

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MM / MMR



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 internal spring return
- Option IP54 version (external spring)

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 (optional IP54)			
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 IP40 (internal spring)	37 ±1 mm		52 ±1 mm	
Housing length IP54 (optional external spring)	49 ±1 mm		64 ±1 mm	

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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

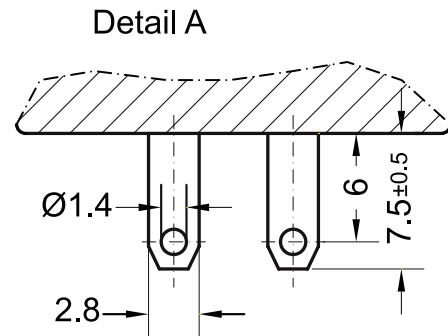
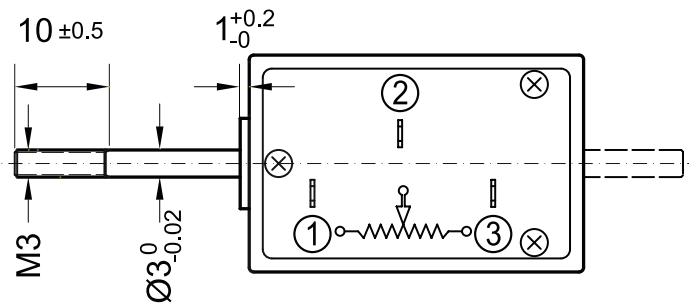
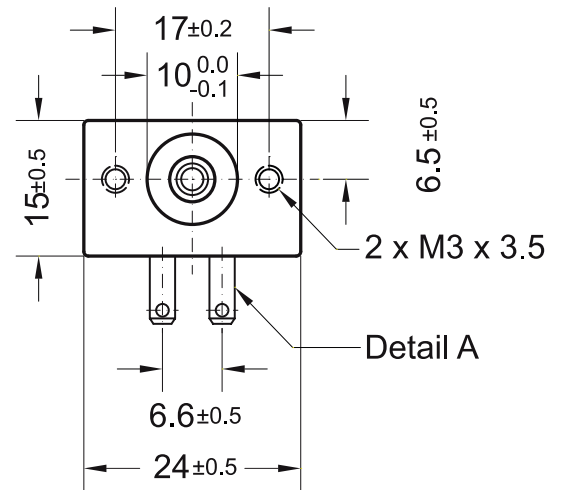
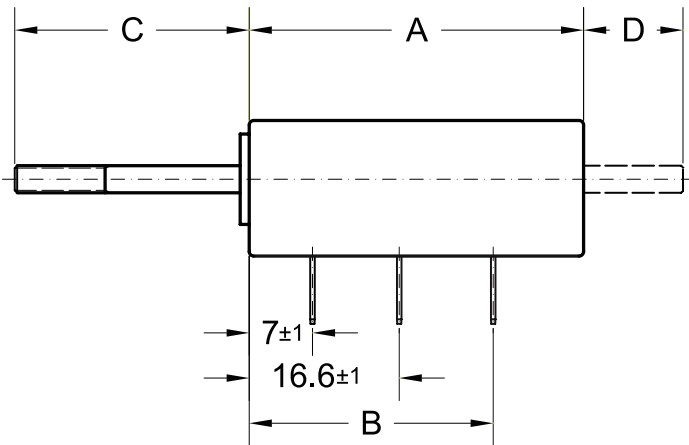
Description	Selection: standard=black/bold , possible <i>options=grey/italic</i>					
Series:						
Without spring return	MM					
With spring return	MMR					
Effective electrical travel:						
10 mm		11				
15 mm		15				
20 mm		20				
30 mm (only with internal spring)		30				
Total resistance:						
<i>Option 500 Ohm</i>			<i>R500</i>			
1 kOhm			R1K			
<i>Option 2 kOhm</i>			<i>R2K</i>			
5 kOhm			R5K			
10 kOhm			R10K			
Resistance tolerance :						
±10%				W10%		
Independent linearity:						
±1% only for 10 mm stroke					L1%	
±0.5%					<i>L0,5%</i>	
<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

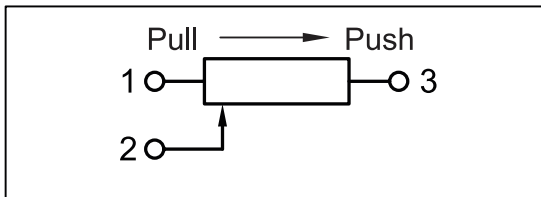
For example:

- 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



Connection diagram



Spring return in housing

Dimensions in mm

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

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Drawing with external Spring Return (IP54)

