Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic) — Series MM / MMR

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

- 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 or without internal spring return
- Option IP54 version (external spring)

This compact sensor has a pilot ring and two threaded holes on the front 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 current 1.)	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

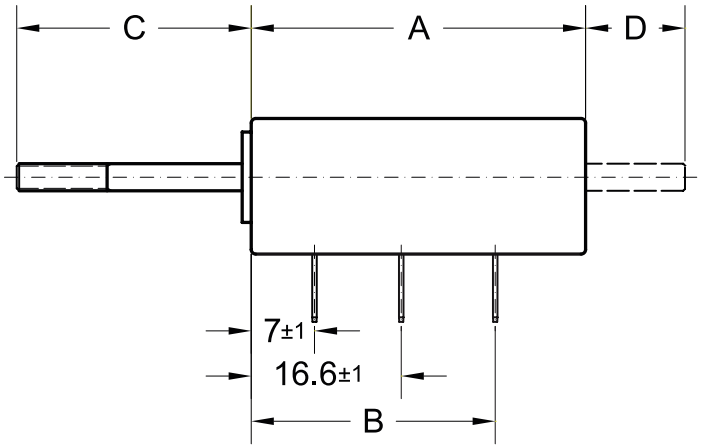
Description	Selection: **standard=black/bold**, possible *options=grey/italic*					
Series: **Without spring return** **With spring return**	**MM** **MMR**					
Effective electrical travel: **10 mm** **15 mm** **20 mm** **30 mm (only with internal spring)**		**11** **15** **20** **30**				
Total resistance: *Option 500 Ohm* **1 kOhm** *Option 2 kOhm* **5 kOhm** **10 kOhm**			*R500* **R1K** *R2K* **R5K** **R10K**			
Resistance tolerance : **±10%**				**W10%**		
Independent linearity: **±1% (only for 10 mm stroke)** **±0.5%**					**L1%** **L0,5%**	
Option IP54 (with external spring return)						*IP54*

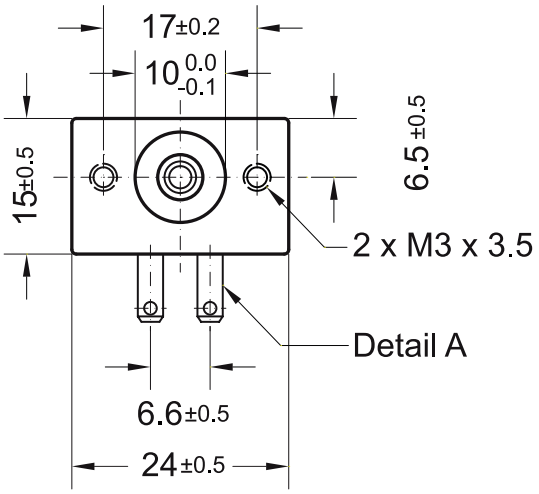
For higher quantities or on-going demand, additional options are available as described below on request

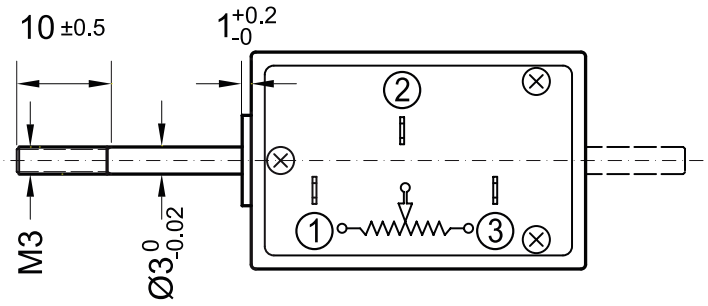
For example:
- Assembled leads and cables with / without connector, better linearity, other probe tips, special axis length and much more

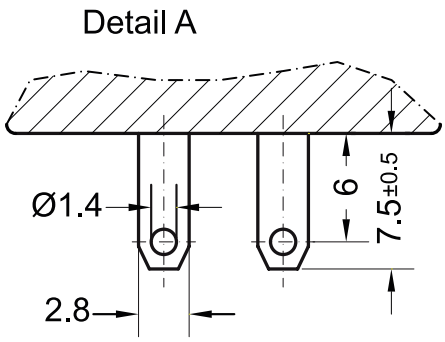
Potentiometric Linear Transducer (Conductive Plastic) — Series MM / MMR

Drawing with or without internal spring return

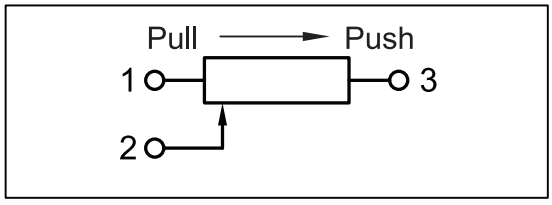








Connection diagram



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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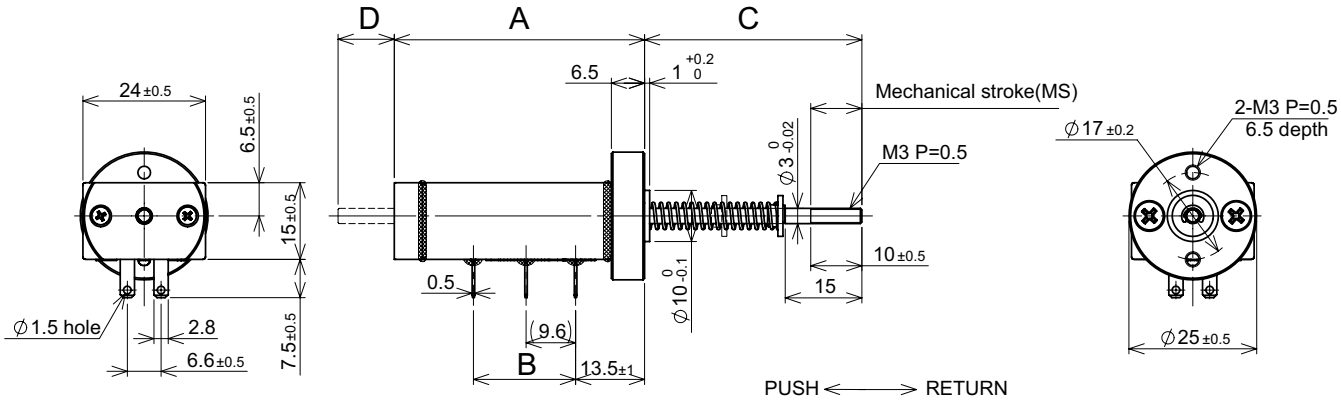
Drawing with external Spring Return (IP54)



Dimensions in mm

	MMR11	MMR15	MMR20
A [±1]	49	49	64
B [±0.5]	20	20	35
C	31.5~42.5	31.5~47.5	31.5~52.5
D	0~11	0~16	0~21