



The MM / MMR series is used in applications where a miniaturized displacement sensor is required.

- Linear potentiometer (conductive plastic) with almost infinite resolution
- Measuring lengths from 10 mm to 30 mm
- Compact dimensions
- Double bearing push rod
- Long lifetime (up to 40 million movements)
- With and without spring return
- Option IP54 version

The pilot ring and two threaded holes on the front of this compact sensor are used for mounting.

Electrical Data	MM(R)11	MM(R)15	MM(R)20	MM(R)30
Effective electrical travel 1.)	10 ±0.5 mm	15 ±0.5 mm	20 ±0.5 mm	30 ±0.5 mm
Total resistance 1.)	0.5, 1, 2, 5, 10 kOhm			
Resistance tolerance	±10%			
Independent linearity (best straight line) 1.)	±1% (±0.5%)	±0.5%		
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	≤ 0.3 W	≤ 0.4 W	≤ 0.5 W
Isolation voltage 1.)	1000 VAC, 1min			
Isolation resistance 1.)	1000 MOhm @ 1000 VDC			

Mechanical Data, Environmental Conditions, Miscellaneous	MM(R)11	MM(R)15	MM(R)20	MM(R)30
Mechanical stroke 1.)	10 +2 mm	15 +2 mm	20 +2 mm	30 +2 mm
Lifetime (90% effective electrical travel) 2.)	40 / 20 Mio. movements (MM / MMR)			
Max. operational speed	< 2 m/s			
Operational force @ RT 1.) 2.)	< 0.3 N / 3 N (MM / MMR)			
End stop force in case of failure	< 20 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	37 ±1 mm		52 ±1 mm	

# Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MM / MMR

Mechanical Data, Environmental Conditions, Miscellaneous	MM(R)11	MM(R)15	MM(R)20	MM(R)30
Mass	ca. 30 g			
Mounting parts (included in delivery)	2 x washer, 2 x nut			
Material housing	Plastic			
Material pushrod	Stainless steel			
Connection type	Gold plated solder tail			

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

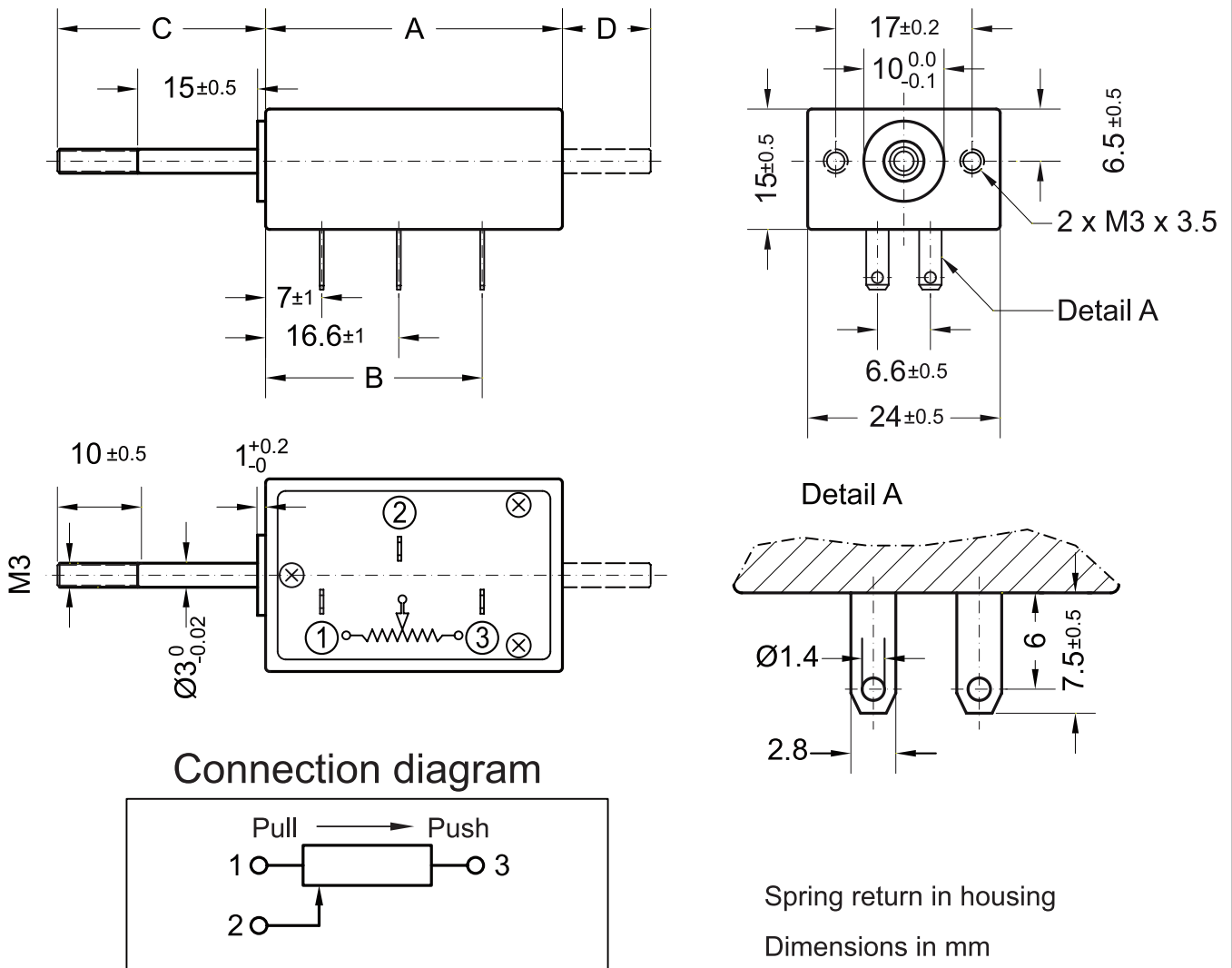
Description	Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>				
<b>Series:</b> Without spring return With spring return	<b>MM</b> <b>MMR</b>				
<b>Effective electrical travel:</b> 10 mm 15 mm 20 mm 30 mm		<b>11</b> <b>15</b> <b>20</b> <b>30</b>			
<b>Total resistance:</b> <i>Option 500 Ohm</i> <b>1 kOhm</b> <i>Option 2 kOhm</i> <b>5 kOhm</b> <b>10 kOhm</b>			<i>R500</i> <b>R1K</b> <i>R2K</i> <b>R5K</b> <b>R10K</b>		
<b>Resistance tolerance :</b> <b>±10%</b>				<b>W10%</b>	
<b>Independent linearity:</b> <b>±1% only for 10 mm stroke</b> <b>±0,5%</b>					<b>L1%</b> <b>L0,5%</b>
<i>Option IP54 (with external spring return)</i>					<i>IP54</i>

**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, better linearity, other probe tips, special axis length and much more

Drawing with or without internal spring return



Dimensions	MM(R)11	MM(R)15	MM(R)20	MM(R)30
A [ $\pm 1$ mm]	37	37	52	52
B [ $\pm 1.5$ mm]	27	27	42	42
C max [ $\pm 0.1$ mm]	26	31	36	46
C min [ $\pm 0.5$ mm]	15	15	15	15
D max [ $\pm 0.5$ mm]	11	16	21	31
D min [ $\pm 0.5$ mm]	0	0	0	0

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## Drawing with external Spring Return (IP54)

