Incremental magnetic measurement system Sensor head, magnetic band | Limes LI20 / B1 | Resolution min. 10 µm

The non-contact 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.

NEW: Version for outdoor use with extremely sturdy aluminium housing and stainless-steel cover, wide temperature range as well as a UV-resistant cable. IP68 / IP69k protection, special encapsulation technology and tested resistance to cyclic humidity and damp heat offer the highest levels of reliability, even in exposed outdoor use.

Temperature range | High protection level | Shock / vibration resistant | Reverse polarity protection

Robust

- Sturdy housing with IP67 protection.
  Option: special housing for maximum resistance against condensation (IP68 / IP69k, resistance to cyclic humidity acc. to EN 60068-3-38 as well as damp heat acc. to EN 60068-3-78)
- Non-contact measuring system – free from wear
- Masking tape protecting the magnetic band

Easy installation

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

Order code Magnetic sensor Limes LI20

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

a *Model*
1 = IP67, standard
2 = IP68 / IP69k and humidity tested acc. to EN 60068-3-38, EN 60068-3-78

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 [6.56'] length

e *Reference signal*
2 = index periodic

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

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

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 B2)

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Accessories / Display Type 572		Order No.
Position display, 6-digit	with 4 fast switch outputs and serial interface	**6.572.0116.D05**
	with 4 fast switch outputs, 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, serial interface and scalable analogue output	**6.572.0118.D95**

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.

Technical data

Magnetic sensor Limes LI20

Output circuit	Push-Pull	RS422
Power supply	4.8 ... 30 V DC	4.8 ... 26 V DC
Permissible load / channel	±20 mA	120 Ω
Max. cable length	max. 30 m [98.43']	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 (corresponds to 4 µs/cycle see signal figures below)	
Output signal	A, $\overline{A}$, B, $\overline{B}$, 0, $\overline{0}$	
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 [+68°F]
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°

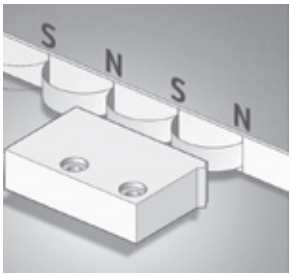
General data

Working temperature		-20°C ... +80°C [-4°F ... +176°F]
Shock resistance		500 g/1 ms
Vibration strength		30 g/10 ... 2000 Hz
Protection	Model 1 Model 2	IP67 acc. to DIN 60529 IP68 / IP69k acc. to DIN 60529 and humidity tested acc. to EN 60068-3-38, EN 60068-3-78
Housing		Aluminium
Cable		2 m [6.56'] long, PUR 8 x 0.14 mm² [AWG25] shielded, may be used in trailing cable installations
Status LED	Green Red	pulse-index Error; Speed too high or magnetic fields too weak (8.LI20.XXXX.X020 and 8.LI20.XXXX.X050)
CE compliant acc. to		EMC guideline 2004/108/EC
RoHS compliant acc. to		guideline 2002/95/EC

Magnetic band Limes B1

Pole gap		2 mm from pole to pole
Dimensions	width thickness	10 mm 1.97 mm incl. masking tape
Temperature coefficient		16 x 10^{-6}/K
Working temperature		-20°C ... +80°C [-4°F ... +176°F] -20°C ... +65°C [-4°F ... +144°F] (when mounted solely with adhesive tape)
Storage temperature		-20°C ... +80°C [-4°F ... +176°F]
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		≥ 150 mm (when mounted solely with adhesive tape)

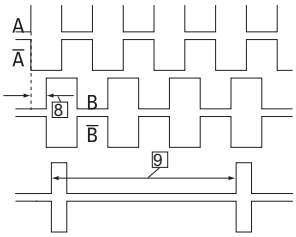
Function principle



Signal figures

8 Pulse edge interval:
Pay attention to the instructions in the technical data

9 Periodic index signal every 2 mm [0.08"]; the logical assignment A, B and 0-Signal can change



1) If power supply 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 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.

Incremental magnetic measurement system
Sensor head, magnetic band

Limes LI20 / B1

Resolution min. 10 µm

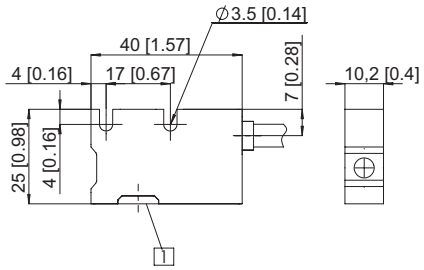
Terminal assignment

Output circuit	Type of connection	Cable									
1, 2	1	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
		Cable colour:	WH	BN	GN	YE	GY	PK	BU	RD	shield [1]

Dimensions

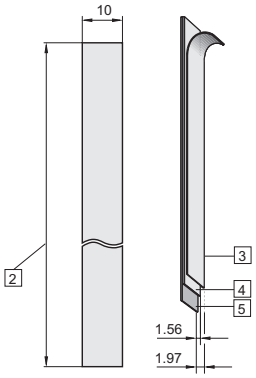
Dimensions in mm [inch]

Magnetic sensor Limes LI20



1 active measuring area

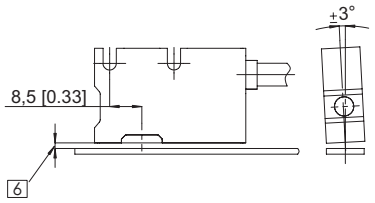
Magnetic band Limes B1



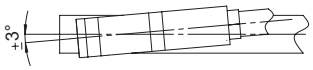
2 length L, max. 50 m
3 masking tape
4 magnetic band
5 carrier band

Permissible mounting tolerances

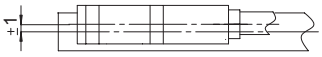
Tilting



Torsion



Offset



6 distance sensor / magnetic band:
0.1 ... 1.0 mm (recommended 0.4 mm)

1) Shield is attached to connector housing