

# Linear Measuring Technology

**Magnetic measurement system**

**Limes LI20 / B1**

**Resolution min. 10 µm**



The incremental magnetic linear measurement system LI20 / B1 - made up of the sensor head LI20 and of the magnetic band B1 - reaches a resolution up to 10 µm with a maximum distance of 1 mm between the sensor and the band.



-20° +80°  
Temperature



High IP value



Shock / vibration resistant



Reverse polarity protection

## Robust

- Sturdy housing with IP67 protection
- Non-contact measuring technology – thus no wear
- Masking tape protecting the magnetic band

## Easy installation

- Simple glued assembly of the magnetic band
- Large mounting tolerances
- Warning signals via LED if the magnetic field is too weak

## Order code

**Magnetic sensor Limes LI20**

**8.LI20 . 1 1 X 1 . 2 XXX**  
Type      a   b   c   d   e   f

**a** Model  
1 = Standard

**c** Output circuit / Power supply  
1 = RS422 / 4.8 ... 26 V DC  
2 = Push-Pull / 4.8 ... 30 V DC

**e** Reference signal  
2 = index periodic

Standard stock types:

8.LI20.1111.2005

8.LI20.1111.2020

8.LI20.1111.2050

8.LI20.1121.2005

8.LI20.1121.2020

8.LI20.1121.2050

**b** Pulse edge interval  
1 = Standard

**d** Type of connection  
1 = cable PUR, 2 m length

**f** Code (resolution)<sup>1)</sup>  
005 = 100 µm  
020 = 25 µm  
050 = 10 µm

## Order code

**Magnetic band Limes B1**

**8.B1 . 10 . 010 . XXXX**  
Type      a      b

**a** Width  
10 = 10 mm

**b** Length  
0010 = 1 m      0060 = 6 m  
0020 = 2 m      0100 = 10 m  
0040 = 4 m      0200 = 20 m  
0050 = 5 m      Other lengths up to 50 m on request

Standard stock types:

8.B1.10.010.0010

8.B1.10.010.0020

8.B1.10.010.0050

8.B1.10.010.0100

<sup>1)</sup> With quadruple evaluation (only connected with magnetic band Limes B1)

<b>Magnetic measurement system</b>	<b>Limes LI20 / B1</b>	<b>Resolution min. 10 µm</b>
------------------------------------	------------------------	------------------------------

<b>Display Type 572 for LIMES LI20</b>		
--	--	--



Counter series for demanding applications, with two individually scalable encoder inputs. HTL or TTL in each case A, A, B, B for count frequencies up to 1 MHz per channel. Operating modes can be selected for position or event counter, total counter, difference counter, cut-to-length display, diameter calculator, batch counter and more.

- 2 separate freely scalable count inputs - HTL or TTL; also with inverted inputs
- Max. input frequency 1 MHz/ channel (at TTL-input)
- 4 freely programmable fast solid-state outputs, each with 350 mA output current
- Step or tracking preset
- AC and DC supply voltage
- Can be used as a counter or position display with limit values
- Monitoring function, where 2 values are monitored or calculated with respect to each other
- 4 fast programmable inputs with various functions such as reset, gate, display memory, reference input or switching between the display values.
- Optional scalable analogue output 0/4 ... 20 mA, +/-10 V or 0 ... 10 V
- 2 auxiliary power supplies for sensors: 5.2 V DC and 24 V DC
- Standard interface RS 232

**Position display, 6-digit** with 4 fast switch outputs and serial interface:

**6.572.0116.D05**

with 4 fast switch outputs and serial interface and scalable analogue output

**6.572.0116.D95**

**Position display, 8-digit** with 4 fast switch outputs and serial interface:

**6.572.0118.D05**

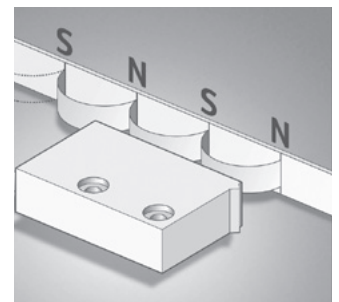
with 4 fast switch outputs and serial interface and scalable analogue output

**6.572.0118.D95**

Technical data – Magnetic sensor Limes LI20		
<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 Ohm
<b>Max cable length</b>	max. 30 m	RS422 Standard
<b>Power consumption (no load)</b>	typ. 25 mA, max. 60 mA	
<b>Short circuit proof <sup>1)</sup></b>	yes	yes <sup>2)</sup>
<b>Min. pulse edge interval</b>	1 µs (edge interval) corresponds to 4 ms/cycle (see signal figures below)	
<b>Output signal</b>	A, $\bar{A}$ , B, $\bar{B}$ , I, $\bar{I}$	
<b>Reference signal</b>	index periodical	
<b>Accuracy</b>		
<b>System Accuracy:</b>	typ. +200 µm, max. ± (0.04 + 0.04 x L) mm, (L in [m], up to L = 50 m, at T = 20°C)	
<b>Repeat accuracy</b>	±1 increment	
<b>Resolution and speed <sup>3)</sup></b>	100 µm (quadruple), max. 25 m/s 25 µm (quadruple), max. 4 m/s 10 µm (quadruple), max. 6.5 m/s	
<b>Permissible alignment tolerance</b> (see draft „Mounting tolerances“)		
<b>Gap sensor / magnetic band</b>	0.1 ... 1.0 mm (recommended 0.4 mm)	
<b>Offset</b>	max. ±1 mm	
<b>Tilting</b>	max. 3°	
<b>Torsion</b>	max. 3°	
<b>General data</b>		
<b>Working temperature</b>	-20°C ... +80°C	
<b>Shock resistance</b>	500 g/1 ms	
<b>Vibration strength</b>	30 g/10 ... 2000 Hz	
<b>Protection</b>	IP67 acc. to DIN 60 529 (housing)	
<b>Humidity</b>	100 %, condensation possible	
<b>Housing</b>	Zinc die-cast	
<b>Cable</b>	2 m long, PUR 8 x 0.14 mm <sup>2</sup> , 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 (8.LI20.XXXX.X020 and 8.LI20.XXXX.X050)
<b>CE compliant acc. to</b>	EN 61 000-6-2, EN 61 000-6-4 and EN 61 000-6-3	
<b>RoHS compliant acc. to</b>	EG guideline 2002/95/EG	

Technical data – Magnetic band Limes B1	
<b>Pole gap</b>	2 mm from pole to pole
<b>Dimensions</b>	width: 10 mm, Thickness: 1.7 mm incl. masking tape
<b>Temperature coefficient</b>	(11 ±1) x 10 <sup>-6</sup> /K
<b>Working temperature</b>	-20°C ... +80°C
<b>Storage temperature</b>	-40°C ... +80°C
<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>	≥ 50 mm

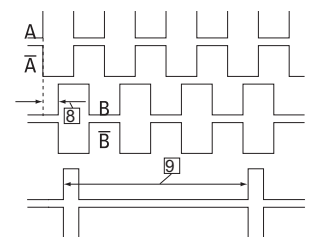
### Function principle



### Signal figures

For a rotation of the magnetic ring in the CW direction (see the Mounting Tolerances drawing)

- ⑨ Periodic index signal (every 2 mm); the logical assignment A, B and I-Signal can change
- ⑧ Pulse edge interval: Pay attention to the instructions in the technical data



- 1) If supply voltage correctly applied
- 2) Only one channel allowed to be shorted-out  
If  $U_B = 5$  V, short-circuit to channel, 0 V, or + $U_B$  is permitted  
If  $U_B = 5 \dots 30$  V, short-circuit to channel or 0 V is permitted
- 3) 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

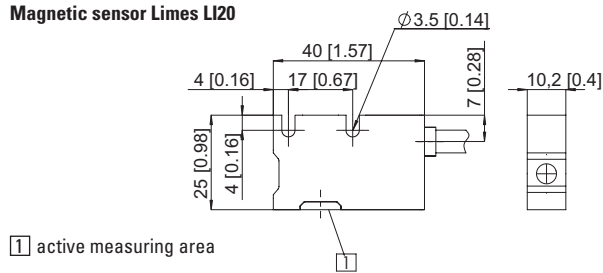
<b>Magnetic measurement system</b>	<b>Limes LI20 / B1</b>	<b>Resolution min. 10 µm</b>
------------------------------------	------------------------	------------------------------

## Terminal assignment

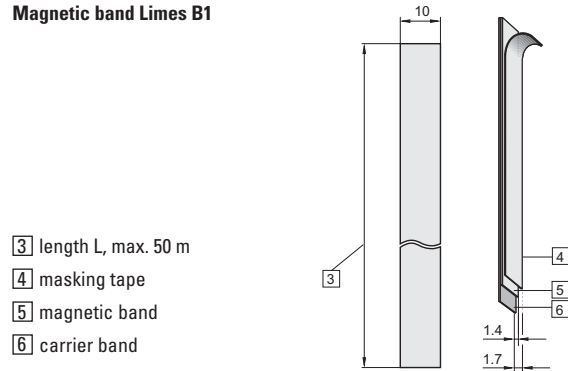
Signal	0 V	U <sub>B</sub>	A	$\bar{A}$	B	$\bar{B}$	I	$\bar{T}$	shield
Cable colour	WH	BN	GN	YE	GY	PK	BU	RD	shield is on the housing

## Dimensions

### Magnetic sensor Limes LI20

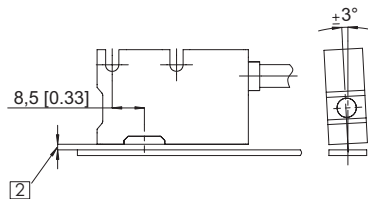


### Magnetic band Limes B1

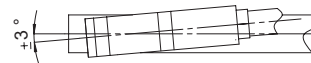


## Permissible Mounting tolerances

### Tilting



### Torsion



### Offset

