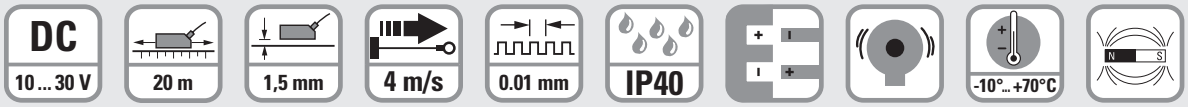
Absolute magnetic measurement system sensor head, magnetic band | **Limes LA50 / BA5** | **Measuring length max. 20 m Resolution min. 10 µm**

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 / power supply*
1 = SSI 25 bit / 10 ... 30 V DC
3 = CANopen / 10 ... 30 V DC

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

Stock types
8.LA50.1211
8.LA50.1231

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

Stock types
8.BA5.20.010.0200

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Accessories

		Order no.
SSI display type 570 Position display, 6-digit	with 2 relay outputs and serial interface DC power supply	**0.570.010.305**
	with 2 fast switch outputs AC/DC power supply	**0.570.011.E00**
	with scalable analog output AC/DC power supply	**0.570.012.E90**
	RS232 / RS485 interface AC/DC power supply	**0.570.012.E05**

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

Power supply	10 ... 30 V DC ±10%
Residual ripple	< 10 %
Current consumption	max. 150 mA
Reverse polarity protection	yes
Short circuit proof	yes
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

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 ... 0.4 MHz
Monoflop time		≤ 40 µs
Data refresh rate		≤ 250 µs

CANopen interface

Interface	CAN High-Speed acc. to ISO 11898, Basic and Full CAN, CAN specification 2.0 B
Protocol	CANopen
Baud rate	250 kbit/s; 125 ... 1000 kbit/s configurable
Termination	yes/no via 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

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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 ... +70°C [-4°F ... +158°F]
Storage temperature	-20°C ... +80°C [-4°F ... +176°F]
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-	–	–	⏚
		Cable color:	WH	BN	YE	OR	GN	PK	GY	BK	shield 1)

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

+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0V)
C+, C-: Clock signal
D+, D-: Data signal

1) Connect shielding only machine side

Absolute magnetic measurement system
Sensor head, magnetic band

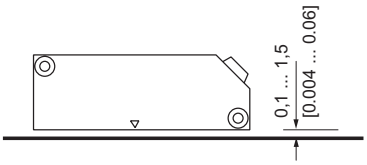
Limes LA50 / BA5

Measuring length max. 20 m
Resolution min. 10 µm

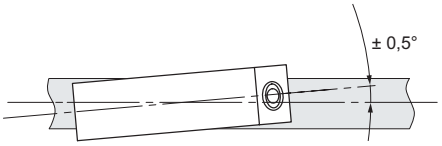
Permissible mounting tolerances

Dimensions in mm [inch]

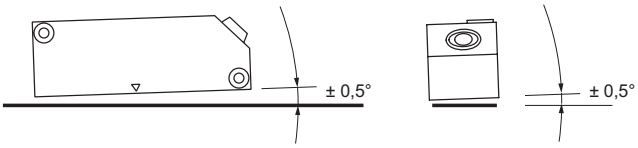
Distance sensor head / magnetic band (incl. masking tape)



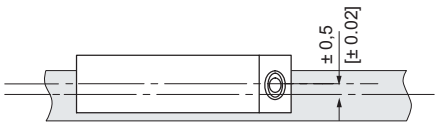
Torsion



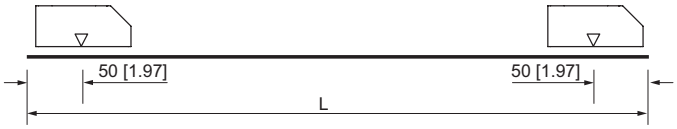
Tilting



Offset



Measuring range

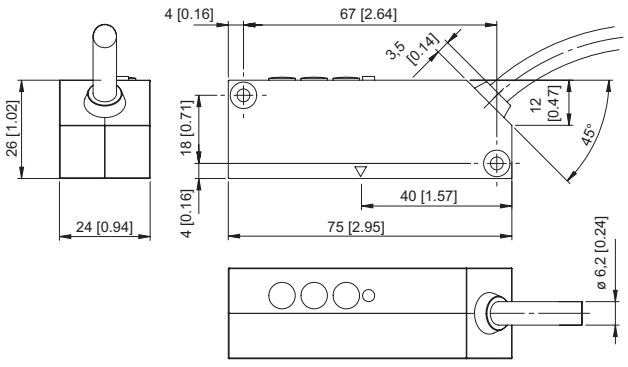


Observe mounting direction

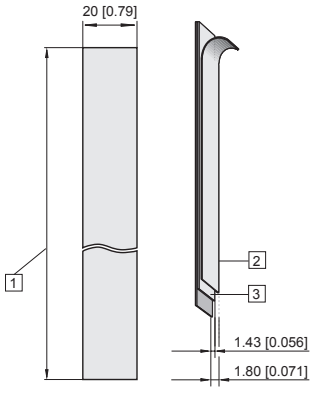
Dimensions

Dimensions in mm [inch]

Sensor head Limes LA50



Magnetic band Limes BA5



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