





# Linear measuring technology

<b>Incremental magnetic measurement system sensor head, magnetic band</b>	<b>Limes LI50 / B2</b>	<b>Resolution min. 5 µm</b>
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Accessories / Displays	Order no.
<b>Codix 560, preset counter</b> <b>6-digit</b>  <ul style="list-style-type: none"> <li>- Counter, tachometer, time counter and position display in one device</li> <li>- Scalable display</li> <li>- Readable via RS232/485 interface or configurable via MODBUS or CR/LF protocol</li> </ul>	<b>6.560.010.XXX</b> <a href="#">Details s. datasheet &gt;</a>
<b>571T touch, multifunction preset counters</b> <b>8-digit</b>  <ul style="list-style-type: none"> <li>- Measuring function for RPM, speed, speed from elapsed time, machine cycle time, throughput time (reciprocal rotary speed), as well as numerous count functions such as position display</li> <li>- Fast counting input (250 kHz/HTL, 1 MHz/RS422)</li> <li>- 4 switching outputs as limit values (response time &lt; 1 ms)</li> <li>- Scalable analog output (response time &lt; 150 ms), resolution 16 bit</li> <li>- Serial interface RS232 or RS485 for reading in and out the data</li> </ul>	<b>6.571T.01X.XXX</b> <a href="#">Details s. datasheet &gt;</a>

Further Kübler accessories can be found at: [kuebler.com/accessories](http://kuebler.com/accessories)  
 Further Kübler cables and connectors can be found at: [kuebler.com/connection-technology](http://kuebler.com/connection-technology)

## Technical data

Mechanical characteristics sensor head LI50		
<b>Working temperature</b>	-20 °C ... +80 °C [-4 °F ... +176 °F]	
<b>Storage temperature</b>	-20 °C ... +80 °C [-4 °F ... +176 °F]	
<b>Shock resistance</b>	5000 m/s <sup>2</sup> , 1 ms	
<b>Vibration resistance</b>	300 m/s <sup>2</sup> , 10 ... 2000 Hz	
<b>Protection</b>	model 1	IP67 acc. to EN 60529
	model 2	IP68 / IP69k acc. to EN 60529 and humidity tested acc. to EN 60068-3-38, EN 60068-3-78
<b>Housing</b>	aluminum	
<b>Cable</b>	2 m [6.56'] PUR 8 x 0.14 mm <sup>2</sup> [AWG25] shielded, may be used in trailing cable installations	
<b>Status LED</b>	green	pulse-index
	red	error; speed too high or magnetic fields too weak (at 8.LI50.XXXX.X050 and 8.LI50.XXXX.X250)

Electrical characteristics sensor head LI50		
<b>Output circuit</b>	Push-pull	RS422
<b>Supply voltage</b>	4,8 ... 30 V DC	4,8 ... 26 V DC
<b>Permissible load / channel</b>	±20 mA	120 Ω
<b>Max. cable length</b>	max. 30 m [98.43']	RS422 standard
<b>Power consumption (no load)</b>	typ. 25 mA, max. 60 mA	
<b>Short circuit proof</b> <sup>1)</sup>	yes	yes <sup>2)</sup>
<b>Min. pulse edge interval</b>	1 µs (corresponds to 4 µs/cycle see signal figures below)	
<b>Output signal</b>	A, $\bar{A}$ , B, $\bar{B}$ , 0, $\bar{0}$	
<b>Reference signal</b>	index periodical <sup>3)</sup>	

Permissible alignment tolerance (see draft „mounting tolerances“)	
<b>Gap sensor head / magnetic band</b>	0,1 ... 2,0 mm (recommended 1,0 mm)
<b>Offset</b>	max. ±1 mm
<b>Tilting</b>	max. 3°
<b>Torsion</b>	max. 3°

Magnetic band Limes B2	
<b>Pole gap</b>	5 mm from pole to pole
<b>Dimensions</b>	width 10 mm thickness 1,97 mm incl. masking tape
<b>Temperature coefficient</b>	16 x 10 <sup>-6</sup> /K
<b>Working temperature</b>	-20 °C ... +80 °C [-4 °F ... +176 °F] <sup>4)</sup>
<b>Mounting</b>	adhesive joint
<b>Measuring</b>	0.1 m (to receive an optimal result of measurement, the magnetic band should be ca. 0.1 m longer than the desired measuring length)
<b>Bending radius</b>	≥ 150 mm (when mounted solely with adhesive tape)
<b>Material metal tape</b>	precision steel strip 1.4310 acc. to EN 10088-3

Accuracy	
<b>Magnetic band</b>	± (0,025 + 0,02 x L) mm – L in [m], up to L <sub>max</sub> = 70 m
<b>Sensor head</b>	± 0,025 mm interpolation error accuracy: at T = 20 °C and gap sensor head/magnetic band 1 mm
<b>Repeat accuracy</b>	±1 increment
<b>Resolution and speed</b> <sup>5)</sup>	25 µm (quadruple), max. 16,25 m/s 5 µm (quadruple), max. 3,25 m/s

Approvals	
<b>CE compliant</b> in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

- 1) If supply voltage correctly applied.
- 2) Only one channel allowed to be shorted-out.  
If +V = 5 V, short-circuit to channel, 0 V, or +V is permitted.  
If +V = 5 ... 30 V, short-circuit to channel or 0 V is permitted.
- 3) At every pole change. The signal is generated by the sensor.
- 4) Magnetic band (ends) attached by screwing, clamping or equivalent.
- 5) At the listed rotational speed the min. pulse edge interval is 1 µs, this corresponds to 250 kHz.  
For the max. rotational speed range a counter with a count input frequency of not less than 250 kHz should be provided.

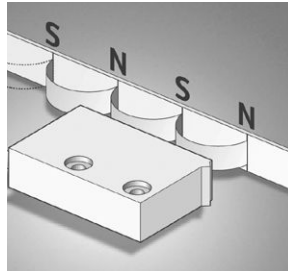
# Linear measuring technology

## Incremental magnetic measurement system sensor head, magnetic band

Limes LI50 / B2

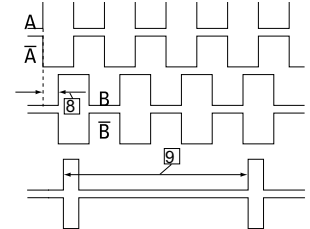
Resolution min. 5 µm

### Function principle



### Signal figures

- 8 Pulse edge interval: pay attention to the instructions in the technical data
- 9 Periodic index signal every 5 mm [0.20"]; the logical assignment A, B and 0-Signal can change



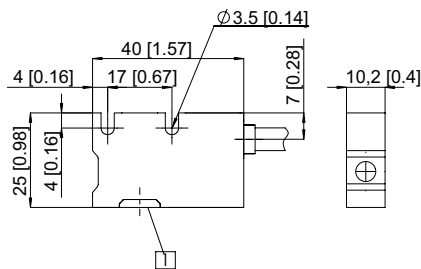
### Terminal assignment

Output circuit	Type of connection	Cable	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
1, 2	1, A	Signal:		0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
		Core color:		WH	BN	GN	YE	GY	PK	BU	RD	shield <sup>1)</sup>

### Dimensions

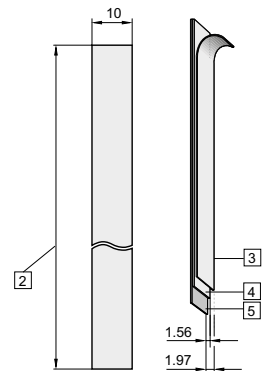
Dimensions in mm [inch]

#### Sensor head Limes LI50



1 Active measuring area

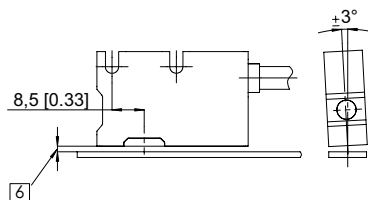
#### Magnetic band Limes B2



- 2 Length L, max. 70 m
- 3 Masking tape
- 4 Magnetic band
- 5 Carrier band

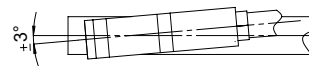
### Permissible mounting tolerances

#### Tilting

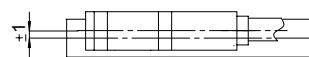


6 Distance sensor head / magnetic band:  
0.1 ... 2.0 mm (recommended 1 mm)

#### Torsion



#### Offset



1) PH = Shield is attached to connector housing.