

## Position Transducers with Restoring Spring 10, 25, 50, 75, 100 mm

## TR, TRS Series



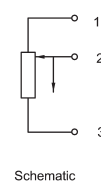
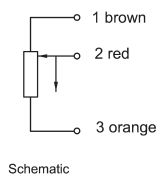
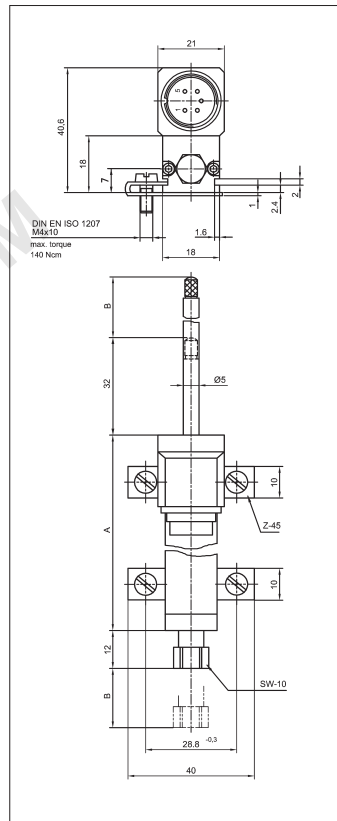
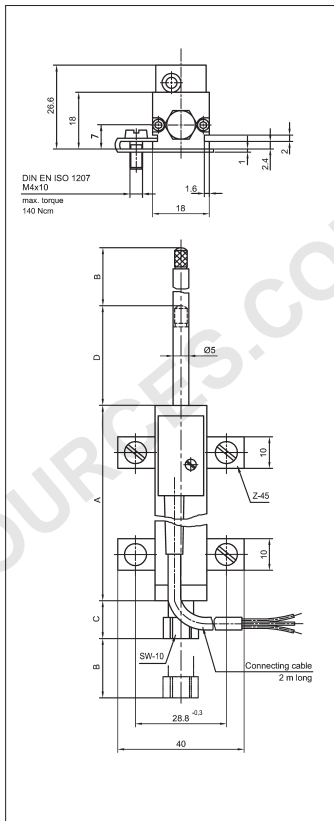
## Special features

- long life –  $100 \times 10^6$  movements
- outstanding linearity – up to  $\pm 0.075\%$
- choice of plug or cable connection
- DIN standard gauging end
- double bearing system on shaft
- insensitive to shock and vibration
- Repeatability to  $\pm 0.002$  mm

Position sensors employing conductive-plastic resistance and collector tracks provide direct means of measuring position or profile, without the need of a solid mechanical coupling.

One important feature of the TR, TRS Series is the industry proven double-bearing systems on both actuator shaft and spring. This arrangement reduces side load errors that could occur in an application such as cam-following and is one of the design factors that enables the outstanding linearity of this series.

The back end of the actuator shaft has a special collar that allows the attachment of an air cylinder or solenoid to automatically retract the actuator when required.



Description	
Housing	aluminum, anodized
Actuating shaft	stainless steel with anti-rotation device, inside thread M 2.5 x 6
Fixings	adjustable clamps
Gauging head	stainless steel with external M 2.5 thread and hardened ball point
Bearings	both ends in DU plastic bearings
Resistance element	conductive plastic
Wiper assembly	precious metal multi-finger wiper, elastomer-damped
Electrical connections type TR type TRS	three conductor stress-relieved, shielded cable, 2 m plug connector

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Type designations	TR 10	TR 25 TRS 25	TR 50 TRS 50	TR 75 TRS 75	TR 100 TRS 100	with cable with plug
<b>Electrical Data</b>						
Defined electrical range	10	25	50	75	100	mm
Nominal resistance	1	1	5	5	5	k $\Omega$
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
Max. wiper current in case of malfunction	10					m
Max. 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, 1 bar, 2 s)	≥ 10					M $\Omega$
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC )	≤ 100					μA
<b>Mechanical Data</b>						
Overall 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 (at TR)	7	12	12	12	12	mm
Dimension D (at TR)	6	32	32	32	32	mm
Weight with cable	80	120	150	180	200	g
Weight with plug		74	100	128	150	g
Weight of the actuating shaft with coupling and wiper block	18	25	36	48	57	g
Operating force (horizontal)	≤ 5					N
Operating frequency max. (In critical applications mount the transducer with the gauging head upwards.)	20	18	14	11	10	Hz
Maximum permitted torque for fixing screws	140					Ncm

**Included in delivery**

2 fixing clamps Z 45 incl.

4 screws M4x10,

1 gauging head with hardened ball point

**Recommended accessories**

Plug type EEM 33-70,

protection class IP 67

Plug type EEM 33-71,

protection class IP 40

Plug type EEM 33-72,

protection class IP 40

1 roller head Z 50

Process-controlled indicators

MAP... with display,

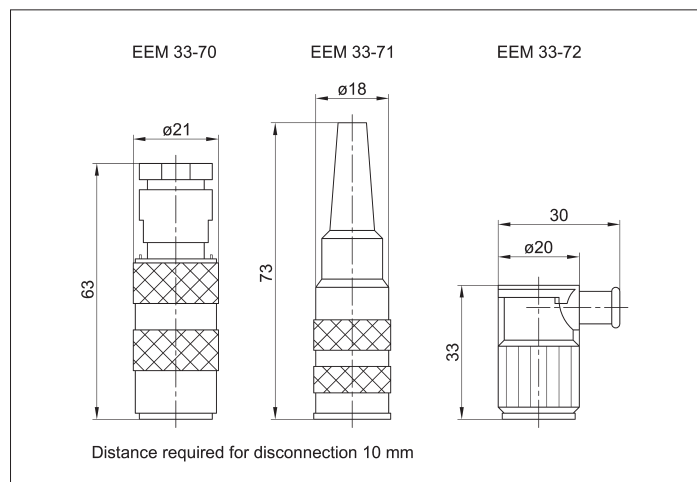
Signal conditioner MUP.../MUK...

for standardized output signals

**Important**

All values given for this series – including linearity, lifetime, micro-linearity, resistance to external disturbances and temperature coefficient in voltage dividing mode – are quoted for the device operating with the wiper voltage driving an operational amplifier working as a voltage follower where virtually no load is applied to the wiper ( $I_e \leq 1 \mu A$ ).

<b>Environmental Data</b>		
Temp. range	-30...+100	°C
Vibration	5...2000 $A_{max} = 0.75$ $a_{max} = 20$	Hz mm g
Shock	50 11	g ms
Life	> 100 x 10 <sup>6</sup>	movements
Protection class	IP 40 (DIN 400 50 / IEC 529)	

**Order designations**

Type	Art. no.
TR 10	023260
TR 25	023261
TRS 25	023271
TR 50	023262
TRS 50	023272
TR 75	023263
TRS 75	023273
TR 100	023264
TRS 100	023274

Subject to changes

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