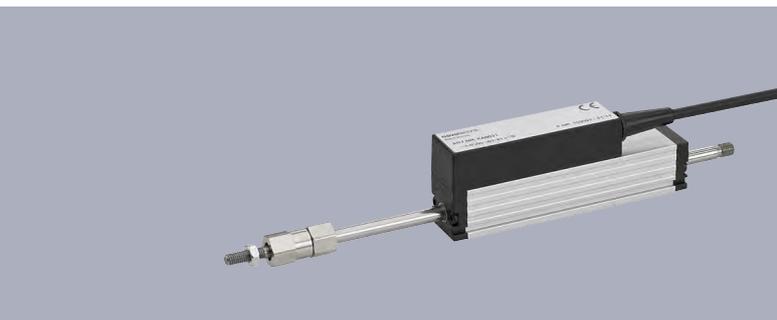
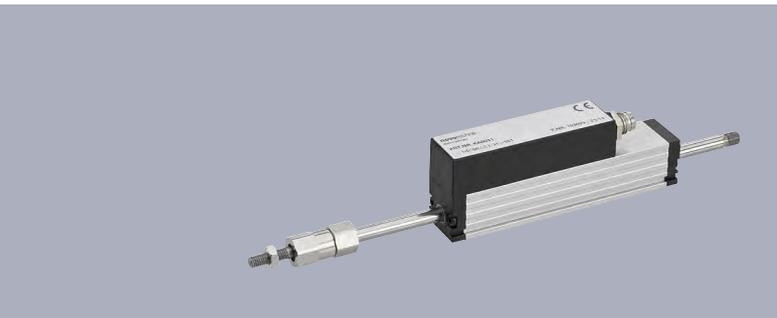


**Position Transducer
potentiometric
with integrated
Signal Conditioner
up to 150 mm**

TE1 Series



A compact transducer on conductive plastic base with integrated signal processing. Designed for direct position measurement of travel in display- or feedback applications.

The integrated signal processing simplifies the connection of the transducer considerably and provides a conditioned current or voltage signal.

Characteristic for the robust design of this compact transducer is the push rod, which is supported on both ends by metal glide bearings. Therefore transverse forces can be absorbed.

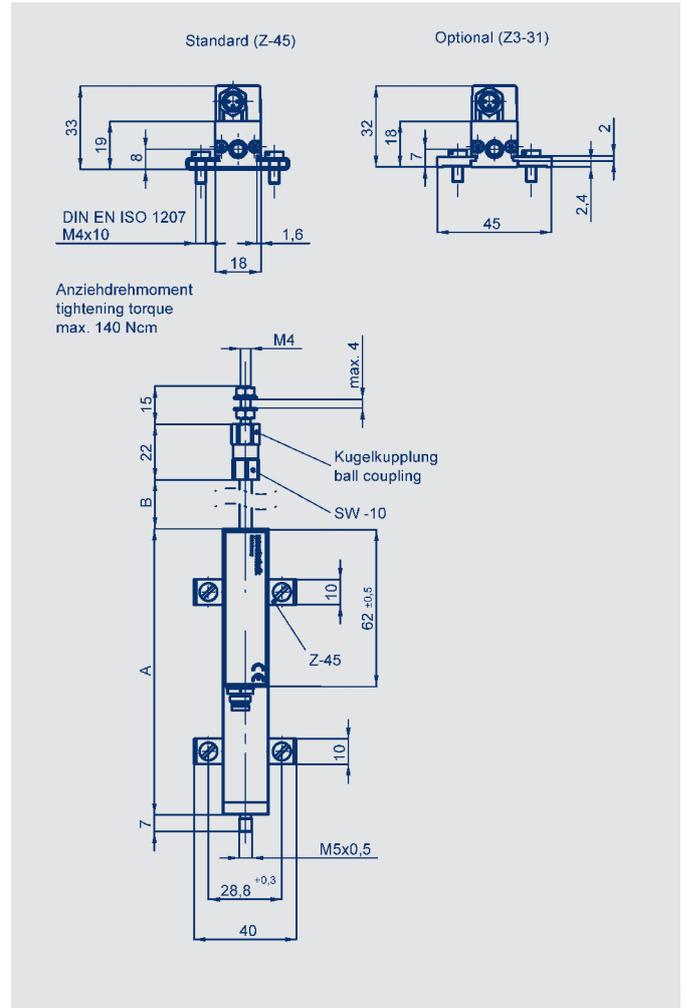
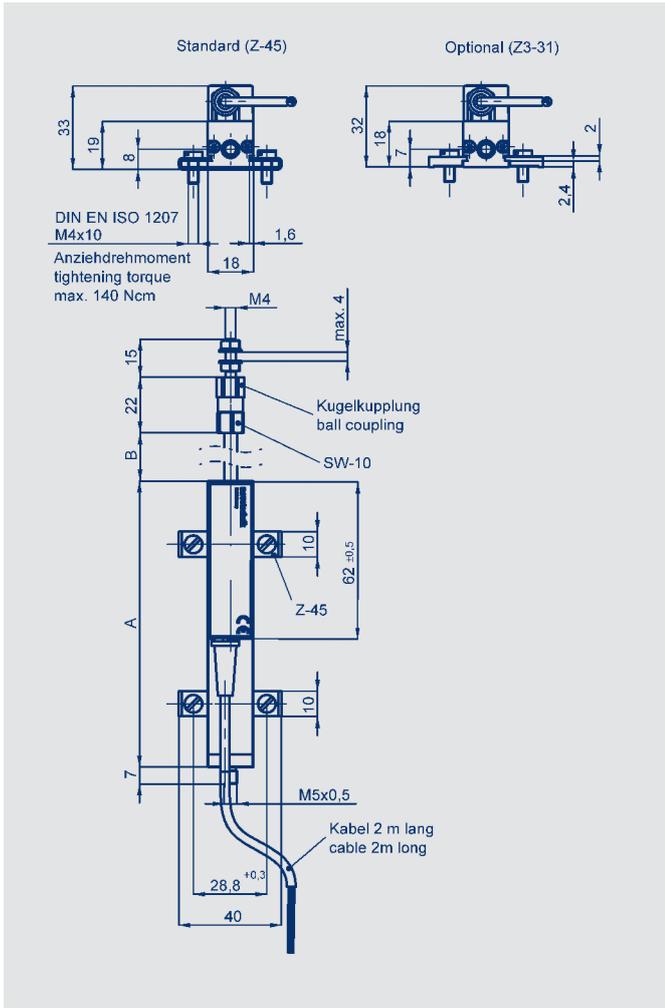
A ball coupling enables a backlash- and shear force free operation even with perpendicular or angular misalignment between the transducer axis and the direction of movement.

Based on the potentiometric measuring principle, magnetic interferences have no influence on the displacement measurement.

Special features

- Long life up to 100 million movements, depending on application
- Outstanding linearity up to $\pm 0.075\%$
- Standard output signals current or voltage
- Double-sided supported actuating rod
- Pre-assembled ball coupling
- High operational speeds up to 10 m/s
- Insensitive to shock and vibration
- Cable or connector version available

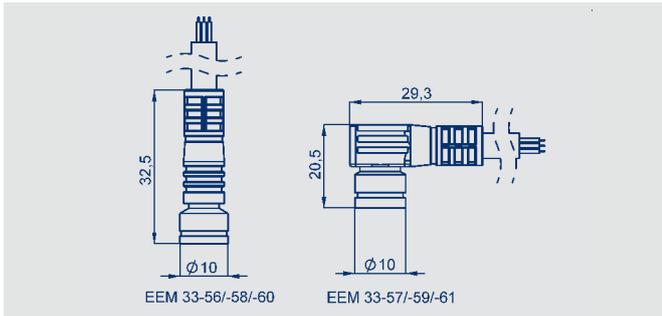
Description	
Housing	aluminium, anodized
Mounting	adjustable clamps
Actuating rod	stainless steel AISI 303
Ball coupling	hardened ball, external thread M5x0.5, with spring pressure on carbide plate
Bearings	both ends in glide bearings
Resistance element	conductive-plastic
Wiper assembly	precious metal multi-finger wiper, elastomer-damped
Electrical connections	3-pin round connector, shielded, M8x1 3-wire PVC-cable, 3 x 0.14 mm ² , shielded, 2 m length



Output connector Code 101	Cable Code 202	Connector with cable EEM 33-56 /-57 /-58 /-59 /-60 /-61	Signal
Pin 1	GN green	BN brown	Supply voltage
Pin 4	WH white	BK black	Output signal
Pin 3	BN brown	BU blue	GND

Type designations	TE1-0025	TE1-0050	TE1-0075	TE1-0100	TE1-150	
Mechanical Data						
Body length (dimension A)	63	88	113	138	188	+1 mm
Mechanical stroke (dimension B)	30	55	80	105	155	±1.5 mm
Weight						
with cable	183	202	222	245	328	g
with plug	138	157	177	201	280	g
Operating force (horizontal)	≤ 0.3					N
Mobility of ball coupling	±1 mm parallel offset, ±2.5° angular offset					
Max. permitted torque for fixing screws (with washer)	140					Ncm
Adjustment speed	max. 10					m/s
Electrical Data						
Defined electrical range	25	50	75	100	150	mm
Independent linearity *	0.2	0.15	0.1	0.075	0.075	± % FS
Absolute linearity *	0.275	0.225	0.175	0.15	0.15	± % FS
Repeatability	0.002					mm
Resolution	unlimited					
Dynamic (electrical)	> 10					kHz
Tolerance of electr. zero point	typ. ± 1.0					mm
Output signal	0...10 V (allowed load > 10 kΩ, residual voltage < = 10 mV)					
voltage or current	10...0 V (allowed load > 10 kΩ, residual voltage < = 10 mV)					
	4...20 mA (burden max. 500 Ω)					
	20...4 mA (burden max. 500 Ω)					
Short circuit protection	yes (vs. GND and Ub)					
Supply voltage Ub	16...30					V
Supply voltage ripple	max. 10					% V _{SS}
Power drain without load	< 1					W
Temperature coefficient	< 20					ppm/K
Overvoltage protection	< 36 (permanent)					V
Polarity protection	yes, supply lines					
Insulation resistance (500 VDC)	≥ 10					MΩ
Environmental Data						
Temperature range	-40...+85					°C
Humidity range	0...95 (no condensation)					% RH
Vibration (IEC 60068-2-6)	20 (5...2000 Hz, A _{max} = 0,75 mm)					g
Shock (IEC 60068-2-27)	50 (11 ms) (single hit)					g
Protection class (DIN EN 60529)	IP40					
Life	> 100x10 ⁶					movements
MTTF (ISO 13849-1, parts count method, w/o load)	25					years
Functional safety	When using our products in safety-related systems, please contact us					
EMC conformity	EN 61000-4-2 electrostatic discharges (ESD) 4 kV, 8 kV EN 61000-4-3 electromagnetic fields 10 V/m EN 61000-4-4 electrical fast transients (burst) 1 kV EN 61000-4-6 conducted disturbances, induced by RF fields 10 V/m eff. EN 55016-2-3 radiated disturbances class B					

*) Better linearities on request



Ordering specifications

Preferred types printed in bold

Electrical Interface 4: Analog Interface

Output signal analog Interface 4 __
1: Voltage output
2: Current output

Analog Interface voltage output 41 __
1: 0 V ... 10 V (extended rod = 0 V)
2: 10 V ... 0 V (extended rod = 10 V)

Analog Interface current output 42 __
1: 4 mA...20 mA (extended rod = 4 mA)
2: 20 mA...4 mA (extended rod = 20 mA)

Electrical connection
101: connector M8x1, 3-pin, axial output
202: round cable, 3-pin, 2 m, shielded

T E 1 - 0 1 5 0 - 1 0 1 - 4 1 1 - 1 0 1

Series

Electrical measuring range
Standard lengths
from 0025 mm up to 0150 mm

Mechanical version
101: Position transducer

- Included in delivery**
- 2 mounting clamps Z-45
incl. 4 cylinder screws M4x10,
 - 1 ball coupling

Available on request
Customized length and
electrical connection e.g.
cable with connector

Optional accessories

- 4 mounting clamps Z3-31 incl. 4 cylinder screws M4x10, P/N 059010
- PUR-cable with 3-pin female connector M8x1, 3x0.25 mm², shielded:
2 m length, EEM 33-56, P/N 005602,
5 m length, EEM 33-58, P/N 005604,
10 m length, EEM 33-60, P/N 005606
- PUR-cable with 3-pin female angled connector, M8x1, 3x0.25 mm², shielded:
2 m length, EEM 33-57, P/N 005603,
5 m length, EEM 33-59, P/N 005605,
10 m length, EEM 33-61, P/N 005607