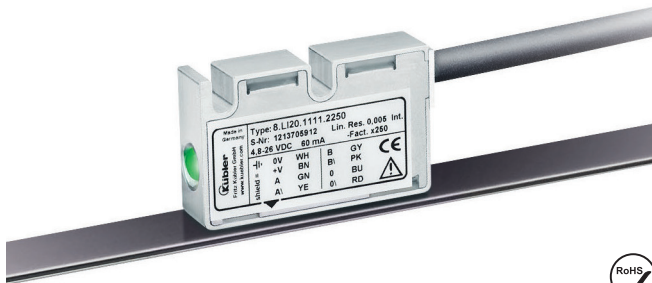


Linear measuring technology

Incremental magnetic measurement system sensor head, magnetic band	Limes LI20 / B1	Resolution min. 10 µm
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The non-contact incremental magnetic linear measurement system Limes 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.

For outdoor use with extremely sturdy aluminum 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 sensor head Limes LI20

8.LI20.X1XX.2XXX
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 / supply voltage

- 1 = RS422 / 4.8 ... 26 V DC
- 2 = Push-pull / 4.8 ... 30 V DC

d Type of connection

- 1 = cable, 2 m [6.56'] PUR
- A = cable, special length PUR *)

*) Available special lengths ¹⁾ (connection type A):
3, 5, 8, 10, 15, 20 m [9.84, 16.40, 26.25, 32.80, 49.21, 65.62']
order code expansion .XXXX = length in dm
ex.: 8.LI20.111A.2005.0030 (for cable length 3 m)

e Reference signal

- 2 = index periodic

f Code (resolution)²⁾

- 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
- 0020 = 2 m
- 0040 = 4 m
- 0050 = 5 m
- 0060 = 6 m
- 0100 = 10 m
- 0200 = 20 m

Optional on request

- other lengths up to 70 m

1) Cable lengths >10 m only possible with supply voltage >10 V.

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

Linear measuring technology

Incremental magnetic measurement system sensor head, magnetic band		Limes LI20 / B1	Resolution min. 10 µm
Accessories / display type 572			Order no.
Position display, 8-digit	with 4 fast switch outputs and serial interface		6.572.0116.D05
	with 4 fast switch outputs, serial interface and scalable analog 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 analog 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

Mechanical characteristics sensor head LI20		
Working temperature	-20 °C ... +80 °C [-4 °F ... +176 °F]	
Storage temperature	-20 °C ... +80 °C [-4 °F ... +176 °F]	
Shock resistance	5000 m/s ² , 1 ms	
Vibration resistance	300 m/s ² , 10 ... 2000 Hz	
Protection	model 1 model 2	IP67 acc. to EN 60529 IP68 / IP69k acc. to EN 60529 and humidity tested acc. to EN 60068-3-38, EN 60068-3-78
Housing	aluminum	
Cable	2 m [6.56'] PUR 8 x 0.14 mm ² [AWG25] shielded, may be used in trailing cable installations	
Status LED	green red	pulse-index error; speed too high or magnetic fields too weak (at 8.LI20.XXXX.X020 and 8.LI20.XXXX.X050)

Electrical characteristics sensor head 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 [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, \bar{A} , B, \bar{B} , 0, $\bar{0}$	
Reference signal	index periodical ³⁾	

Magnetic band Limes B1		
Pole gap	2 mm from pole to pole	
Dimensions	width	10 mm
	thickness	1,97 mm incl. masking tape
Temperature coefficient	16 x 10 ⁻⁶ /K	
Working temperature	-20 °C ... +80 °C [-4 °F ... +176 °F] ⁴⁾	
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)	
Material metal tape	precision steel strip 1.4310 acc. to EN 10088-3	

Accuracy	
Magnetic band	± (0,025 + 0,02 x L) mm – L in [m], up to L _{max} = 70 m
Sensor head	± 0,01 mm interpolation error accuracy: at T = 20 °C and gap sensor head/magnetic band 0,4 mm
Repeat accuracy	±1 increment
Resolution and speed ⁵⁾	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 head / magnetic band	0,1 ... 1,0 mm (recommended 0,4 mm)
Offset	max. ±1 mm
Tilting	max. 3°
Torsion	max. 3°

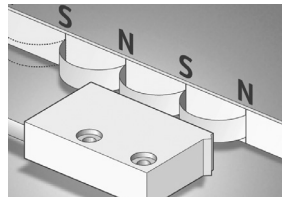
Approvals		
CE compliant in accordance with		
	EMC Directive	2014/30/EU
	RoHS Directive	2011/65/EU
UKCA compliant in accordance with		
	EMC Regulations	S.I. 2016/1091
	RoHS Regulations	S.I. 2012/3032

- 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

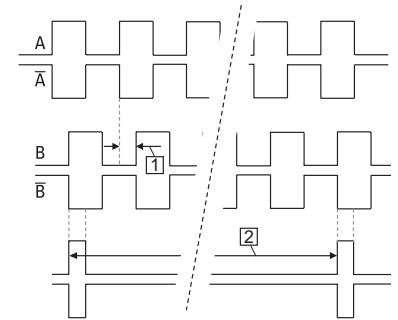
Incremental magnetic measurement system sensor head, magnetic band	Limes LI20 / B1	Resolution min. 10 µm
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Function principle



Signal figures

- 1 Pulse edge interval:
Pay attention to the instructions in the technical data
- 2 Periodic index signal every 2 mm [0.08"]; the logical assignment A, B and 0-signal can change



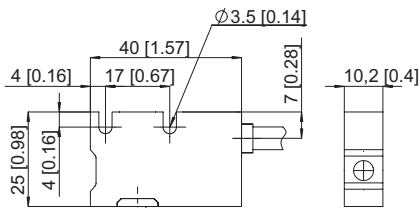
Terminal assignment

Output circuit	Type of connection	Cable									
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 ¹⁾

Dimensions

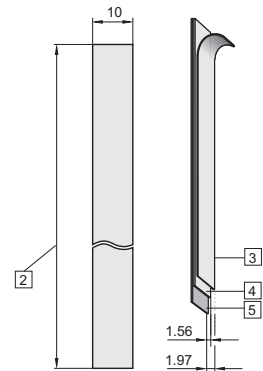
Dimensions in mm [inch]

Sensor head Limes LI20



1 Active measuring area

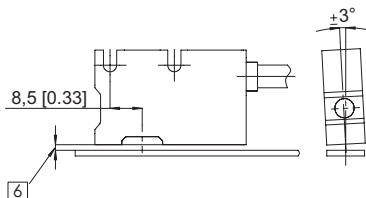
Magnetic band Limes B1



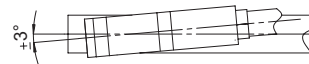
- 2 Length L, max. 70 m
- 3 Masking tape
- 4 Magnetic band
- 5 Carrier band

Permissible mounting tolerances

Tilting



Torsion



Offset



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

1) Shield is attached to connector housing