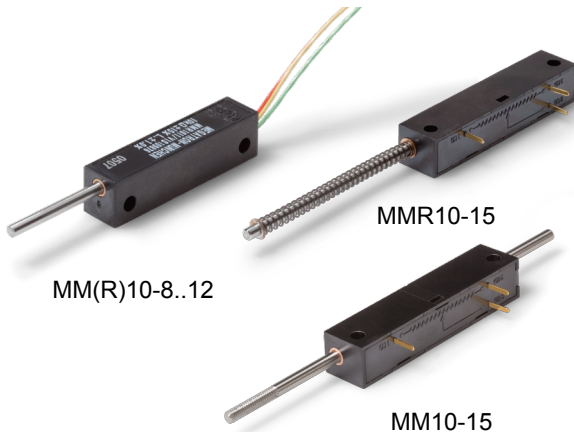


# Data Sheet for Linear Sensors

## 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)

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 opens up additional fields of application.

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 kOhm (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 @ 40°C (0W @ 55°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..+105°C			
Storage temperature	-30..+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

# Data Sheet for Linear Sensors

## Potentiometric Linear Transducer (Conductive Plastic)

Series MM10 / MMR10

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 options=grey/cursive

Series:	MM10					
<b>Without spring return</b>	<b>MMR10</b>					
<b>With spring return</b>						
<b>Effective electrical travel:</b>						
<b>8 mm</b> (MMR10 spring return internally)		<b>8</b>				
<b>11 mm</b> (MMR10 spring return internally)		<b>11</b>				
<b>12,7 mm</b> (MMR10 spring return internally)		<b>12</b>				
<b>15 mm</b> (MM10 with M2 thread in pushrod, MMR10 with spring return externally without thread)		<b>15</b>				
<b>Electrical connection:</b>						
<b>Standard single strands MM(R)10-8..12</b> (150 mm)				-		
<b>Standard soldering pins MM(R)10-15</b>				-		
<i>Option length of strands MM(R)10-8..12 in m</i>				<i>EX,XX</i>		
<b>Total resistance:</b>						
<b>1 kOhm</b>					<b>R1k</b>	
<i>Option 2 kOhm</i>					<i>R2k</i>	
<b>5 kOhm</b>					<b>R5k</b>	
<b>10 kOhm</b>					<b>R10k</b>	
<i>Option 20 kOhm*</i>					<i>R20K</i>	
<i>Option 50 kOhm*</i>					<i>R50K</i>	
<b>Resistance tolerance :</b>						
<b>±15%</b>						<b>W15%</b>
<i>Option ±10%</i>						<i>W10%</i>
<b>Independent linearity:</b>						
<b>±2%</b>						<b>L2%</b>
<i>Option ±1%</i>						<i>L1%</i>

\* Options marked with an asterisk have different technical characteristics. Please ask us for more informations.

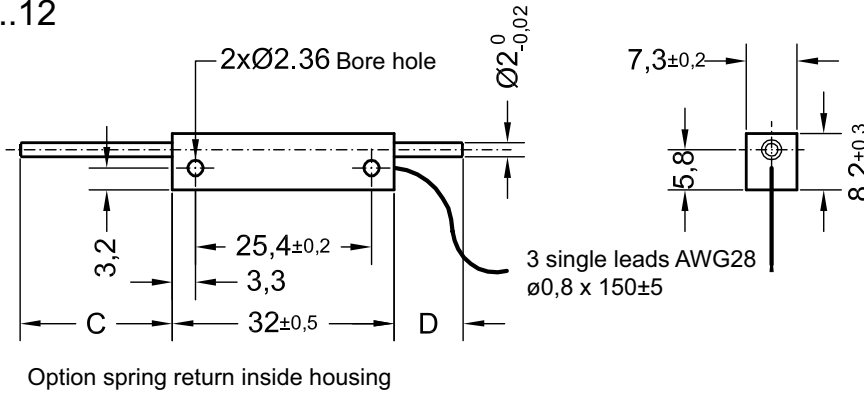
**For higher quantities or on-going demand, additional options are available as described below on request**

For example:

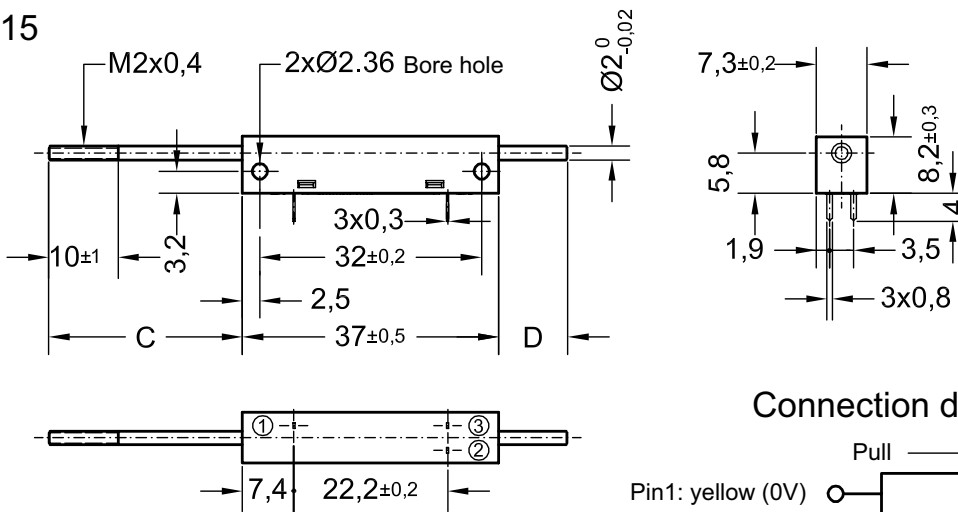
- Assembled leads and cables with / without connector
- Probe, special axis length and much more

**Drawing**

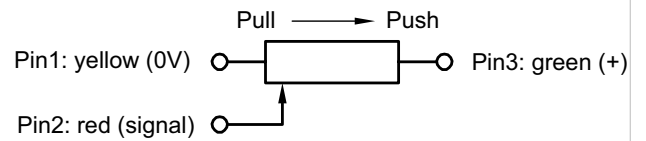
**MM(R)10-8..12**



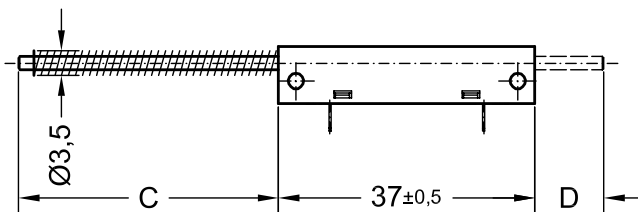
**MM10-15**



**Connection diagram**



**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