

# Data Sheet for Linear Sensors

## Incremental Linear Transducer

## Series MSV



An accurate glass scale is mounted on the MS50 series pushrod. Inside the sensor housing, the glass scale passes an electronic board with an optical detector, which generates counting pulses in TTL or line driver level up to 5  $\mu$ m resolution.

- Probe with spring return,
- Measuring length 30 mm or 50 mm
- Resolution 5  $\mu$ m or 10  $\mu$ m
- Output signals Linedriver or TTL

Electrical Data	Line Driver (LD)	Voltage Output (TTL)
Output channels	A, /A, B, /B	A, B
Effective electrical travel 1.)	30 mm, 50 mm	
Theoretical resolution 1.)	5 $\mu$ m, 10 $\mu$ m	
Output frequency	$\leq 150$ kHz	$\leq 100$ kHz
Supply voltage	5 V $\pm 5$ %	
Power consumption (no load)	$\geq 80$ mA	$\geq 40$ mA
Output voltage high	RS422 @ 20 mA load	> 3.5 V @ $\leq 10$ mA load
Output voltage low	RS422 @ 20 mA load	< 0.4 V @ $\leq 10$ mA load
Differential output voltage	3.8 V	--

Mechanical Data, Environmental Conditions	Line Driver (LD)	Voltage Output (TTL)
Mechanical stroke 1.)	30 mm, 50 mm	
Lifetime (90% effective electrical travel) 2.)	4 mio. movements	
Max. operational speed	< 2 m/s	
Max. acceleration	$\leq 10$ m/s <sup>2</sup>	
Operational force @ RT 1.) 2.)	0.8 $\pm 0.2$ N	
Operational temperature	0 °C up to +60 °C	
Storage temperature	0 °C up to +60 °C	
Protection grade (IEC60529)	IP40	
Vibration (IEC 68-2-6, Test Fc)	10 g (2..2000 Hz, 0.75mm)	
Shock (IEC 68-2-27, Test Ea)	30 g, halfsine, 2 ms (18x)	
Housing length	138 mm (for 50 mm version) / 118 mm (for 30 mm version)	
Max. permissible force vertical to the carriage movement	$\leq 0.2$ N	
Mass	ca. 250 g	
Mounting parts (included in delivery)	None	
Probe tip	Included in delivery	
Material housing	Painted sheet steel	
Material measuring rod	Float glass with grating	
Connection type	7 pole connector or cable 1 m	4 pole connector or cable 1 m
Sensor mounting method	Screws	

1.) According IEC 60393

2.) Determined by climatic conditions according to IEC 68-1, para. 5.3.1 without load collectives

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## Order Code

Description	Selection: <b>standard=black/bold</b> , possible <i>options=grey/italic</i>					
<b>Series:</b>	<b>MSV</b>					
<b>Effective electrical travel:</b>						
30 mm		<b>30</b>				
50 mm		<b>50</b>				
<b>Spring return:</b>						
<b>With spring return as probe tip</b>				<b>R</b>		
<i>Option without spring return</i>				-		
<b>Resolution:</b>						
5 µm					<b>5</b>	
10 µm					<b>10</b>	
<b>Output electronics:</b>						
TTL						<b>TTL</b>
Line Driver						<b>LD</b>
<b>Electrical connection:</b>						
Connector						<b>S</b>
Cable 1 m						<b>K</b>
<i>Option cable length in m (xx)</i>						<i>Kxx</i>

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

For example:

- Further output electronics like push/pull, Open Collector
- Cable assemblies with and without connector
- Special axis length and much more

### Accessories (not included in delivery):

- Mating connector for TTL (STEM9) #111558: M9 thread, 4-pole, IP67, straight, not shielded (STE M9 4POL IP67 G NS)
- Mating connector for LD (STEM9) #111351: M9 thread, 7-pole, IP40, straight, not shielded (STE M9 7POL IP40 G NS)

More connectors with and without cable on request. Take a look at data sheet STEM9 for connector without cable or STKM9 for connector with cable.

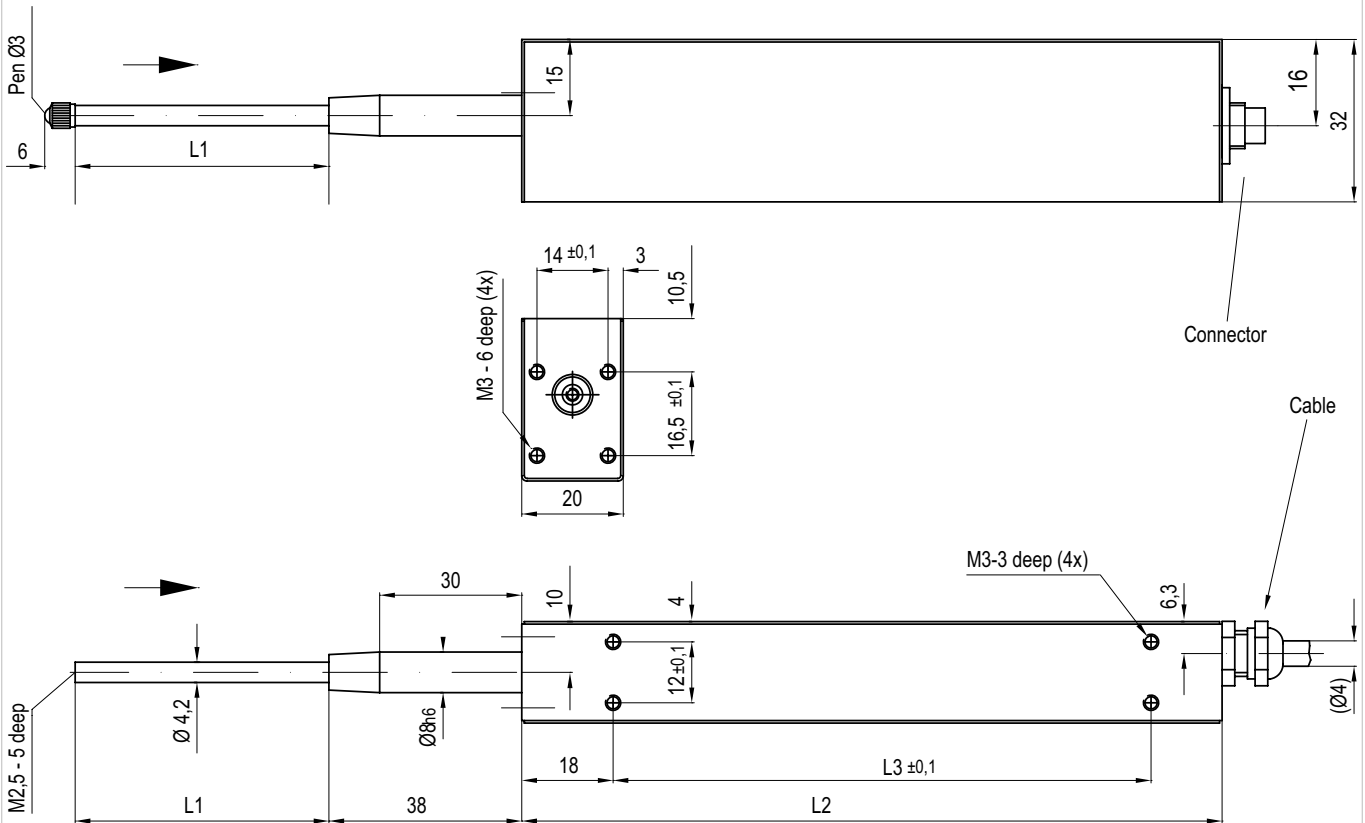
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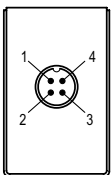
## Drawing



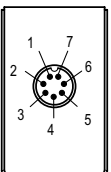
Dimensions	MSV 50 mm stroke	MSV 30 mm stroke
L1 stroke	50	30
L2 Housing length	138	118
L3 Mounting holes	106	86

Dimensions in mm

Pinout 4 pole TTL output



Pinout 7 pole Line Driver output



Connection			Signal profile when pushing the push rod
TTL			
PIN	Wire color	Function	
1	White	Channel A	
2	Yellow	Channel B	
3	Brown	Supply +5 V	
4	Green	Supply 0 V	
Line Driver			
PIN	Wire color	Function	
1	White	Channel A	
2	Yellow	Channel B	
3	Brown	Supply +5 V	
4	Green	Supply 0 V	
5	Grey	Channel /A	
6	Pink	Channel /B	
7	Not used	Not used	
Shield			Intern with 0 V