

Data Sheet for Linear Sensors

Potentiometric Linear Transducer (Conductive Plastic)

Series MMS33



The MMS33 linear transducers are used in heavy vibration applications that require a displacement sensor with long lifespan, high accuracy and front guided push rod in measuring lengths from 50 to 900 mm

- Robust design in protection class up to IP67
- Measuring lengths from 50 to 900 mm
- With front guided push rod
- Simple coupling with ball joints (not included)
- For applications with strong vibrations

The robust construction is particularly suitable for applications with strong vibrations and is available in protection class IP60 (optional IP65/IP67) as well as with plug and cable connection.

Electrical Data

Effective electrical travel (+3/-0 mm) 1.)	50 / 75 / 100 / 130 / 150 / 175 / 200 / 225 / 275 / 300 / 350 / 375 / 400 / 450 / 500 / 600 / 650 / 750 / 900
Total electrical travel (±1 mm) 1.)	53 / 78 / 103 / 133 / 153 / 178 / 204 / 229 / 279 / 304 / 355 / 380 / 406 / 457 / 508 / 609 / 660 / 762 / 914
Total resistance 1.)	5 kOhm (50...650 mm) / 10 kOhm (750...900 mm)
Resistance tolerance	±20 %
Independent linearity (best straight line) 1.)	±0.05 %
Theoretical resolution 1.)	Almost infinite
Repeatability 1.)	≤ 0.01 mm
Max. / recommended wiper current 1.)	10 mA (@40 °C, 1 min in case of failure) / < 1 µA
Power rating @40 °C (0 W @120 °C)	≤ 3 W
Isolation voltage 1.)	< 100 µA@500 VAC, 1bar, 2s
Isolation resistance 1.)	100 MOhm@500 VDC, 1bar, 2s

Mechanical Data, Environmental Conditions, Miscellaneous

Mechanical stroke (mm) 1.)	59 / 84 / 109 / 139 / 159 / 184 / 210 / 235 / 285 / 310 / 361 / 386 / 412 / 463 / 518 / 619 / 670 / 772 / 924
Lifetime (90 % effective electrical travel) 2.)	> 25 million meters or 100 million movements (the smaller value applies)
Max. operational speed	≤ 10 m/s (IP60) / ≤ 5 m/s (IP65/IP67)
Max. acceleration	≤ 200 m/s²
Operational force @ RT 1.) 2.)	< 3,5 N (IP60) / < 15 N (IP65) / < 20 N (IP67)
Operational temperature	-30...+100 °C
Storage temperature	-50...+120 °C
Protection grade (IEC60529)	IP60 (optional IP65/IP67)
Vibration (IEC 68-2-6, Test Fc)	20 g (5...2000 Hz, 0.75 mm)
Shock (IEC 68-2-27, Test Ea)	50 g, halfsine, 11 ms
Housing length IP60/IP65 (±1 mm)	113 / 138 / 163 / 193 / 218 / 238 / 264 / 289 / 339 / 364 / 415 / 440 / 466 / 517 / 572 / 673 / 725 / 826 / 978
Housing length IP67 (±1 mm)	121,5 / 155,5 / 171,5 / 201,5 / 221,5 / 246,5 / 272,5 / 297,5 / 347,5 / 372,5 / 423,5 / 448,5 / 474,5 / 525,5 / 580,5 / 681,5 / 733,5 / 834,5 / 986,5

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Mechanical Data, Environmental Conditions, Miscellaneous

Mounting parts (included in delivery)	1 set mounting clamps, screws
Material housing	Aluminium, Nylon 66 G 25
Material cursor	Stainless steel AISI 303 IP60/IP65 / C45 chrome steel 20µm IP67
Connection type	Cable 3 pol, valve connector 4-pole DIN43650, M16 connector 5-pole DIN43322, M12 connector 4-pole
Sensor mounting method	Mounting clamps and with screw M5 ISO4017 DIN933 (screw M5 not included in delivery)

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

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Order Code							
Description				Selection: standard=black/bold, possible options=grey/cursive			
Series:	MMS33						
Electrical connection:							
4-pol. valve connector (3 + PE)		SV					
5-pole connector		P					
Cable 1 m		K					
<i>Option cable length in m</i>		<i>Kxx</i>					
<i>Option 4-pole connector M12 (IP67)</i>		<i>L</i>					
Effective electrical travel:							
50 mm			50	R5K			
75 mm			75	R5K			
100 mm			100	R5K			
130 mm			130	R5K			
150 mm			150	R5K			
175 mm			175	R5K			
200 mm			200	R5K			
225 mm			225	R5K			
275 mm			275	R5K			
300 mm			300	R5K			
350 mm			350	R5K			
375 mm			375	R5K			
400 mm			400	R5K			
450 mm			450	R5K			
500 mm			500	R5K			
600 mm			600	R5K			
650 mm			650	R5K			
750 mm			750	R10K			
900 mm			900	R10K			
Total resistance:							
Standard depends on electrical travel				see above			
Resistance tolerance:							
±20 %					W20%		
Independent linearity:							
Standard 0.05 %						L0,05%	
Protection class:							
IP60							IP60
<i>Option IP65</i>							<i>IP65</i>
<i>Option IP67 (only with 4-pole M12 connector)</i>							<i>IP67</i>

Accessories (not included in delivery):

For 4 pole valve connector:

- Mating connector (STV) #110767: angled, without cable, 3-pole + PE, IP65, not shielded (STV E 3POLPE IP65 NS)
- Mating connector with cable (STV): angled, with cable 3 meters, 3-pole + PE, IP67, not shielded (STV K3M 3POLPE IP67 NS)

For 4 pole connector M12:

- Series STEM12 (connector without cable) or STKM12 (connector with cable) IP67 versions

For 5 pole connector M16:

- Mating connector (STEM16) #110906: M16 thread, 5-pole, IP67, straight, shieldable (STE M16 5POL IP67 G S)
- Mating connector (STEM16) #114462: M16 thread, 5-pole, IP67, angled, shieldable (STE M16 5POL IP67 W S)
- Mating connector with cable (STKM16) #127664: M16 thread, 5-pole, IP67, straight, shielded, 2 m (STK M16 5POL IP67 G GS 2M AWG24)
- Mating connector with cable (STKM16) #127665: M16 thread, 5-pole, IP67, angled, shielded, 2 m (STK M16 5POL IP67 W GS 2M AWG24)

More connectors with cable on request. Take a look at data sheet STEM for connector without cable, STKM for connector with cable.

Note: When calibrating the linear transducer, be careful to set the stroke so that the output does not drop below 1 % or rise beyond 99 % of the supply voltage.

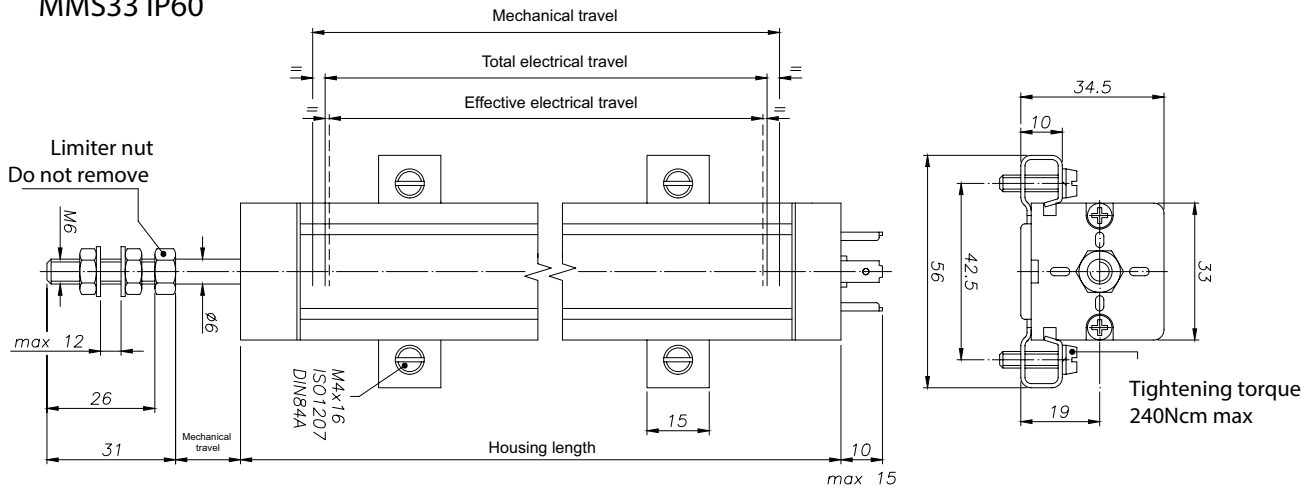
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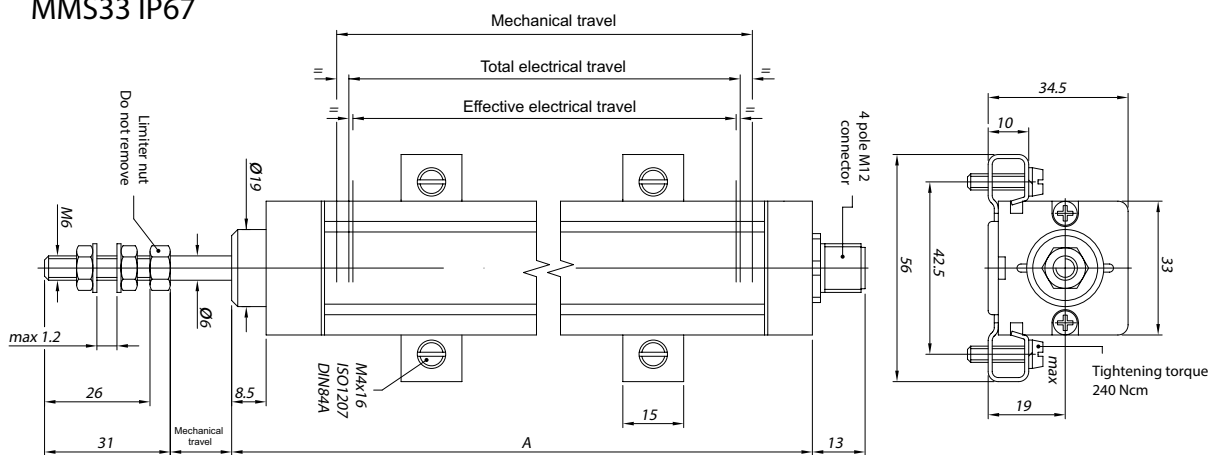
Series MMS33

Drawing

MMS33 IP60

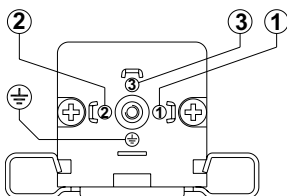


MMS33 IP67

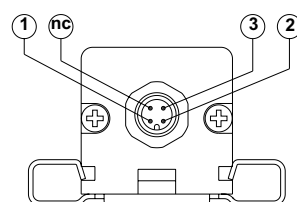


Dimensions in mm

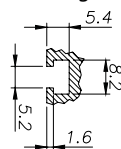
4 pole valve connector



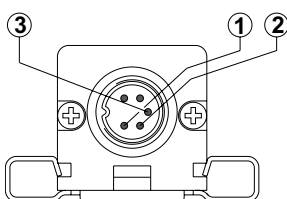
4 pole connector (only IP67 version)



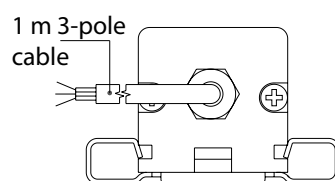
Dimensions of screw head groove



5 pole connector



Cable



Mounting with M5 screw
ISO4017-DIN933

Connection diagram

