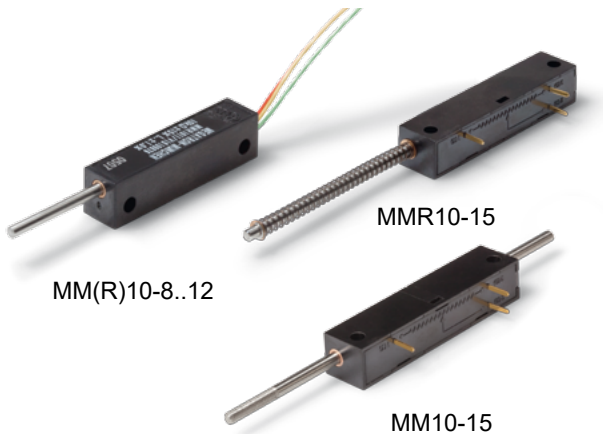


Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MM10 / MMR10



The MM10 / MMR10 series is used in applications where a miniaturized displacement sensor is required.

- Linear potentiometer (conductive plastic) with almost infinite resolution
- Measuring lengths from 8 mm to 15 mm
- Very compact dimensions
- Double bearing push rod
- Long lifetime (up to 40 million movements)
- With and without spring return (MMR10-8..12 internal, MMR10-15 external)
- optionally with reduced spring force

The very compact displacement sensor has an excellent lifetime due to the high quality sleeve bearing. It can also be integrated directly onto a printed circuit board. The spring return with optional light spring rate opens up additional applications.

Electrical Data	MM(R)10-8	MM(R)10-11	MM(R)10-12	MM(R)10-15
Effective electrical travel 1.)	8 ±0.5 mm	11 ±0.5 mm	12.7 ±0.5 mm	15 ±0.5 mm
Total resistance 1.)	1, 2, 5, 10, 20, 50 kOhm			
Resistance tolerance	±15% (±10%)			
Independent linearity (best straight line) 1.)	±2% (±1%)			
Theoretical resolution 1.)	Almost infinite			
Backlash (Hysteresis) 1.)	≤ 0.1 mm			
Max. / recommended wiper current1.)	1 mA (@ 40°C, 1 min in case of failure) / 2 µA			
Power rating @ 70°C (0W @ 105°C)	≤ 0.2 W			
Isolation voltage 1.)	500 VAC, 1min			
Isolation resistance 1.)	1000 MOhm @ 500 VDC			

Mechanical Data, Environmental Conditions, Miscellaneous	MM(R)10-8	MM(R)10-11	MM(R)10-12	MM(R)10-15
Mechanical stroke 1.)	8 +1 mm	12 +1 mm	13 +1 mm	15 +3 mm
Lifetime (90% effective electrical travel) 2.)	40 / 20 Mio. movements (MM10 / MMR10)			
Max. operational speed	< 2 m/s			
Operational force @ RT 1.) 2.)	< 0.3 N / 3 N (MM10 / MMR10)		< 0.5 N / 5 N (MM10 / MMR10)	
End stop force in case of failure	< 10 N			
Operational temperature	-30 °C up to +105 °C			
Storage temperature	-30 °C up to +105 °C			
Protection grade (IEC60529)	IP40			
Vibration (IEC 68-2-6, Test Fc)	15 g (10..2000 Hz, 0,75mm, 12h)			
Shock (IEC 68-2-27, Test Ea)	50 g, halfsine, 11 ms (18x)			
Housing length	32 ±0.5 mm			37 ±0.5 mm

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Mechanical Data, Environmental Conditions, Miscellaneous	MM(R)10-8	MM(R)10-11	MM(R)10-12	MM(R)10-15
Mass	ca. 5 g			
Mounting parts (included in delivery)	None			
Material housing	Plastic			
Material pushrod	Stainless steel			
Connection type	3 single strands AWG28: Ø0.8 x 150±5 mm			soldering pins

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

Please note: Max. permissible supply voltage <75 VDC respectively <50 VAC in addition the max. power rating must be observed

Order Code					
Description	Selection: standard=black/bold , possible <i>options=grey/italic</i>				
Series:					
Without spring return	MM10				
With spring return	MMR10				
Effective electrical travel:					
8 mm (MMR10 spring return internally)		8			
11 mm (MMR10 spring return internally)		11			
12,7 mm (MMR10 spring return internally)		12			
15 mm (MM10 with M2 thread in pushrod, MMR10 with spring return externally without thread)		15			
Electrical connection:					
Standard single strands MM(R)10-8..12 (150 mm)			-		
Standard soldering pins MM(R)10-15			-		
<i>Option length of strands MM(R)10-8..12 in meter</i>			<i>Ex,xx</i>		
Total resistance:					
1 kOhm				R1K	
<i>Option 2 kOhm</i>				<i>R2K</i>	
5 kOhm				R5K	
10 kOhm				R10K	
<i>Option 20 kOhm*</i>				<i>R20K</i>	
<i>Option 50 kOhm*</i>				<i>R50K</i>	
Resistance tolerance :					
±15%					W15%
<i>Option ±10%</i>					<i>W10%</i>
Independent linearity:					
±2%					L2%
<i>Option ±1%</i>					<i>L1%</i>
Spring rate (only with spring return):					
Standard 0.16 N/mm					-
<i>Light 0.06 N/mm</i>					<i>FL</i>

* Options marked with an asterisk have different technical characteristics. Please contact us for further information.

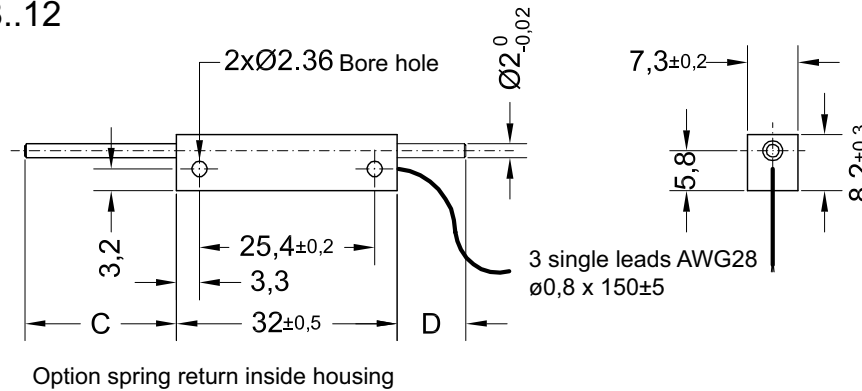
For higher quantities or on-going demand, additional options are available as described below on request

For example:

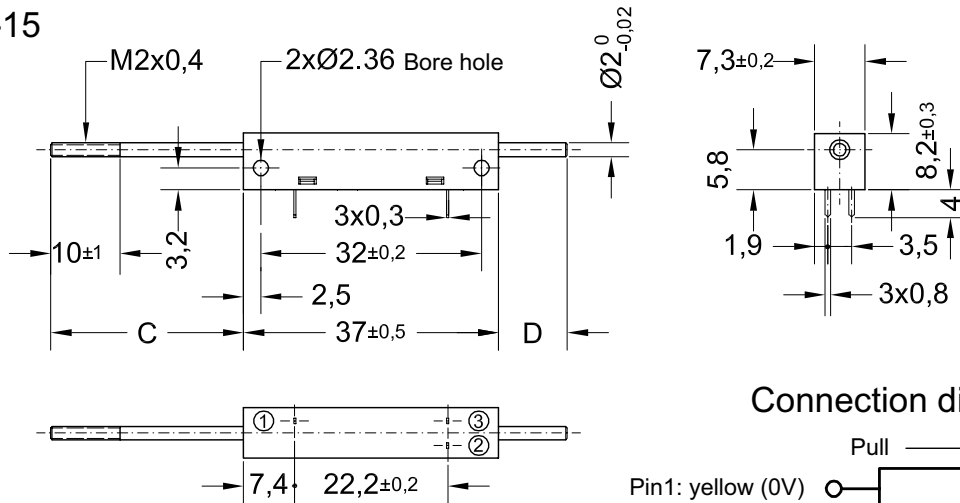
- Assembled leads and cables with / without connector, IP54 versions, better linearity, other probe tips, special axis length and much more

Drawing

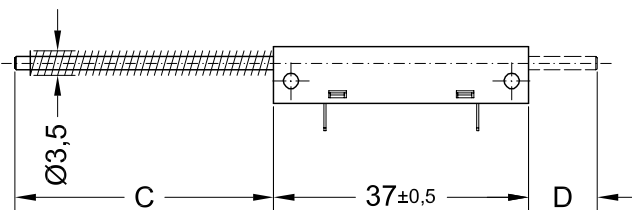
MM(R)10-8..12



MM10-15



MMR10-15



Dimensions in mm

Dimensions	MM(R)10-8	MM(R)10-11	MM(R)10-12	MM10-15	MMR10-15
C max [±1mm]	18	22	23	28	37
C min [±1mm]	10	10	10	10	19
D max [±1mm]	18	22	23	28	18
D min [±1mm]	10	10	10	10	0