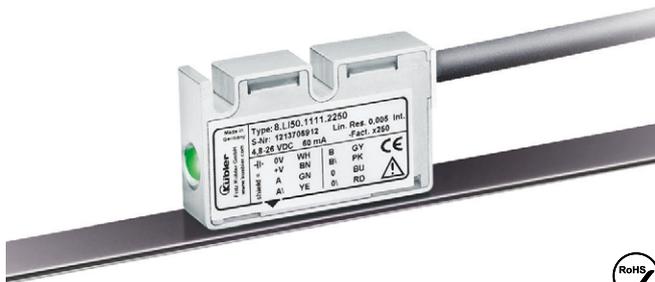


Linear measuring technology

Incremental magnetic measurement system sensor head, magnetic band	Limes LI50 / B2	Resolution min. 5 µm
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The non-contact incremental magnetic linear measurement system Limes LI50 / B2 - made up of the sensor head LI50 and of the magnetic band B2 - reaches a resolution up to 5 µm with a maximum distance of 2 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 tape.
- Large mounting tolerances.
- Requires very little installation space.
- Warning signals via status LED if the magnetic field is too weak.

Order code sensor head Limes LI50

8.LI50.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.LI50.111A.2050.0030 (for cable length 3 m)

e Reference signal

- 2 = index periodic

f Code (resolution) ²⁾

- 050 = 25 µm
- 250 = 5 µm

Order code magnetic band Limes B2

8.B2.10.010.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

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 B2).

Linear measuring technology

Incremental magnetic measurement system sensor head, magnetic band	Limes LI50 / B2	Resolution min. 5 µm
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Accessories / Displays	Order no.
Codix 560, preset counter 6-digit  <ul style="list-style-type: none"> - Counter, tachometer, time counter and position display in one device - Scalable display - Readable via RS232/485 interface or configurable via MODBUS or CR/LF protocol 	6.560.010.XXX
571T touch, multifunction preset counters 8-digit  <ul style="list-style-type: none"> - 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 - Fast counting input (250 kHz/HTL, 1 MHz/RS422) - 4 switching outputs as limit values (response time < 1 ms) - Scalable analog output (response time < 150 ms), resolution 16 bit - Serial interface RS232 or RS485 for reading in and out the data 	6.571T.01X.XXX

Further Kübler accessories can be found at: kuebler.com/accessories
 Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

Technical data

Mechanical characteristics sensor head LI50		
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	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
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	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		
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⁾	

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

Magnetic band Limes B2	
Pole gap	5 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	± 0,025 mm interpolation error accuracy: at T = 20 °C and gap sensor head/magnetic band 1 mm
Repeat accuracy	±1 increment
Resolution and speed ⁵⁾	25 µm (quadruple), max. 16,25 m/s 5 µm (quadruple), max. 3,25 m/s

Approvals	
CE compliant 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.

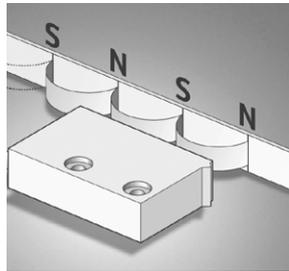
Linear measuring technology

Incremental magnetic measurement system sensor head, magnetic band

Limes LI50 / B2

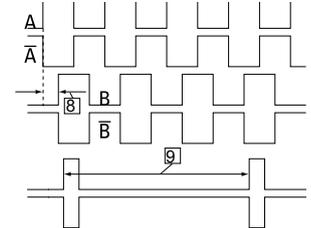
Resolution min. 5 µm

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



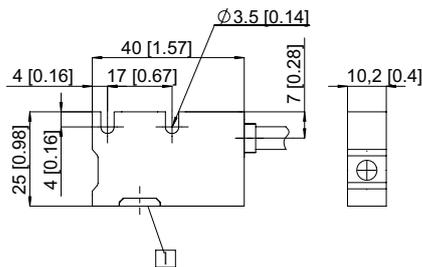
Terminal assignment

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

Dimensions

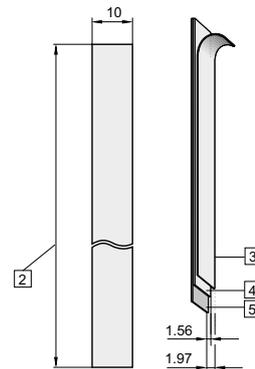
Dimensions in mm [inch]

Sensor head Limes LI50



1 Active measuring area

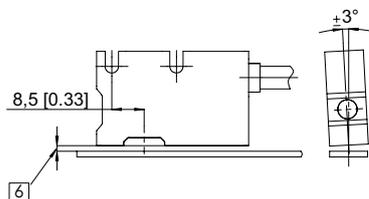
Magnetic band Limes B2



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

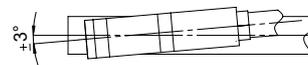
Permissible mounting tolerances

Tilting

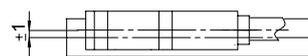


6 Distance sensor head / magnetic band:
0.1 ... 2.0 mm (recommended 1 mm)

Torsion



Offset



1) PH = Shield is attached to connector housing.