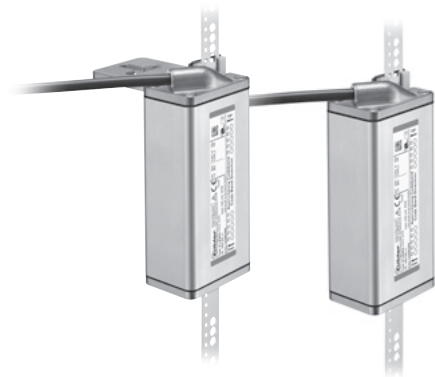# Linear measuring technology

Shaft copying system	Ants LEB02	Absolute position measurement Measuring range up to 392 m

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.

RoHS · CANopen LIFT · SSI · RS485

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

Order code Sensor

8.LEB02.X1XX.XX11
Type (a) (b)(c) (d)

(a) *Type of mounting*
1 = with mounting plate
2 = without mounting plate [1]

(b) *Interface / power supply*
2 = CANopen / 10 ... 30 V
3 = RS485 / 10 ... 30 V
4 = SSI / 10 ... 30 V

(c) *Type of connection*
1 = cable, 3 m [9.84'], open cable end
2 = cable, 3 m [9.84'], shielded, male connector 9-pin [2]
A = cable, special lengths, shielded, open cable end *)
B = cable, special lengths, shielded, Sub-D male contacts, 9-pin *) [2]

*) Available special lengths: 4 m, 5 m, 7 m, 10 m
   order code expansion .XXXX = length in dm
   ex.: 8.LEB02.112A.2211.**0050** (for cable length 5 m)

(d) *Interface profile*
22 = CANopen Lift, DS417 V2.2.8
31 = RS485, 9 Byte, 24 bit position data
41 = SSI, Gray, 25 bit

Order code Coded band, absolute

8.LEX.BA.XXXX
Type (a)

(a) *Measuring lengths*
XXXX = lengths in meters
(max. length = 392 m)

Standard lengths			Stock types	
0010 = 10 m	0040 = 40 m	0090 = 90 m	0010 = 10 m	0030 = 30 m
0015 = 15 m	0050 = 50 m	0100 = 100 m	0015 = 15 m	0040 = 40 m
0020 = 20 m	0060 = 60 m	0392 = 392 m	0020 = 20 m	0392 = 392 m
0025 = 25 m	0070 = 70 m	Intermediate lengths < 100 m as from 5 pieces,	0025 = 25 m	
0030 = 30 m	0080 = 80 m	> 100 m on request		

Accessories	Order no.
Mounting kit LEB.MK	**8.LEB.MK.0001**

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

Shaft copying system	Ants LEB02	Absolute position measurement Measuring range up to 392 m

Technical data

Mechanical characteristics sensor Ants LEB02

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

Electrical characteristics sensor Ants LEB02

Power supply	10 ... 30 V DC
Reverse polarity protection	yes
Power consumption	max. 100 mA
Interfaces	CANopen Lift, RS485, SSI

Environmental conditions sensor Ants LEB02

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

Technical data coded band

Material	V2A spring-loaded stainless steel, chamfered edges
Dimensions	16 x 0.4 mm [0.63 x 0.016"]
Max. length	392 m
Weight	50 g / m [1.76 oz/m]
Thermal expansion	16×10^{-6} / K between 20°C ... 100°C

Technical data mounting kit LEB.MK

Dimensions	see manual R60205
Material	see manual R60205

Standards / Directives / Certificates

Standards	
standards for elevators	EN81-20 / -50
EMC emission	EN12015
EMC immunity	EN12016
vibration resistance	EN60068-2-6
shock resistance	EN60068-2-27
environmental conditions	EN60068-2-14

Directives	
EMC directive	2014/30/EU
elevator directives	2014/33/EU
RoHs directive	2011/65/EU

CE compliant	Yes

Interface characteristics CANopen Lift (standard factory setting)

Bitrate	250 kbit/s
Identifier	0x18C
Node ID	0x04
Eventtimer	10 ms
Resolution	1 mm
Heartbeat	500 ms
Terminated	yes

Interface characteristics RS485

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

Interface characteristics SSI (standard factory setting)

Data transfer	in slave mode double data transmission
Resolution	0.25 mm
Data length	25 bit + 1 power failure bit (Low)
MSB	first
Code	gray
Clock rate	max. 200 kHz
Monoflop time	min. 500 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)

Shaft copying system	Ants LEB02	Absolute position measurement Measuring range up to 392 m

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: Power supply +V DC
0 V: Power supply ground GND (0 V)

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

n.c. :   Do not connect

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
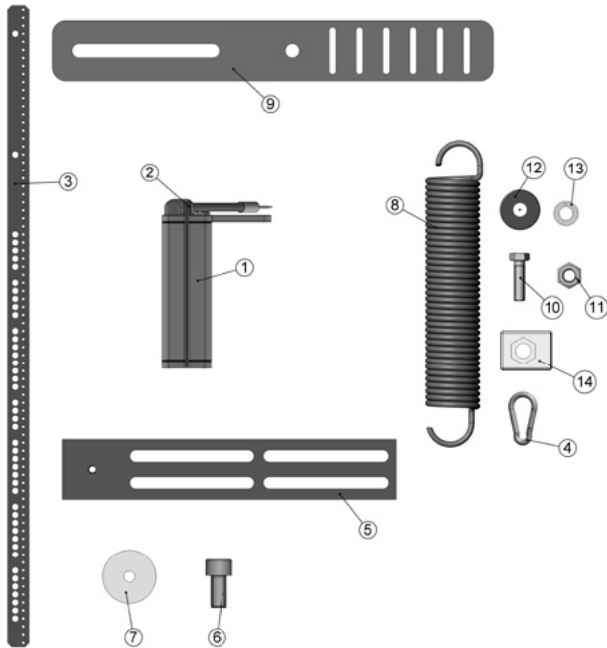
Proper operation requires the following components

Ants LEB02 (8.LEB02.xxxx.xxxx)

1   1 x sensor
2   2 x sliding plates, mounted

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

**3**   1 x stainless steel coded band

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

4   1 x stainless steel snap hooks
5   1 x sensor cabin fastening plate
6   1 x sensor fastening screw with Polyfleck coating
7   1 x washer
8   1 x spring
9   2 x rail fastening plates
10 4 x M10x30 hexagon head screws
11 4 x M10 hexagon nuts
12 8 x M10 large diameter washers
13 8 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.
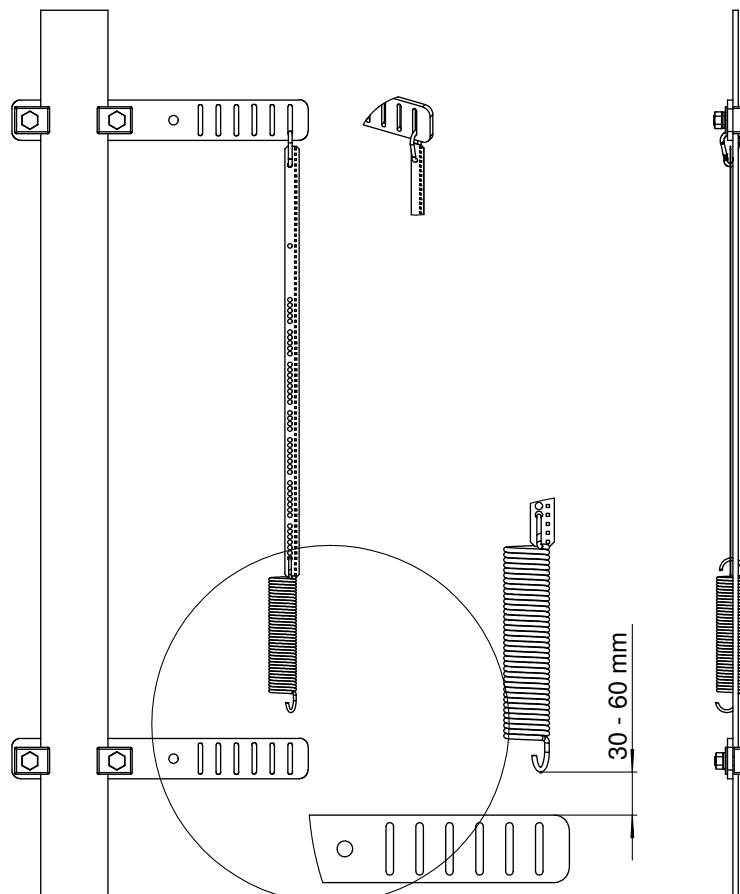
30 - 60 mm

Kübler

Shaft copying system	Ants LEB02	Absolute position measurement Measuring range up to 392 m

Dimensions

Dimensions in mm [inch]

Sensor

5 [0,2]

114 [4,5]

126 [4,97]

102 [4,02]

8,7 [0,34]

16 [0,63]

$4,8 \ {}^{+0,3}_{0} \ [0,19 \ {}^{+0,01}_{0,00}]$

$6,5 \ {}^{+0,3}_{0} \ [0,26 \ {}^{+0,01}_{0,00}]$

$8 \ {}^{+0,3}_{0} \ [0,31 \ {}^{+0,01}_{0,00}]$

$16,6 \ {}^{+0,6}_{0} \ [0,65 \ {}^{+0,02}_{0,00}]$

55 [2,17]

37

without mounting plate

55 [2,17]

37 [1,46]

82 [3,23]

with mounting plate

6,5 [0,26]

7,5 [0,3]

15 [0,59]

20 [0,79]

45 [1,77]