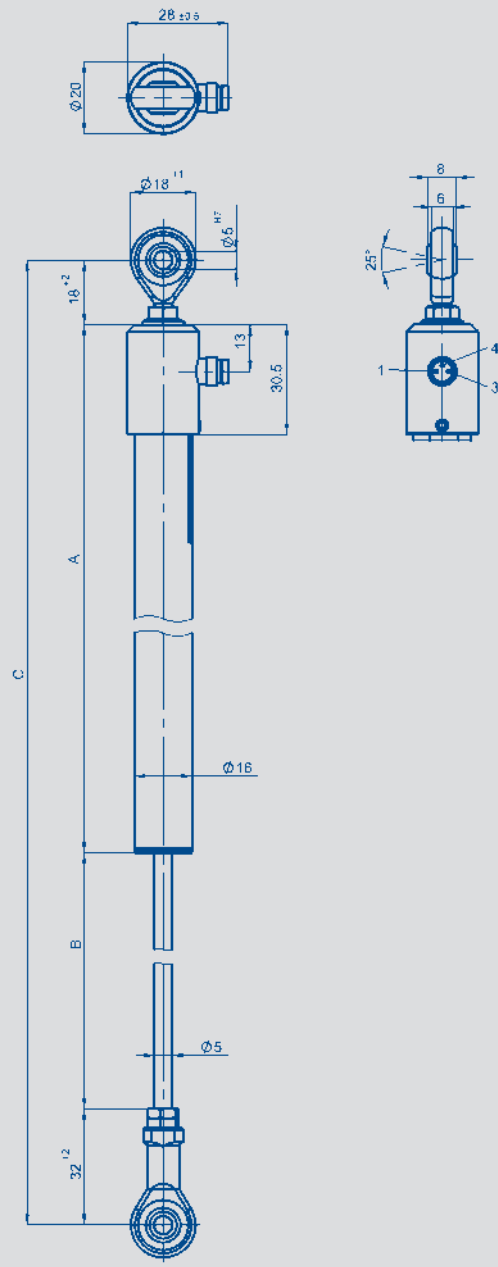
The heavy-duty design with metal flanges and double sealed actuating rod offers many fields of applications also under adverse conditions like e.g. dirt, dust and humidity.

Due to the user-friendly pivot heads this sensor is recommended especially for mobile applications.

The electrical connection can be made via a radial plug connector or a radial cable.

Transducers with and without restoring spring and mounting clamp, central thread or flange plates see separate data sheets TEX.

| Description            |   |
|------------------------|---|
| Housing                | aluminium, anodized   |
| Mounting               | see drawing   |
| Actuating rod          | stainless steel, (1.4305), rotatable  |
| Bearings               | sintered bronze bush  |
| Resistance element     | conductive plastic  |
| Wiper assembly         | precious metal multi-finger wiper   |
| Electrical connections | 3-pin round connector M8x1<br>4-wire PUR-cable, 4x0.14 mm <sup>2</sup> , shielded, 2 m length |



| type designations   | TX2<br>0025   | TX2<br>0050 | TX2<br>0075 | TX2<br>0100 | TX2<br>0150 | TX2<br>0200 | TX2<br>0250 | TX2<br>0300 |               |
|---|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| Electrical Data   |   |             |             |             |             |             |             |             |               |
| Defined electrical range  | 25  | 50          | 75          | 100         | 150         | 200         | 250         | 300         | mm            |
| Electrical range  | 27  | 52          | 77          | 102         | 155         | 205         | 255         | 305         | mm            |
| Nominal resistance  | 1   | 2           | 3           | 4           | 6           | 8           | 10          | 12          | kΩ            |
| Resistance tolerance  | 20  |             |             |             |             |             |             |             | ±%            |
| Independent linearity   | 0.2   | 0.1         | 0.1         | 0.1         | 0.05        | 0.05        | 0.05        | 0.05        | ±%            |
| Repeatability   | 0.01  |             |             |             |             |             |             |             | mm            |
| Recommended operating wiper current                                       | ≤ 1   |             |             |             |             |             |             |             | μA            |
| Max. wiper current in case of malfunction                                 | 10  |             |             |             |             |             |             |             | mA            |
| Max. permissible applied voltage  | 42  |             |             |             |             |             |             |             | V             |
| Effective temperature coefficient of the output-to-applied voltage ration | typical 5   |             |             |             |             |             |             |             | ppm/K         |
| Insulation resistance (500 VDC)   | ≥10   |             |             |             |             |             |             |             | MΩ            |
| Dielectric strength (500 VAC, 50 Hz)                                      | ≤100  |             |             |             |             |             |             |             | μA            |
| Mechanical Data   |   |             |             |             |             |             |             |             |               |
| Body length (dimension A)   | 86  | 111         | 136         | 161         | 224         | 274         | 324         | 374         | ±2 mm         |
| Mechanical stroke (dimension B)   | 30  | 55          | 80          | 105         | 158         | 208         | 258         | 308         | ±2 mm         |
| Min. distance between pivot heads, nominal (dimension C)                  | 136   | 161         | 186         | 211         | 274         | 324         | 374         | 424         | mm            |
| Weight approx.<br>with connector (101)                                    | 100   | 110         | 120         | 130         | 150         | 163         | 190         | 205         | g             |
| with cable (202)  | 120   | 156         | 160         | 177         | 190         | 225         | 250         | 270         | g             |
| Operating force<br>horizontal<br>vertical                                 | < 5 (at RT 20° C)   |             |             |             |             |             |             |             | N             |
| Tearing force   | max. 15 (*)   |             |             |             |             |             |             |             | N             |
| Environmental Data  |   |             |             |             |             |             |             |             |               |
| Temperature range   | -40 ...+85 connector / -20 ...+100 cable  |             |             |             |             |             |             |             | °C            |
| Operating humidity range  | 0 ... 95 (no condensation)  |             |             |             |             |             |             |             | % R.H.        |
| Vibration   | 5...2000<br>A <sub>max</sub> = 0.75<br>a <sub>max</sub> = 20  |             |             |             |             |             |             |             | Hz<br>mm<br>g |
| Shock   | 50<br>6   |             |             |             |             |             |             |             | g<br>ms       |
| Life  | > 50 x 10 <sup>6</sup> typ.   |             |             |             |             |             |             |             | movements     |
| Operating speed   | 5   |             |             |             |             |             |             |             | m/s max.      |
| Protection class  | IP67 DIN EN 60529 (use connector with IP67 or higher)<br>The protection class IP67 was determined at new condition under the following terms (DIN EN 60529):<br>1 m water depth, duration 0.5 h<br>Abrasion of rod sealing depends on application and cycles.<br>Please pay attention to the instruction manual before starting up. |             |             |             |             |             |             |             |               |

\*) Depending on the environmental temperature and standstill time, the necessary force for the initial operating of the push rod can increase.



## Ordering specifications

Electrical version  
002: linearized

### Electrical connection

101: 3-pin round connector M8x1, radial output  
202: NT standard cable 2 m, radial output

T X 2 - 0 1 5 0 - 7 1 6 - 0 0 2 - 2 0 2

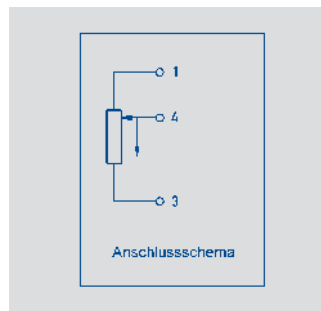
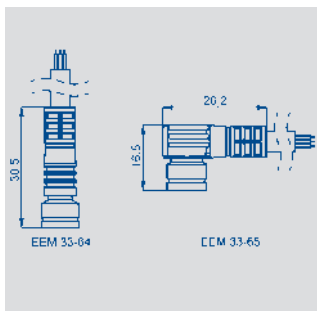
Series

Mechanical mounting  
6: Pivot heads

Mechanical version actuating rod  
1: Transducer with one-side rod and thread M5

Protection class  
7: one-side actuating rod, IP67

Electrical defined range  
Standard lengths 0025 up to 0300 mm



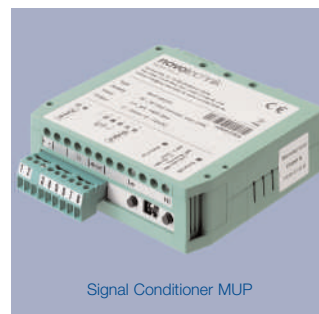
| Output connector<br>Code 101 | Cable<br>Code 202 | Connector with cable<br>EEM 33-64 / -66 / -68 / -65 / - 67 / -69 |
|------------------------------|-------------------|--|
| PIN 1                        | BN brown          | BN brown   |
| PIN 4                        | WH white          | BK black   |
| PIN 3                        | GN green          | BU blue  |

## Optional accessories

PUR-cable with 3-pin female connector M8x1, 3x0.34 mm<sup>2</sup>, IP67, unshielded  
2 m length, EEM-33-64. P/N 005617  
5 m length, EEM-33-66, P/N 005619  
10 m length, EEM-33-68, P/N 005643.

PUR-cable with 3-pin angled female connector M8x1, 3x0.34 mm<sup>2</sup>, IP67, unshielded  
2 m length, EEM-33-65. P/N 005618  
5 m length, EEM-33-67, P/N 005620  
10 m length, EEM-33-69, P/N 005644.  
Other cable on request.

Process-controlled indicators MAP... with display, Signal conditioner MUP.../MUK... for current supply 24 V and standardized output signals.



## Important

All values specified in this data sheet for linearity, lifetime and temperature coefficient are only valid for a sensor used as a voltage divider with virtually no load applied to the wiper ( $I_e \leq 1 \mu A$ ).