

# Data Sheet for Linear Sensors

## Potentiometric Linear Transducer

## Series MBX



- Measuring stroke from 50 to 200 mm
- Flat design (height < 7 mm)
- Short length (no push rod required)
- Infinite resolution (conductive plastic potentiometer)
- Absolute measurement signal with no processing delay

The low profile design and compact wiper carrier (no push rod required) makes this sensor ideal for integration into space constrained applications. Due to the potentiometric measurement principle, which requires no signal processing electronics, the absolute measurement signal is available immediately after power-on and without delay, with infinite resolution during operation.

Electrical Data	MBX50	MBX100	MBX150	MBX200
Effective electrical travel 1.)	50 ±0.3 mm	100 ±0.3 mm	150 ±0.3 mm	200 ±0.3 mm
Nominal total resistance 1.)	2.5 kOhm	5 kOhm	7.5 kOhm	10 kOhm
Resistance tolerance 1.)	±30 %			
Independent linearity (best straight line) 1.)	±1 %			
Max. / recommended wiper current 1.)	1 mA (@ 40°C, 1 min in case of failure) / 1 µA			
Power rating @ 70°C (0W @ 105°C)	≤ 25 mW	≤ 50 mW	≤ 75 mW	≤ 100 mW

Mechanical Data, Environmental Conditions, Miscellaneous	MBX50	MBX100	MBX150	MBX200
Mechanical Stroke 1.)	62 ±0.3 mm	105.5 ±0.3 mm	154.5 ±0.3 mm	205 ±0.3 mm
Lifetime (90% el. effective stroke) 2.)	5 Mio. movements			
Bearing	Sleeve bearing			
Max. operational speed	0.5 m/s			
Starting force @ ambient temperature 1.) 2.)	< 1 N			
Operating temperature range	-15 °C up to +70 °C			
Storage temperature range	-30 °C up to +85 °C			
Protection grade (IEC60529)	IP00			
Vibration (IEC 68-2-6, Test Fc)	10 g (55..2000 Hz, 0.75mm, 12h)			
Shock (IEC 68-2-27, Test Ea)	50 g, (Half sine, 11 ms (18x))			
Housing length	105 ±0.3 mm	150 ±0.3 mm	200 ±0.3 mm	250 ±0.3 mm
Mass ca.	16 g	21 g	27 g	33 g
Fastening parts (not included in delivery)	Screws M3 ISO7380			
Material groove / slider	Aluminium / engineering plastic			
Connection type	Single leads AWG22 ca. 175 mm			

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: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>				
<b>Series:</b>	<b>MBX</b>				
<b>Effective electrical travel (<math>\pm 0.3</math> mm):</b> <i>Option 50 mm</i>		50	<i>R2,5K</i>		
<b>100 mm</b>		<b>100</b>	<b>R5K</b>		
<b>150 mm</b>		<b>150</b>	<b>R7,5K</b>		
<b>200 mm</b>		<b>200</b>	<b>R10K</b>		
<b>Nominal total resistance:</b> <b>Depends on electrical travel</b>			<b>see above</b>		
<b>Resistance tolerance:</b> <b><math>\pm 30\%</math></b>				<b>W30%</b>	
<b>Tolerance independent linearity:</b> <b><math>\leq \pm 1\%</math></b>					<b>L1%</b>
<b>Electrical connection:</b> <b>Single leads (standard length 175 mm)</b> <i>Option leads length in m</i>					<b>E0,175</b> <i>Ex,xx</i>

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

For example:

- Special electrical effective strokes like 300 mm
- Special mechanical modification of the aluminium groove (special mounting holes or groove length)
- Customized lead assemblies with/without connector
- Special aluminium groove to fit in the customer application
- Modifications of the wiper carrier part

## General handling guidelines:

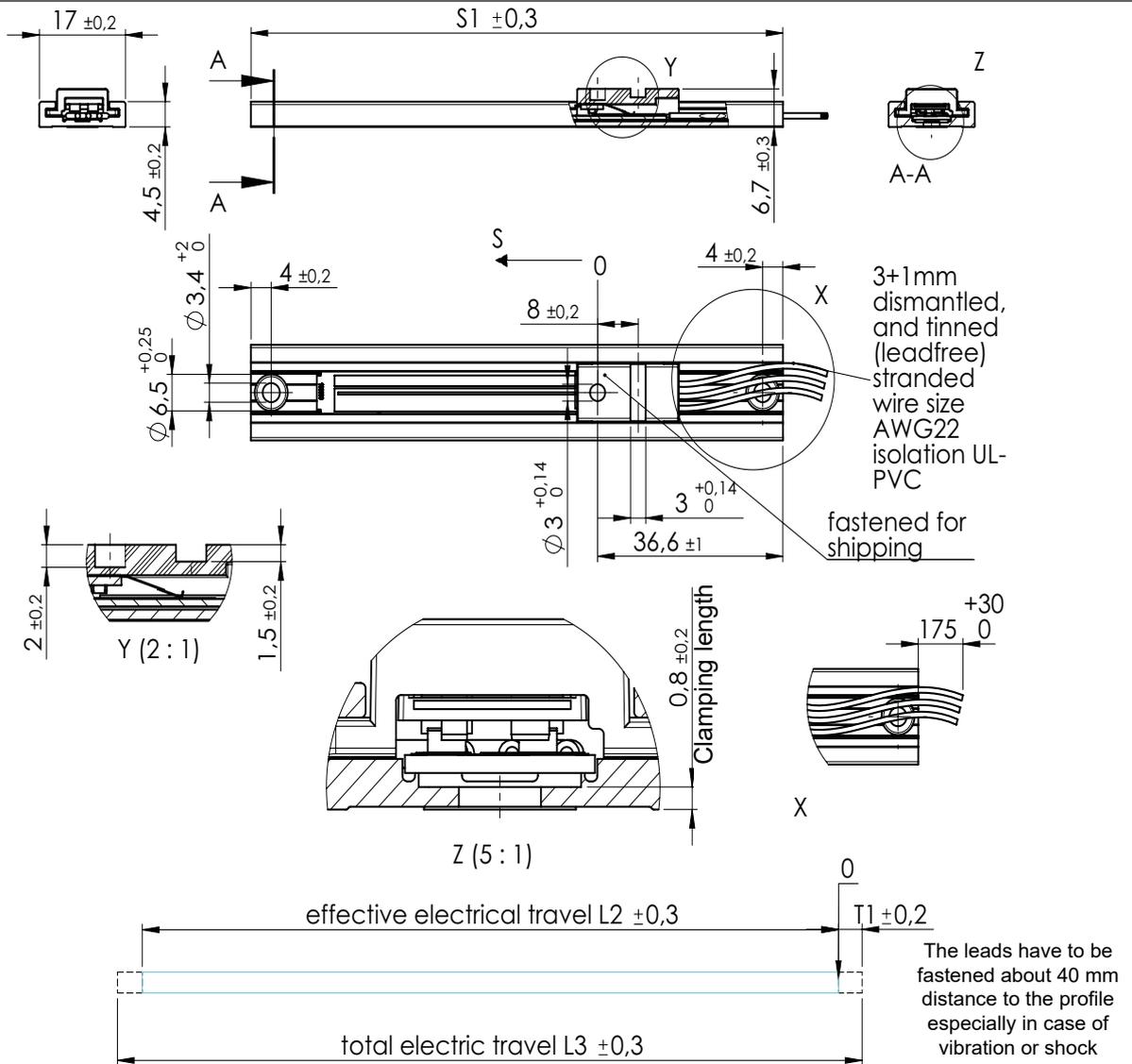
To ensure proper potentiometer function, requirements as listed below have to be maintained

- "Installation requirements" and "general operating data" to be respected at storage and system integration
- Slider operation permissible within effective electrical travel only at handling, system integration and sensor operation. Slider operation beyond the limits of total electrical travel is not permissible (travel definitions see IEC60393-1 chapt. 4.4.5 and 4.4.6)
- Removing the product from package when processing by gripper (robot) or protective glove (manual handling) only. Fingerprints on product are not permissible.
- Mechanical damage (Scratches, dents, deflections etc.) on resistance and on wiper element is not permissible
- Storage of product packed in package as delivered permissible only. Open storage (unpacked) is not permissible.
- Non system defilement (e.g. wear of actuator etc.) on resistance- and on wiper element is not permissible (see installation requirements and technical data also).
- Any kind of cleaning treatment on product is not permissible
- Evaporation of silicon in the environment is not permissible

## Installation requirements:

- Sealed housing IP6X / IPX6S / IPX7S acc. IEC 60529  
IPX9K acc. DIN 40050 part 9
- Air moisture 25 - 75% RH
- Grease (in the environment) Klüber Isoflex Topas NB52, Klüber Isoflex Super LDS18
- Oil none

### Drawing



Rev.	Title	S1	L2	L3	T1	Total Resistance	ind. Lin.
00	MBX 50	105	50	62	3,15	2,5kOhm $\pm 30\%$	$\leq \pm 1\%$
00	MBX 100	150	100	105,5	3,15	5kOhm $\pm 30\%$	$\leq \pm 1\%$
00	MBX 150	200	150	154,5	3,15	7,5kOhm $\pm 30\%$	$\leq \pm 1\%$
00	MBX 200	250	200	205	3,15	10kOhm $\pm 30\%$	$\leq \pm 1\%$

