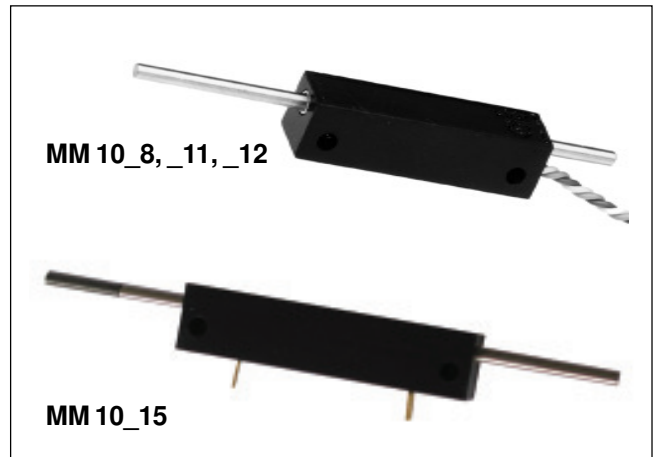
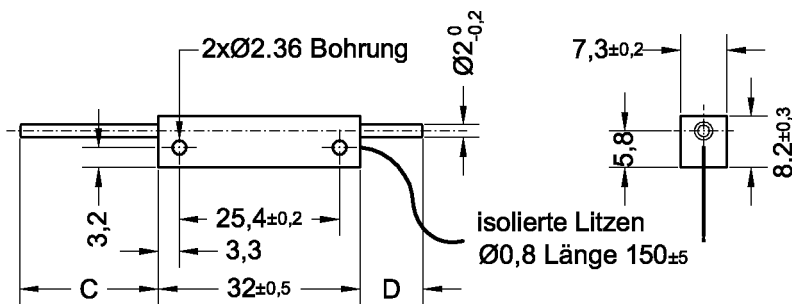


- High resolution (<0,01 mm) conductive plastic element
- Strokes from 8 mm to 15 mm
- Small dimensions
- Shaft with double bearing
- High life expectancy (up to 40 mio. movements)
- Spring return device optional (MMR10_8, _11, _12 with internal spring MMR10_15 with external spring)

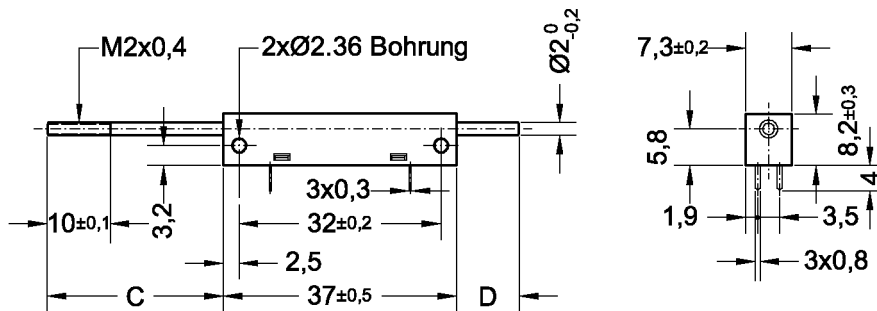


That compact sensor is available with resistance values from 1 kOhm to 50 kOhm, with spring return device (MMR10) or with shaft-modifications.

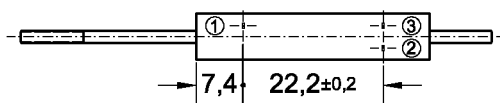
Dimensioned Drawing



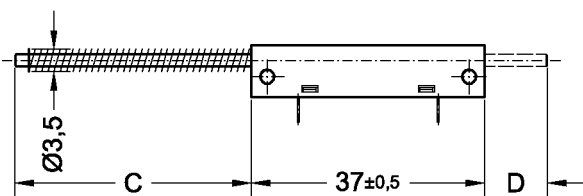
MM10_8, _11, _12
with /without spring return



MM10_15
without spring return



MMR10_15
with spring return



Dimensions	MM(R)10_8	MM(R)10_11	MM(R)10_12	MM10_15	MMR10_15	Electrical connection
C max [±1mm]	18	22	23	28	37	<p>1 (gelb) ○ — ○ 3 (grün) 2 (rot) ○ — ○</p> <p>Diagram is equivalent to the shaft position in the above drawing</p>
C min [±1mm]	10	10	10	10	19	
D max [±1mm]	18	22	23	28	18	
D min [±1mm]	10	10	10	10	0	

TIP: At lowest strokes, and if high resolution and life expectancy are required, we are recommending our inductive sensors with an internal electronic. They work with a direkt d.c. voltage-input and -output.

Electrical Specifications		MM 10_8	MM 10_11	MM 10_12	MM 10_15
Electrical stroke [$\pm 0,5$ mm]	8	11	12,7	15	
Resistance value [kOhm]		1, 2, 5, 10, 20, 50			1, 2, 5, 10, 20
Resistance tolerance [%]		± 15 (Standard)			
Best resistance tol. [%]		± 10 (optional)			
Linearity tolerance [%]		± 2 (Standard)			
Improved linearity tolerance [%]		± 1			
Best linearity tolerance [%]		--	$\pm 0,5$	--	--
Resolution [mm]		<0,01			
Max. power at 40°C [W]		0,2			0,3
Temperature coefficient/ res.[ppm/K]		400			
Starting resistance [%]		<2			
Insulation resistance [MOhm]		>1000 (bei 500 V DC)			
Dielectric strength		500Veff./1 min.			
Max. wiper current [mA]		1			
Recommended wiper current [μ A]		<1 (Voltage divider)			

Mechanical Specifications		MM 10_8	MM 10_11	MM 10_12	MM 10_15
Mechanical stroke [mm]		8 ± 1	12 ± 1	13 ± 1	15 $+5/-0$
Max. operating friction MM [N]		0,3			0,5
Max. operating friction MMR [N]		3			5
Stopper strength statically [N]		10			
Weigth [ca. g]		5			
Bearing pushing rod		2 x sleeve bearing			
Max. displacement speed [m/s]		2			
Average life time (shaft movements)		Version MM (=without spring) 40 Mio. / Version MMR (= with spring) 20 Mio.			
Housing material		Duroplast			
Pushing rod material		stainless steel			
Terminals material		MM 10_8, _11, _12: 3 insulated wire \varnothing 0,8 mm, length 150 ± 5 mm MM 10_15: gold-plated solder lugs (opt. connetion with 3 wires AWG28)			

Environmental Specifications		
Operating temperature [$^{\circ}$ C]		-25...+105
Storage temperature [$^{\circ}$ C]		-40...+125
Vibration		15 g/10...2000 Hz
Shock		50 g/11ms
Protection grade		IP40 (opt. IP54, with another mechanical dimensions)

Options / Accessories / Subsequent Processing Devices	
Mechanical options: – Special shaft (length, shape, bushing) – Spring return device (low life expectancy) – IP54 (Attention: other mechanical dimensions)	Electrical options: – Special resistance values – Tighter tolerances – MM10_15: instead of solder lugs, connection with wires

Ordering Terms					
Series	Mech. Version	Stroke	Resistance value	Resistance tolerance	Linearity tolerance
MM	R	10_11	R 5kOhm	W $\pm 15\%$	L $\pm 2\%$
– = without spring return R = with spring return					
Ordering example: Potentiometric transducer type MMR 10_11, with spring return, resistance value 5 kOhm, standard-resistance tolerance $\pm 15\%$, standard-linearity tolerance $\pm 2\%$					

The specifications and informations in this datasheet can not consider the special customer demands in his application. Any modification may affect the specification of our equipment.

