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.

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

b *Pulse edge interval*
1 = Standard

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

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

e *Reference signal*
2 = index periodic

f *Code (resolution)* [1)]
005 = 100 µm
020 = 25 µm
050 = 10 µm

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

Order code Magnetic band Limes B1

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

a *Width*
10 = 10 mm

b *Length*
0010 = 1 m
0020 = 2 m
0040 = 4 m
0050 = 5 m
0060 = 6 m
0100 = 10 m
0200 = 20 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

1) With quadruple evaluation (only connected with magnetic band Limes B1)

Magnetic measurement system | Limes LI20 / B1 | Resolution min. 10 µm

Display Type 572 for LIMES LI20

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

Output circuit	Push-Pull	RS422
Supply voltage	4.8 ... 30 V DC	4.8 ... 26 V DC
Permissible load / channel	±20 mA	120 Ω
Max cable length	max. 30 m	RS422 Standard
Power consumption (no load)	typ. 25 mA, max. 60 mA	
Short circuit proof [1]	yes	yes [2]
Min. pulse edge interval	1 µs (edge interval) corresponds to 4 ms/cycle (see signal figures below)	
Output signal	A, $\overline{A}$, B, $\overline{B}$, I, $\overline{I}$	
Reference signal	index periodical	

Accuracy

System Accuracy:	typ. +200 µm, max. ± (0.04 + 0.04 x L) mm, (L in [m], up to L = 50 m, at T = 20°C)
Repeat accuracy	±1 increment
Resolution and speed [3]	100 µm (quadruple), max. 25 m/s 25 µm (quadruple), max. 4 m/s 10 µm (quadruple), max. 6.5 m/s

Permissible alignment tolerance (see draft „Mounting tolerances“)

Gap sensor / magnetic band	0.1 ... 1.0 mm (recommended 0.4 mm)
Offset	max. ±1 mm
Tilting	max. 3°
Torsion	max. 3°

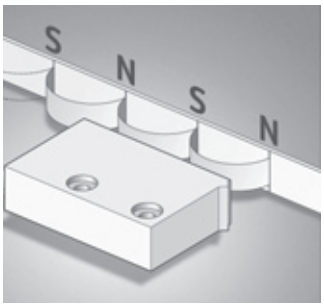
General data

Working temperature		-20°C ... +80°C
Shock resistance		500 g/1 ms
Vibration strength		30 g/10 ... 2000 Hz
Protection		IP67 acc. to DIN 60 529 (housing)
Housing		Zinc die-cast
Cable		2 m long, PUR 8 x 0.14 mm², shielded, may be used in trailing cable installations
Status LED	Green	pulse-index
	Red	Error; Speed too high or magnetic fields too weak (8.LI20.XXXX.X020 and 8.LI20.XXXX.X050)
CE compliant acc. to		EN 61 000-6-2, EN 61 000-6-4 and EN 61 000-6-3
RoHS compliant acc. to		EG guideline 2002/95/EG

Technical data – Magnetic band Limes B1

Pole gap	2 mm from pole to pole
Dimensions	width: 10 mm, Thickness: 1.7 mm incl. masking tape
Temperature coefficient	(11 ±1) x 10^{-6}/K
Working temperature	-20°C ... +80°C
Storage temperature	-40°C ... +80°C
Mounting	adhesive joint
Measuring	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)
Bending radius	≥ 50 mm

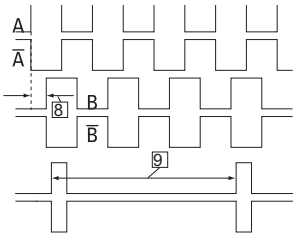
Function principle



Signal figures

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 ... 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 then 250 kHz should be provided.

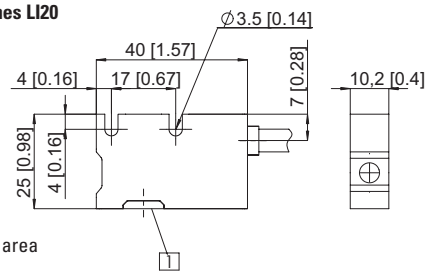
Magnetic measurement system | Limes LI20 / B1 | Resolution min. 10 µm

Terminal assignment

Signal	0 V GND	U_B	A	$\overline{A}$	B	$\overline{B}$	I	$\overline{I}$	shield
Cable colour	WH	BN	GN	YE	GY	PK	BU	RD	shield is on the housing

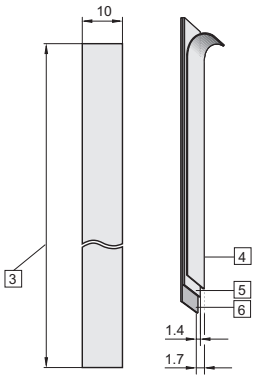
Dimensions

Magnetic sensor Limes LI20



1 active measuring area

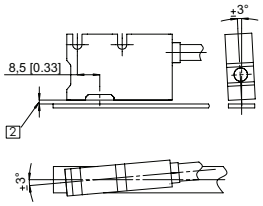
Magnetic band Limes B1



3 length L, max. 50 m
4 masking tape
5 magnetic band
6 carrier band

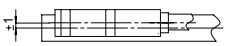
Permissible Mounting tolerances

Tilting



Torsion

Offset



2 Distance Sensor / Magnetic band:
0.1 ... 1.0 mm (0.4 mm recommended)