

# Linear measuring technology

<b>Shaft copying system</b>	<b>Ants LEB02</b>	<b>Absolute position measurement Measuring range up to 392 m</b>
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Ants LEB02 is an extremely robust, compact and contactless measuring system. It uses a contactless measuring principle to measure without any slipping absolute elevator car positions with a resolution of 1 mm and a travel speed of 8 m/s. Additional components such as magnetic switches become superfluous. Especially the easy assembly reduces installation time, thus contributing to overall costs reduction.



392 m	1 mm						-10...+70°C
Wide measuring range	Resolution	Easy installation	Compact	Robust	Shock / vibration resistant	Reverse polarity protection	Temperature range

### Characteristics

- Absolute position values.
- Measuring length up to 392 m.
- Status LED.
- Extremely robust and compact.
- Stainless steel coded band.
- Simple mounting.
- Contactless measuring principle.

### Benefits

- Highest availability - no referencing required in case of power outage.
- 100 % slip-free – absolute position measurement directly at the elevator car.
- Suitable for tightest installation spaces.
- Reduced installation work.
- Elimination of additional components (magnetic sensors, reference sensors).
- Long service life thanks to its robust design.

<b>Order code</b>	<b>8.LEB02.X1XX.XX11</b>				
<b>Sensor</b>	Type	a	b	c	d
<b>a</b> Type of mounting	<b>c</b> Type of connection	<b>d</b> Interface profile <sup>3)</sup>			
1 = with mounting plate 2 = without mounting plate <sup>1)</sup>	1 = cable, 3 m [9.84'], open cable end 2 = cable, 3 m [9.84'], shielded, male connector 9-pin <sup>2)</sup> A = cable, special lengths, shielded, open cable end *) B = cable, special lengths, shielded, Sub-D male contacts, 9-pin *) <sup>2)</sup>	22 = CANopen Lift, DS417 V2.2.8 31 = RS485, 9 Byte, 24 bit position data 41 = SSI, Gray, 25 bit			
<b>b</b> Interface / supply voltage	*) Special lengths on request: 5 m, 7 m, 10 m order code expansion .XXXX = length in dm ex.: 8.LEB02.112A.2211.0050 (for cable length 5 m)				
2 = CANopen / 10 ... 30 V 3 = RS485 / 10 ... 30 V 4 = SSI / 10 ... 30 V					

<b>Order code</b>	<b>8.LEX.BA.XXXX</b>	
<b>Coded band, absolute</b>	Type	a
<b>a</b> Measuring lengths	<b>Standard lengths</b>	<b>Stock types</b>
XXXX = lengths in meters (max. length = 392 m)	0010 = 10 m    0040 = 40 m    0090 = 90 m 0015 = 15 m    0050 = 50 m    0100 = 100 m 0020 = 20 m    0060 = 60 m    0392 = 392 m 0025 = 25 m    0070 = 70 m    Intermediate lengths < 100 m as from 5 pieces, 0030 = 30 m    0080 = 80 m    > 100 m on request	0010 = 10 m    0030 = 30 m 0015 = 15 m    0040 = 40 m 0020 = 20 m    0392 = 392 m 0025 = 25 m

1) T-slot mounting.  
2) With interface RS485 (b = 3) on request.

3) Selection depending on selected interface b:  
CANopen can only be combined with b = 2  
RS485 can only be combined with b = 3  
SSI can only be combined with b = 4

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Accessories		Order no.
<b>Mounting kit LEB.MK</b>	components for installation	<b>8.LEB.MK.0001</b>
<b>EMC shield terminal</b>	for an EMC-compliant installation of the cable	<b>8.0000.4G06.0312</b>

## Technical data

Mechanical characteristics sensor Ants LEB02	
<b>Code</b>	absolute, 16 bit
<b>Max. measuring length</b>	392 m
<b>Speed</b>	8 m/s
<b>Resolution</b>	1 mm
<b>Accuracy</b>	± 1 mm
<b>Type of connection</b>	cable 3 m with open end further lengths up to max. 10 m on request
<b>Weight</b>	550 g [19.4 oz]
<b>Housing (material)</b>	aluminum
<b>Dimensions</b>	L x W x H 126 x 55 x 37 mm [4.96 x 2.17 x 1.46"]

Electrical characteristics sensor Ants LEB02	
<b>Supply voltage</b>	10 ... 30 V DC
<b>Reverse polarity protection</b>	yes
<b>Power consumption</b>	max. 100 mA
<b>Interfaces</b>	CANopen Lift, RS485, SSI

Environmental conditions sensor Ants LEB02	
<b>Protection acc. to EN 60529</b>	IP54
<b>Humidity</b>	< 90 % (non-condensing)
<b>Working temperature</b>	-10 °C ... +70 °C [+14 °F ... +158 °F]
<b>Storage temperature</b>	-20 °C ... +80 °C [-4 °F ... +176 °F]
<b>Air pressure (operating altitude)</b>	800 ... 1013 hPA (up to 2000 m above NN)

Interface characteristics RS485	
<b>Baud rate</b>	19.200
<b>Number of data bits</b>	8 bit
<b>Number of Start bits</b>	1 bit
<b>Number of Stop bits</b>	1 bit
<b>Parity</b>	none
<b>Repetition</b>	150 Hz
<b>Number of bytes / transmission</b>	9 bytes
<b>Resolution position</b>	1 mm
<b>Resolution speed</b>	10 mm/s
<b>Position value</b>	24 bit, binary
<b>Speed value</b>	16 bit, two's complement

Interface characteristics CANopen Lift (standard factory setting)	
<b>Bitrate</b>	250 kbit/s
<b>Identifier</b>	0x18C
<b>Node ID</b>	0x04
<b>Eventtimer</b>	10 ms
<b>Resolution</b>	1 mm
<b>Heartbeat</b>	500 ms
<b>Terminated</b>	yes

Interface characteristics SSI (standard factory setting)	
<b>Data transfer</b>	in slave mode double data transmission
<b>Resolution</b>	0.25 mm
<b>Data length</b>	25 bit + 1 power failure bit (Low)
<b>MSB</b>	first
<b>Code</b>	gray
<b>Clock rate</b>	max. 200 kHz
<b>Monoflop time</b>	< 50 µs
A position value must be read by the SSI master over 52 pulses.	
1 ... 25:	MSB first absolute position in gray code
26:	Data low (PFB)
27 ... 51:	Second transmission (see 1-25)
52:	Data Low (PFB)

Standards / Directives / Certificates		
<b>Standards</b>	standards for elevators	EN 81-20 / -50
	EMC emission	EN 12015
	EMC immunity	EN 12016
	vibration resistance	EN 60068-2-6
	shock resistance	EN 60068-2-27
	environmental conditions	EN 60068-2-14
<b>Directives</b>	EMC directive	2014/30/EU
	elevator directives	2014/33/EU
	RoHS directive	2011/65/EU
<b>UL approval</b>		file no. E498900
<b>CE compliant</b>		Yes

Technical data coded band	
<b>Material</b>	V2A spring-loaded stainless steel, chamfered edges
<b>Dimensions</b>	16 x 0.4 mm [0.63 x 0.016"]
<b>Max. length</b>	392 m
<b>Weight</b>	50 g / m [1.76 oz/m]
<b>Thermal expansion</b>	16 x 10 <sup>-6</sup> / K between 20 °C ... 100 °C

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Elevator functions	Standard	Base Sensor
Referencing / correction trip	-	√
Top & bottom inspection limitation	EN 81-20	√
Direct drive-in – depending on complete drive module	-	√
Stopping point shift	-	√
Overspeed during inspection	EN 81-20	√

## Terminal assignment

Interface	Type of connection	Cable								
2 CANopen Lift (DS417)	1, A	Signal:	+V	0 V / GND	CAN_H	CAN_L	n.c.	n.c.		
		Core color:	BN	WH	GN	YE	GY	PK		

Interface	Type of connection	Cable with Sub-D, male connector 9-pin										
2 CANopen Lift (DS417)	2, B	Signal:	n.c.	CAN_L	0 V / GND	n.c.	shield	0 V / GND	CAN_H	n.c.	+V	
		Pin:	1	2	3	4	5	6	7	8	9	

Interface	Type of connection	Cable								
3 RS485	1, A	Signal:	+V	0 V / GND	D+	D-	n.c.	n.c.		
		Core color:	BN	WH	GN	YE	GY	PK		

Interface	Type of connection	Cable								
4 SSI	1, A	Signal:	+V	0 V / GND	C+	C-	D+	D-		
		Core color:	BN	WH	GN	YE	GY	PK		

Interface	Type of connection	Cable with Sub-D, male connector 9-pin										
4 SSI	2, B	Signal:	n.c.	C+	shield	D+	0 V / GND	+V	C-	D-	n.c.	
		Pin:	1	2	3	4	5	6	7	8	9	

+V: Supply voltage +V DC  
 0 V: Supply voltage ground GND (0 V)

C+, C-: Clock signal  
 D+, D-: Data signal

n.c. : Do not connect

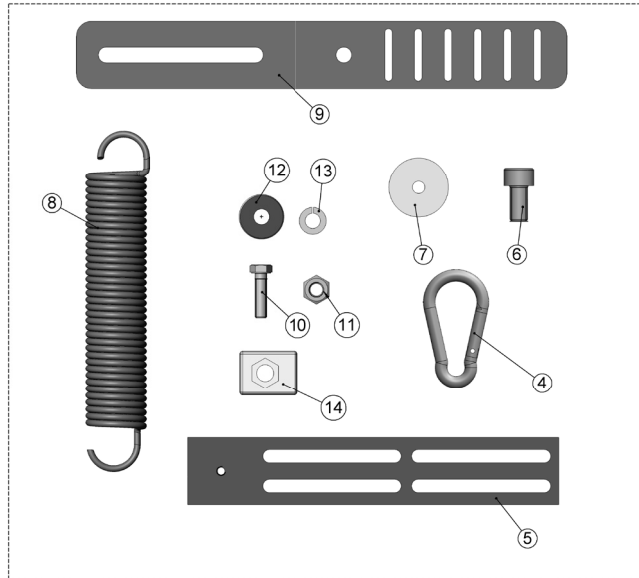
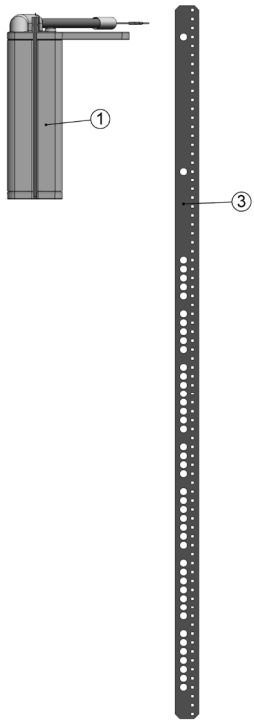
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Shaft copying system

Ants LEB02

Absolute position measurement  
Measuring range up to 392 m

Scope of delivery Ants LEB02 with LEX.BA and LEB.MK



Proper operation requires the following components:

**Ants LEB02 (8.LEB02.xxxx.xxxx)**

**1** 1 x sensor

**Coded band LEX.BA (8.LEX.BA.xxxx)**

**3** 1 x coded stainless steel band

**Mounting kit LEB.MK (8.LEB.MK.0001)**

**4** 1 x carabiner

**5** 1 x sensor cabin fastening plate

**6** 1 x sensor fastening screw

**7** 1 x washer

**8** 1 x tension spring

**9** 2 x rail fastening plates

**10** 4 x M10x30 hexagon head screws

**11** 4 x M10 hexagon nuts

**12** 4 x M10 large diameter washers

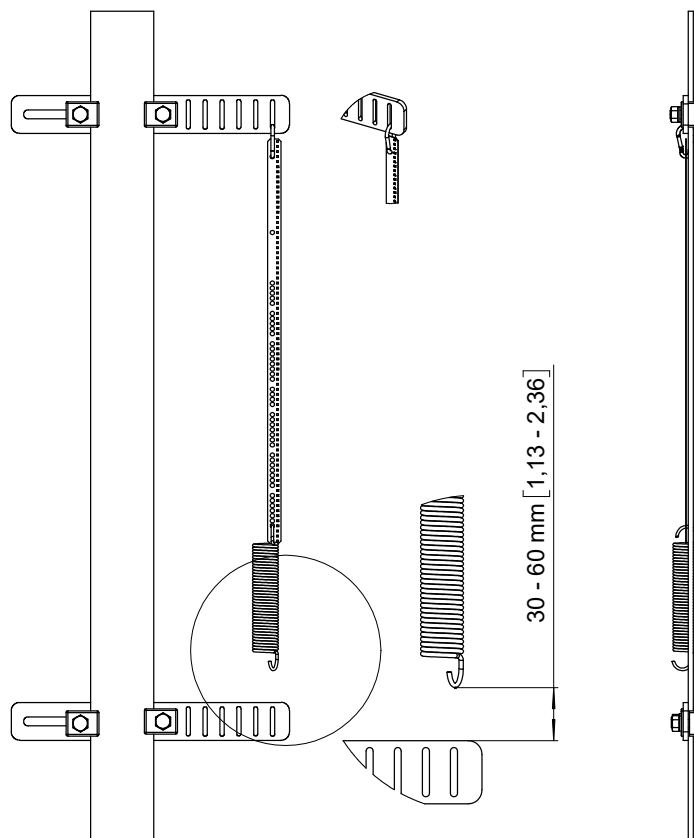
**13** 4 x M10 retaining rings

**14** 4 x clamping plates

## Technology in detail

### Coded band fastening

Ants LEB02 stands out in particular for its ease of installation. This saves time and costs.



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## Shaft copying system

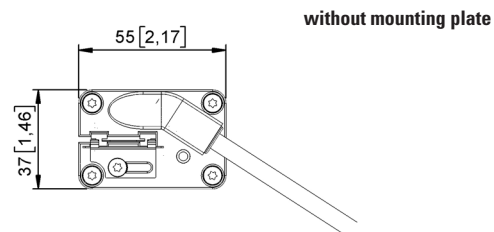
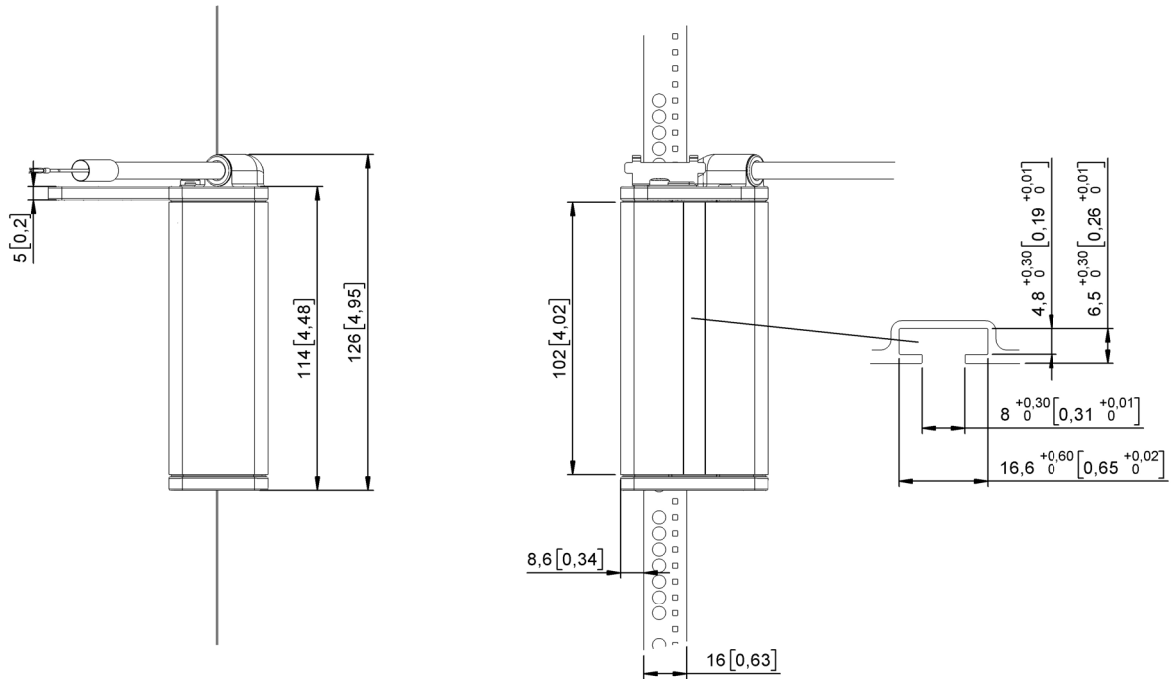
## Ants LEB02

## Absolute position measurement Measuring range up to 392 m

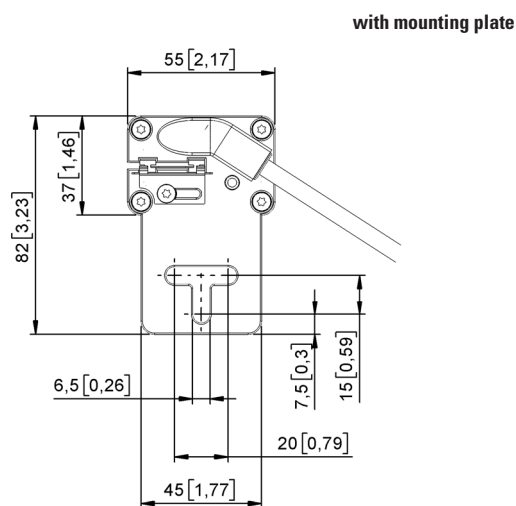
### Dimensions

Dimensions in mm [inch]

### Sensor



without mounting plate



with mounting plate