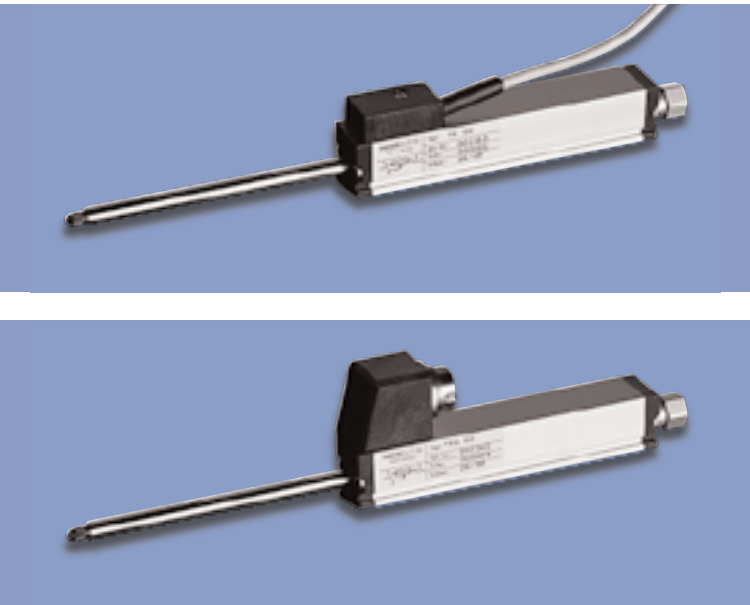


**Position Transducers  
with restoring spring  
10, 25, 50, 75, 100 mm**

Series TR, TRS



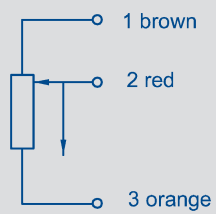
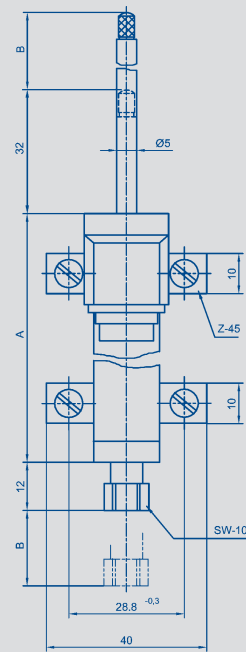
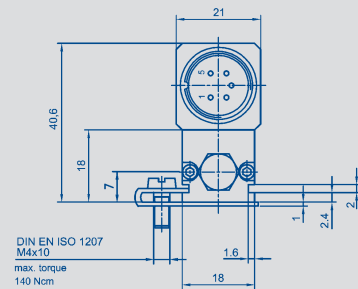
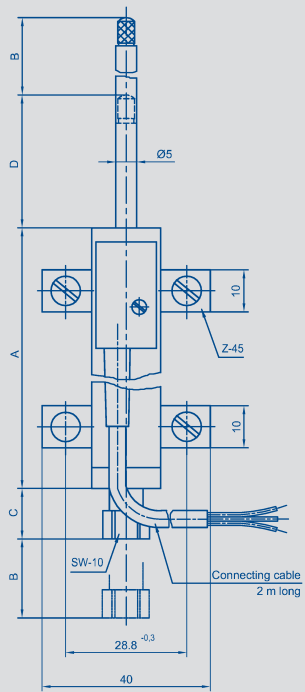
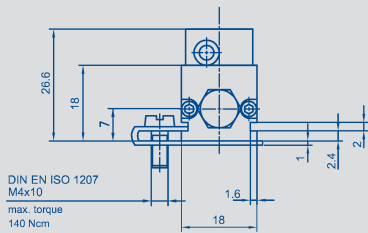
Position sensors employing conductive-plastic resistance and collector tracks provide direct means of measuring position or profile, without the need of any form of solid mechanical coupling.

An important and special feature of these particular units is their robust, industry-proven design. Of particular significance is the double bearing arrangement which really comes into its own when side forces (such as would be experienced in a cam-following application) are met. The rear end of the actuator shaft has a special collar, which can be very easily employed where automatic retraction by means of air cylinders or solenoid is required.

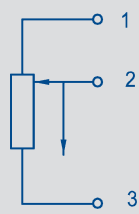
**Special features**

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

Description	
Housing	aluminium, 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	3-core stress-relieved, shielded cable, 2 m plug connector



Schematic



Schematic

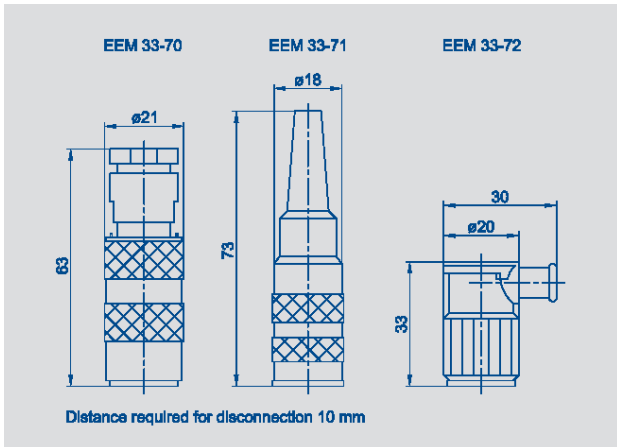
Type designations	TR 10	TR 25 TRS 25	TR 50 TRS 50	TR 75 TRS 75	TR 100 TRS 100	with cable with plug
<b>Electrical Data</b>						
Defined electrical range	10	25	50	75	100	mm
Nominal resistance	1	1	5	5	5	k $\Omega$
Resistance tolerance	20					$\pm$ %
Independent linearity	0.25	0.2	0.15	0.1	0.075	$\pm$ %
Repeatability	0.002					mm
Recommended operating wiper current	$\leq$ 1					$\mu$ A
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/ $^{\circ}$ K
Insulation resistance (500 VDC, 1 bar, 2 s)	$\geq$ 10					M $\Omega$
Dielectric strength (50 Hz, 2 s, 1 bar, 500 VAC )	$\leq$ 100					$\mu$ A
<b>Mechanical Data</b>						
Overall length (dimension A)	48	63	94.4	134.4	166	+1mm
Mechanical stroke (dimension B)	15	30	55	80	105	$\pm$ 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)	$\leq$ 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

#### Environmental Data

Temperature range	-30...+100	$^{\circ}$ C
Vibration	5...2000 $A_{max} = 0.75$ $a_{max} = 20$	Hz mm g
Shock	50 11	g ms
Life	$> 100 \times 10^6$	movem.
Protection class	IP 40 (DIN 400 50 / IEC 529)	

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**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 the values given in this data sheet for linearity, lifetime and temperature coefficient in the voltage dividing mode are quoted for the device operating with the wiper voltage driving on operational amplifier working as a voltage follower, where virtually no load is applied to the wiper ( $I_e \leq 1 \mu A$ ).

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