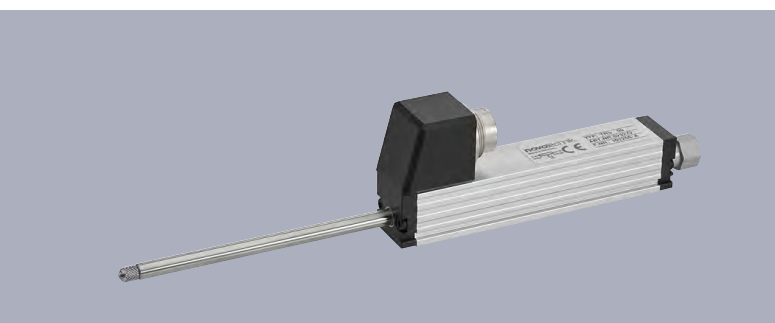
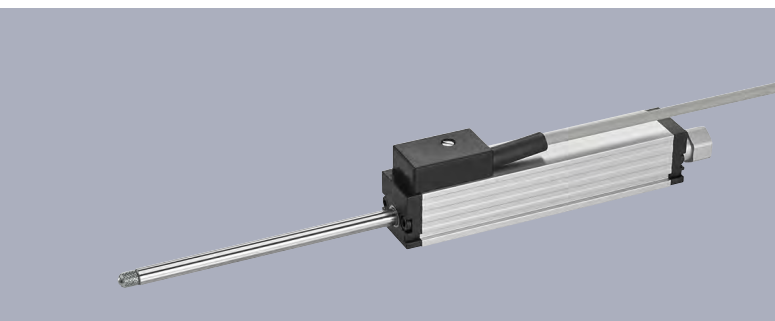


**Position Transducer  
with return spring  
potentiometric  
up to 100 mm**

Series TR / TRS



Position transducers employing conductive plastic tracks provide direct, accurate measurement of travel in display or control systems and for continuous contour gauging.

The push rod is supported on both ends by metal glide bearings, allowing high lateral forces on the tip of the rod. The elastomer-damped wiper provides reliable contact when experiencing shock or vibration.

The design of the rear end stop nut on the push rod simplifies the mechanical connection of actuators like pneumatic cylinders and solenoids.

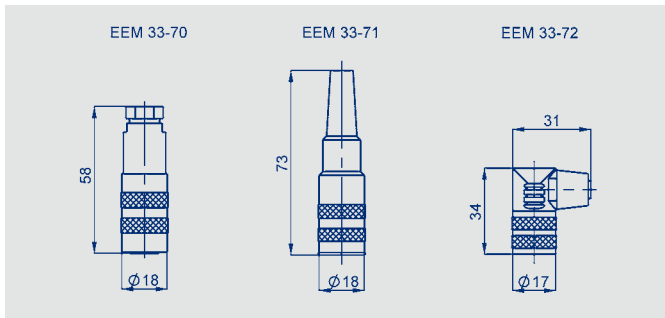
**Special features**

- long life up to 100 million movements, depending on application
- outstanding linearity - up to  $\pm 0.075\%$
- Repeatability to  $\pm 0.002\text{ mm}$
- actuating shaft with double-sided support
- special ball-coupling eliminates sideways forces
- high operational speeds - up to 10 m/s
- insensitive to shock and vibration
- TR-series with cable or TRS-series with connector versions

Description	
Housing	aluminium, anodized
Mounting	adjustable clamps
Actuating rod	stainless steel AISI 303, with anti-twist safeguard, internal thread M2.5x6
Probe tip	stainless steel with external thread M2.5 and pressed-in hardened metal ball
Bearings	both ends in glide bearings
Resistance element	conductive-plastic
Wiper assembly	precious metal multi-finger wiper, elastomer damped
Electrical connections	
Series TR	3-wire, PVC-cable, 3 x 0.14 mm <sup>2</sup> , shielded, 2 m length
Series TRS	5-pin round connector IEC 130-9



Type designations	TR-0010	TR-0025 TRS-0025	TR-0050 TRS-0050	TR-0075 TRS-0075	TR-0100 TRS-0100	with cable with plug
<b>Electrical Data</b>						
Defined electrical range	10	25	50	75	100	mm
Electrical stroke	12	27	52	77	102	mm
Nominal resistance	1	1	5	5	5	kΩ
Resistance tolerance	20					±%
Independent linearity	0.25	0.2	0.15	0.1	0.075	±%
Repeatability	0.002					mm
Recommended operating wiper current	≤ 1					μA
Maximum wiper current in case of malfunction	10					mA
Maximum permissible applied voltage	24	42	42	42	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)	48	63	94.4	134.4	166	+1 mm
Mechanical stroke (dimension B)	15	30	55	80	105	±1,5 mm
Dimension C (TR series)	7	12	12	12	12	mm
Dimension D (TR series)	6	32	32	32	32	mm
Weight with cable	80	120	150	180	200	g
with plug		74	100	128	150	g
Weight of shaft with coupling	18	25	36	48	57	g
Operating force extended (horizontal)	≤ 3.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	N
Operating force retracted (horizontal)	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	≤ 5.0	N
Operating force to end stop	max. 5					N
Operating frequency (maximum) (in critical applications, mount probe tip upwards)	20	18	14	11	10	Hz
Maximum permitted torque for mounting screws (with washer)	140					Ncm
<b>Environmental Data</b>						
Temperature range	-30 ... +100					°C
Vibration	5...2000 A <sub>max</sub> = 0.75 a <sub>max</sub> = 20					Hz mm g
Shock	50 11					g ms
Life	> 100x10 <sup>6</sup>					movements
Protection class	IP40 (DIN EN 60529)					



**Order designations**

Type	P/N
TR-0010	023260
TR-0025	023261
TRS-0025	023271
TR-0050	023262
TRS-0050	023272
TR-0075	023263
TRS-0075	023273
TR-0100	023264
TRS-0100	023274

**Available on request**

Type	P/N	independent linearity
TR-0025-.1	023265	±0,1 %
TRS-0025-.1	023275	±0,1 %
TR-0050-.1	023266	±0,1 %
TRS-0050-.1	023276	±0,1 %
TR-0050-.05	023267	±0,05 %
TRS-0050-.05	023277	±0,05 %
TR-0075-.05	023268	±0,05 %
TRS-0075-.05	023278	±0,05 %
TR-0100-.05	023269	±0,05 %
TRS-0100-.05	023279	±0,05 %

**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 ( $i_e \leq 1 \mu A$ ).

**Included in delivery**

2 mounting clamps Z-45 incl.  
4 cylinder screws M4x10;  
1 probe tip with pressed-in hardened metal ball.

**Optional accessories**

4 mounting clamps Z3-31,  
P/N 059010.  
Straight connector IEC130-9  
(5x0.75 mm<sup>2</sup>, Ø 4-6 mm);  
EEM 33-70, unshielded, IP67;  
EEM 33-71, shielded, IP40;  
Angled connector IEC130-9;  
EEM 33-72, shielded, IP40;  
1 roller head Z 50,  
P/N 005678.

**Recommended accessories**

MAP - Process monitor /display  
MUP/MUK - signal conditioners

