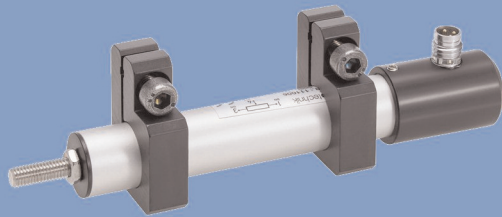


**Position Transducers  
with mounting clamps  
potentiometric  
up to 300 mm, IP67**

Series TX2



**Special features**

- compact dimensions  
Ø 16 mm
- protection class IP67
- very long life (depending on application) up to 50 million movements
- resolution better than 0.01 mm
- outstanding linearity up to ±0.05 %
- suitable for harsh environmental conditions (humidity, oil, dust)
- cable or connector version available

High protection class and very compact dimensions characterize this cost effective transducer.

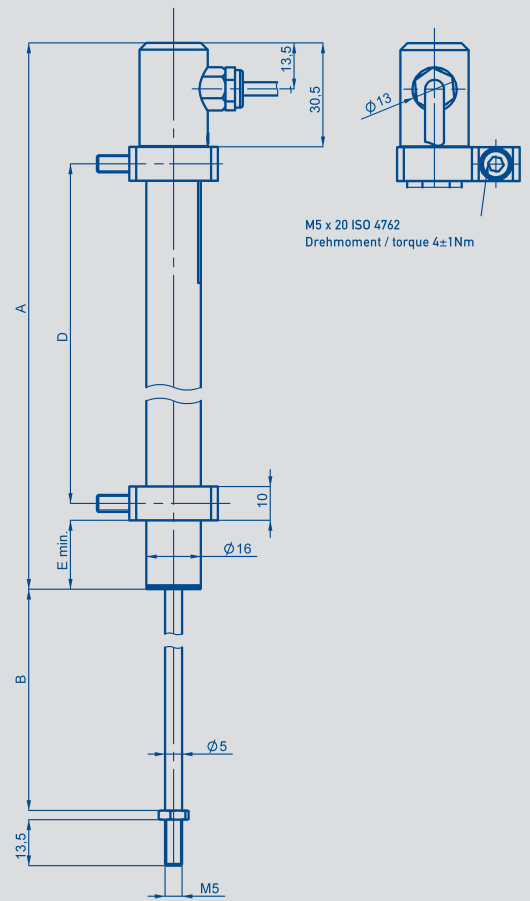
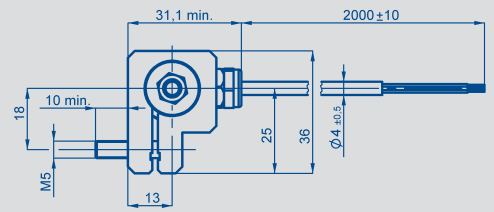
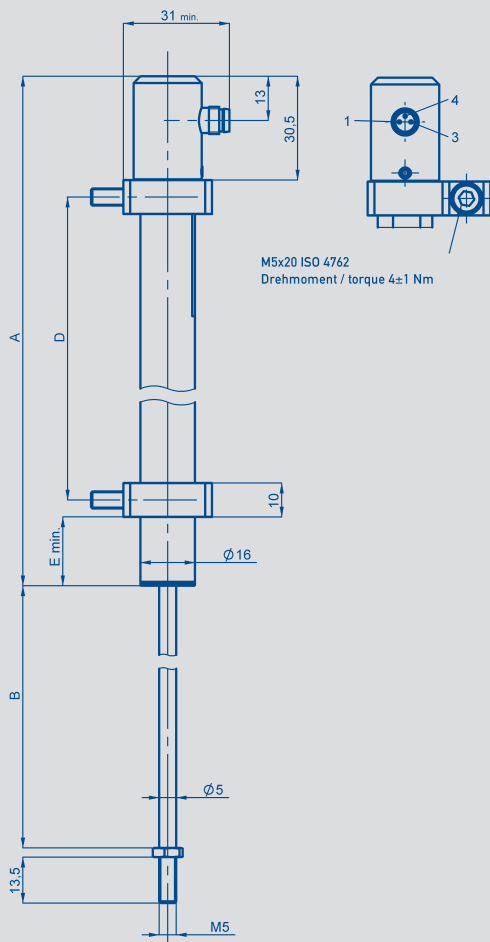
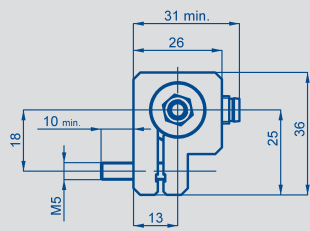
The heavy-duty design with metal flanges and double sealed actuating rod allows a variety of applications even under adverse conditions like e.g. dirt, dust and humidity.

The adjustable fixing via mounting clamps makes a variable and simple mounting of the sensor possible, particularly for industrial applications.

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

For transducers with or without return spring and mounting clamp, bushing mount or flange plates, please see separate data sheets TEX.

Description	
Housing	aluminium, anodized
Mounting	see drawing
Actuating rod	stainless steel (1.4305), rotatable, external thread M5
Bearings	sintered bronze bush
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper
Electrical connections	3-pin round connector M8x1 4-wire PUR-cable, 4x0.14 mm <sup>2</sup> , shielded, 2 m length



Type designations	TX2 0025	TX2 0050	TX2 0075	TX2 0100	TX2 0150	TX2 0200	TX2 0250	TX2 0300	
<b>Electrical Data</b>									
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 ratio	typical 5								ppm/K
Insulation resistance (500 VDC)	≥10								MΩ
Dielectric strength (500 VAC, 50 Hz)	≤100								μA
<b>Mechanical Data</b>									
Body length (dimension A)	86	111	136	161	224	274	324	374	±1 mm
Mechanical stroke (dimension B)	30	55	80	105	158	208	258	308	±1 mm
Recommended mounting clamp distance (dimension D)	30	50	70	90	140	190	240	290	mm
E min. (dimension E)	15	20	25	25	35	35	35	35	mm
Weight approx. with connector (101) with cable (202)	100 120	110 156	120 160	130 177	150 190	163 225	190 250	205 270	g g
Operating force horizontal vertical	< 5 (at RT 20° C)								N
Tearing force	max. 15 (*)								N
<b>Environmental Data</b>									
Temperature range	-40 ...+85 connector / -20 ...+100 cable								°C
Operating humidity range	0 ... 95 (no condensation)								% R.H.
Vibration	5...2000 A <sub>max</sub> 0.75 a <sub>max</sub> 20								Hz mm g
Shock	50 6								g 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) The protection class IP67 was determined as fabricated condition under the following terms (DIN EN 60529): 1 m water depth, duration 0.5 h Abrasion of rod sealing depends on application and cycles. 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.

Novotechnik  
 Messwertaufnehmer OHG  
 Postfach 4220  
 73745 Ostfildern (Ruit)  
 Horbstraße 12  
 73760 Ostfildern (Ruit)  
 Tel. +49 711 44 89-0  
 Fax +49 711 44 89-118  
 info@novotechnik.de  
 www.novotechnik.de



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**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 7 - 0 0 2 - 2 0 2

Series

Mechanical mounting  
7: Mounting clamp

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

Protection class  
7: one-side actuating rod, IP67

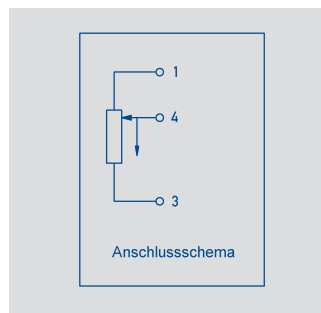
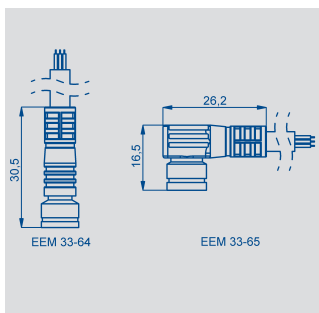
Electrical defined range  
Lengths 0025 up to 0300 mm

### Mounting Instructions

A ball coupling is recommended for backlash-free and side load-free operation to compensate misalignment between transducer axis and the moving part.

### 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 ( $I_e \leq 1 \mu A$ ).



Output connector Code 101	Cable Code 202	Connector with cable 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

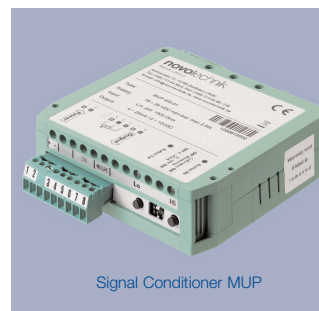
### Optional accessories

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.

Ball coupling Z-301-M5/M5, P/N 058002,  
 Pivot head Z-G01, P/N 056014.

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



### Included in delivery

2 mounting clamps incl. 2  
 head cap screws M5x20

**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.

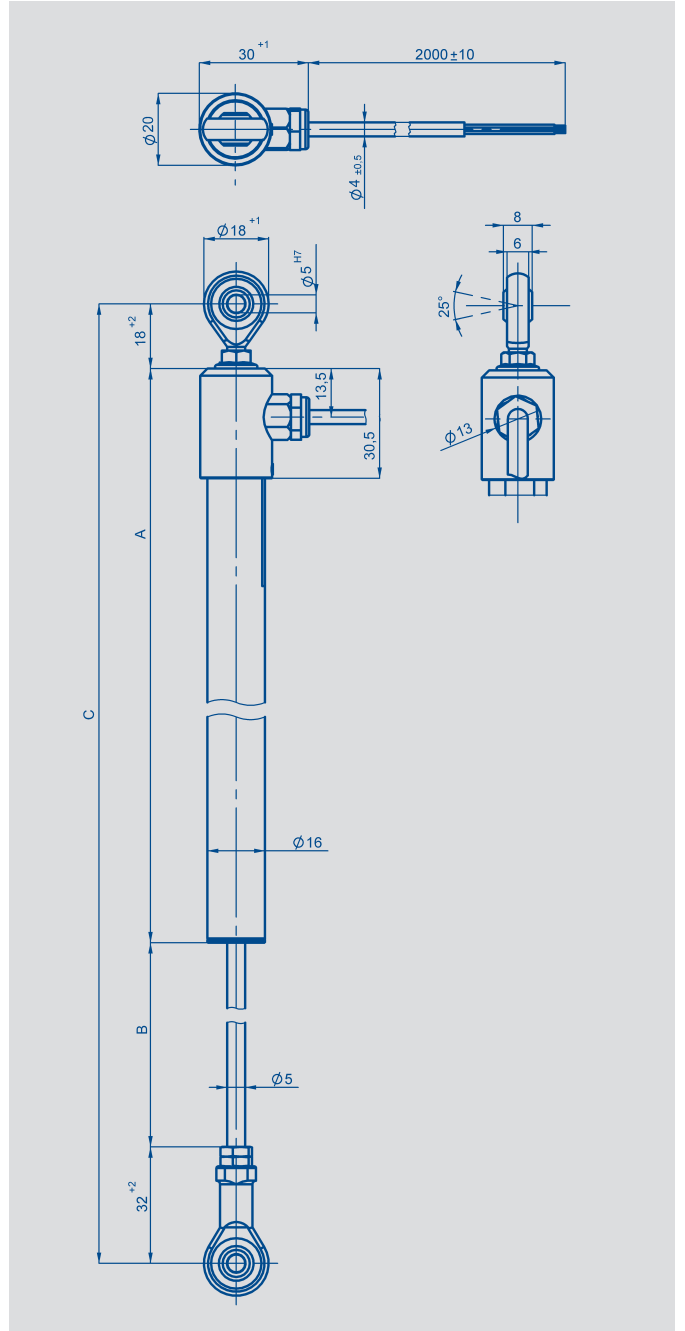
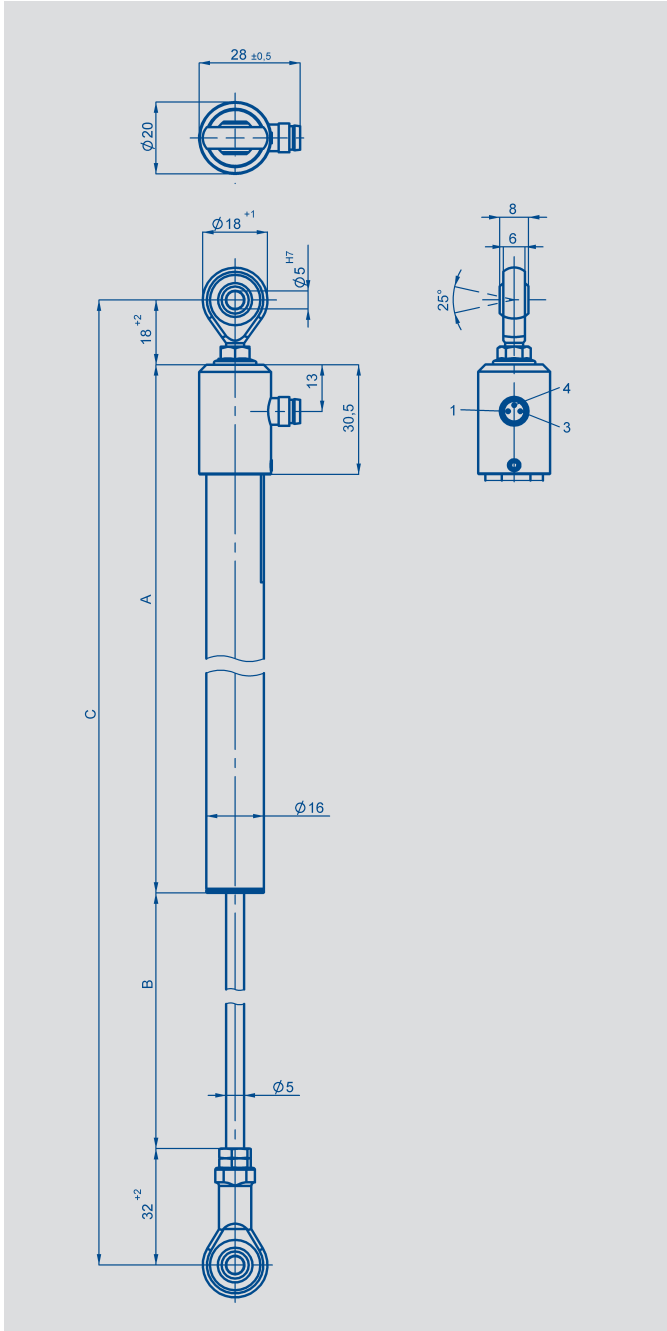
The heavy-duty design with metal flanges and double sealed actuating rod offers many fields of applications also under adverse conditions like e.g. dirt, dust and humidity.

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 4-wire PUR-cable, 4x0.14 mm <sup>2</sup> , shielded, 2 m length



Type designations	TX2 0025	TX2 0050	TX2 0075	TX2 0100	TX2 0150	TX2 0200	TX2 0250	TX2 0300	
<b>Electrical Data</b>									
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
<b>Mechanical Data</b>									
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. 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 horizontal									N
vertical	< 5 (at RT 20° C)								N
Tearing force	max. 15 (*)								N
<b>Environmental Data</b>									
Temperature range	-40 ...+85 connector / -20 ...+100 cable								°C
Operating humidity range	0 ... 95 (no condensation)								% R.H.
Vibration	5...2000 A <sub>max</sub> 0,75 a <sub>max</sub> 20								Hz mm g
Shock	50 6								g 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) The protection class IP67 was determined at new condition under the following terms (DIN EN 60529): 1 m water depth, duration 0.5 h Abrasion of rod sealing depends on application and cycles. 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

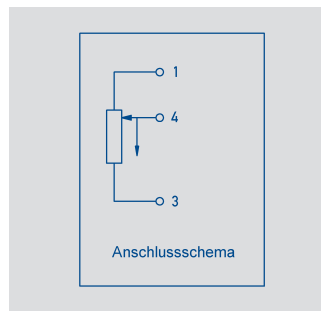
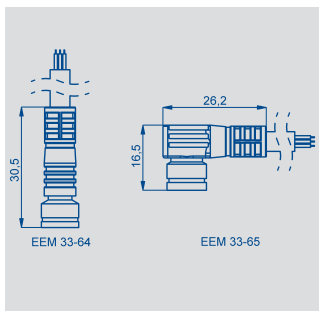
**Series**  
T X 2 - 0 1 5 0 - 7 1 6 - 0 0 2 - 2 0 2

**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 Code 101	Cable Code 202	Connector with cable 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

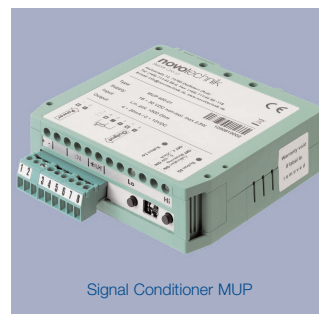
PUR-cable with 3-pin female connector M8x1, 3x0.34 mm<sup>2</sup>, IP67, unshielded

- 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 ( $I_e \leq 1 \mu A$ ).