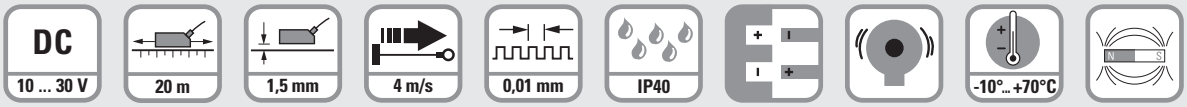
Absolute magnetic measurement system sensor head, magnetic band | **Limes LA50 / BA5** | **Measuring length max. 20 m Resolution min. 10 µm**

The non-contact absolute magnetic linear measurement system Limes LA50 / BA5 - made up of the sensor head LA50 and of the magnetic band BA5 - reaches a resolution up to 10 µm with a maximum distance of 1.5 mm between the sensor and the band.

RoHS SSI CANopen



Robust and versatile

- Resolution 0.01 mm / measuring lengths max. 20 m.
- Rugged die-cast zinc housing.
- Positions changes are also detected when de-energized no referencing movement required – no wear.
- Automatic distance detection in case of too high distance between the sensor and the magnetic band.
- Masking tape protecting the magnetic band.
- Address, baud rate, bus termination can be modified via microswitches.
- Interfaces: SSI, CANopen.

Easy installation

- Simple glued assembly of the magnetic band.
- Large mounting tolerances.
- Requires very little installation space.
- LED warning signals in case of too weak magnetic field.

Order code sensor head Limes LA50

8.LA50	.	1	2	X	1
Type		a	b	c	d

a *Model*
1 = IP40, standard

b *baud rate*
2 = standard (CANopen, 250 k)

c *Output circuit / supply voltage*
1 = SSI 25 bit / 10 ... 30 V DC
3 = CANopen / 10 ... 30 V DC

d *Type of connection*
1 = cable, 1.5 m PUR

Order code magnetic band Limes BA5

8.BA5	.	20	.	010	.	XXXX
Type		a				b

a *Width*
20 = 20 mm

b *Length (measuring range = length - 0.1 m)*
0010 = 1 m
0020 = 2 m
0040 = 4 m
0050 = 5 m
0060 = 6 m
0100 = 10 m
0200 = 20 m

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Accessories

		Order no.
SSI display type 570T Position display, 8-digit	with 2 relay outputs and serial interface DC supply voltage	**6.570T.010.300**
	with 4 fast switch outputs and serial interface AC/DC supply voltage	**6.570T.012.E01**
	with 4 fast switch outputs, serial interface and scalable analog output AC/DC supply voltage	**6.570T.012.E02**
	with 4 fast switch outputs and RS485 interface AC/DC supply voltage	**6.570T.012.E03**

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

Weight	ca. 0.19 kg [6.70 oz]
Working temperature	-10 °C ... +70 °C [+14 °F ... +158 °F] (non condensing)
Storage temperature	-25 °C ... +85 °C [-13 °F ... +185 °F]
Protection acc. to EN 60529	IP40
Housing	zinc die-cast
Max. traverse speed permanent absolute positions reading	4 m/s
Shock resistance acc. to EN 60068-2-27	5000 m/s², 1 ms
Vibration resistance acc. to EN 60068-2-6	300 m/s², 10 ... 2000 Hz
Distance sensor head / magnetic band	0.1 ... 1.5 mm incl. masking tape (recommended 0.5 mm)
Measuring length	max. 20 m
Type of connection (standard)	cable, 1.5 m PUR, open cable ends

Electrical characteristics

Supply voltage	10 ... 30 V DC ±10%
Residual ripple	< 10 %
Current consumption	max. 150 mA
Reverse polarity protection	yes
Short circuit proof	yes

Accuracy

Measuring principle	absolute
System accuracy at 20 °C [+68 °F]	max. ± (150 + 20 x L) µm L = measuring length in meters
Repeat accuracy	±1 increment
Resolution	0.01 mm
LED, red	lights up when distance too large

SSI interface

Output driver		RS485 transceiver type
Permissible load / channel		max. ±20 mA
Signal level	HIGH	typ. 3.8 V
	LOW at I_{Load} = 20 mA	typ. 1.3 V
Clock rate		25 bit (24 + 1 failurebit for distance)
Code		binary / gray (default) switchable
SSI clock rate		80 kHz ... 0.25 MHz
Monoflop time		≤ 40 µs
Data refresh rate		≤ 1 ms

CANopen interface

Interface	CAN High-Speed acc. to ISO 11898, Basic and Full CAN, CAN specification 2.0 B
Protocol	CANopen
Baud rate	125 ... 1000 kbit/s adjustable with a rotary switch
Termination	yes/no with a rotary switch
Node address	1 ... 15 configurable (default 1)
LSS protocol	CIA LSS protocol DS305 global command support for node address and baud rate selective commands via attributes of the identity object

Approvals

CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

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Magnetic band Limes BA5		
Pole gap		basic pole pitch 5 mm
Dimensions	width	20 mm
	thickness	1.8 mm incl. masking tape
Relative linear expansion		$\Delta L = L \times \alpha \times \Delta\delta$ L = measuring length in meters α = 16×10^{-6} 1/K temperature coefficient $\Delta\delta$ = relative temperature change based on 20 °C [+68 °F] in °K

Working temperature	-20 °C ... +80 °C [-4 °F ... +176 °F] [1]
Mounting	adhesive joint
Additional length	100 mm in order to obtain an optimal measuring result, the magnetic band should be about 0.1 m longer than the required measuring length
Min. bending radius for storage	≥ 150 mm
Material metal tape	precision steel strip 1.4404 acc. to EN 10088-3

Terminal assignment

Output circuit	Type of connection	Cable									
1 (SSI)	1	Signal:	0 V	+V	D+	D-	C+	C-	–	–	⏚
		Core color:	WH	BN	YE	OR	GN	VT	GY	BK	shield [2]

Output circuit	Type of connection	Cable									
3 (CANopen)	1	Signal:	0 V	+V	CAN_H	CAN_L	–	–	–	–	⏚
		Core color:	WH	BN	YE	OR	GN	VT	GY	BK	shield [2]

+V: Supply voltage encoder +V DC
0 V: Supply voltage encoder ground GND (0V)
C+, C-: Clock signal
D+, D-: Data signal

1) Magnetic band (ends) attached by screwing, clamping or equvalent.
2) Connect shielding only machine side

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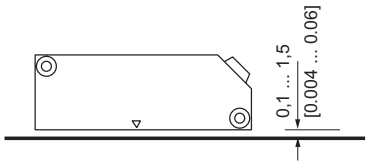
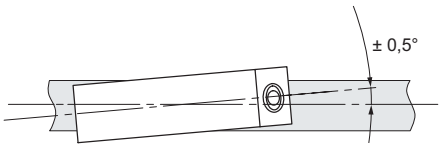
Permissible mounting tolerances

Dimensions in mm [inch]

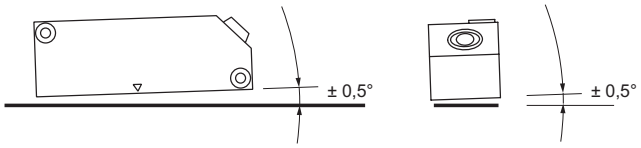
Distance sensor head / magnetic band (incl. masking tape)



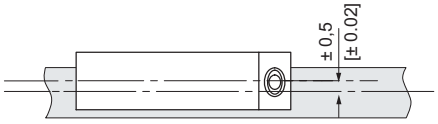
Torsion



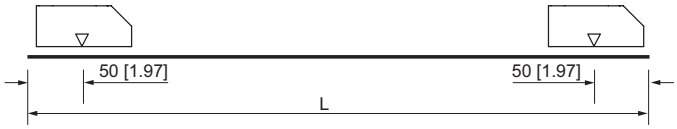
Tilting



Offset



Measuring range

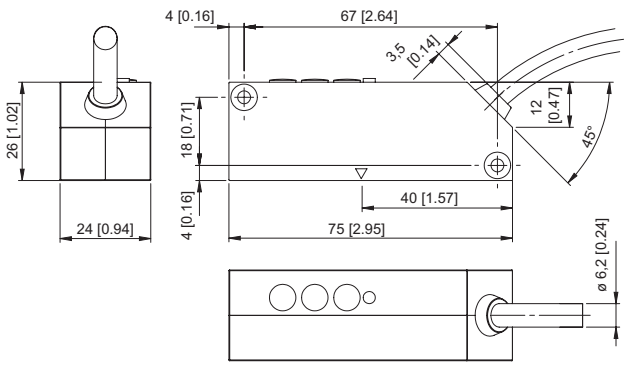


Observe mounting direction

Dimensions

Dimensions in mm [inch]

Sensor head Limes LA50



Magnetic band Limes BA5

1 Length L, max. 20 m
2 Masking tape
3 Magnetic band