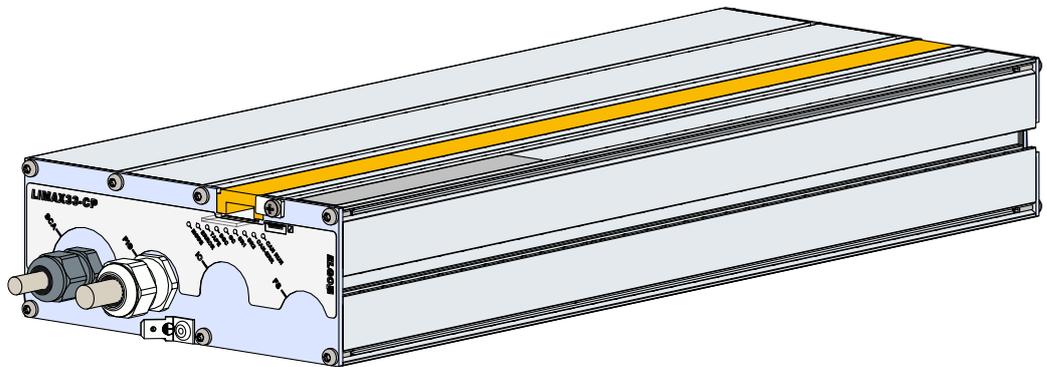


# LIMAX3CP

Magnetic Shaft Information and Safety System  
with Safe Inputs and Safety Relay Pairs



- Safe, absolute position detection up to 260 m and safety-relevant switching and control functions in one housing
- High cost savings due to the reduction of components
- Up to 3 pairs of safety relays and up to 13 safe inputs for SIL3 compliant controller transfer
- CANopen interface (DS406) for car position and parameter transfer (DS417 and other safe interfaces possible)
- Scalable functional safety architecture (e.g. solution for EN81-A3 functionality with 2 safety relays)
- Travel speed up to max. 10 m/s
- Insensitive against dirt, dust and smoke
- Noiseless measuring principle
- EU type-examination tested (SIL3)
- Floor sensor possible (optionally)
- Quick and easy installation

# LIMAX3CP - Magnetic Absolute Shaft Information and Safety System

## General:

LIMAX3CP is the first system on the market which combines all of the functions of LIMAX3 SAFE (such as shaft information and safety functions) in one housing, thereby contributing to a further reduction of components in the elevator shaft. For example, various safety-relevant electromechanical switches, light barriers and similar systems in the elevator shaft can be replaced.

LIMAX3CP is able to cover lifting heights up to 260 meters and speeds up to 10 m/s. A simple and flexible mounting ensures quick installation or replacement of the measuring system.

A redundant position sensor detects the current absolute car position. This position information is processed internally; speed and acceleration of the elevator are calculated from the unit and via safety relays converted into corresponding switching functions.

## Safe Inputs:

Via up to 13 safe inputs, additional status signals of the elevator can be detected. In case of overspeed or other errors, the safety circuit will be opened and/or the safety brake released.

## Digital Output:

The system also includes a push-pull output that is switched within the door zones of the stored floor positions. This means that in case of an emergency the output signals whether the car is positioned within a door zone.

## Magnetic Tape:

For measurement of the lift position, the dual-sensor - which is integrated in aluminum profile housing - requires an absolute coded magnetic tape (type AB20-80-10-1-R-D-15-BK80). The magnetic tape carries the unique position information as a magnetic code.

## Resolution:

Resolutions up to 62.5  $\mu\text{m}$  can be freely configured according to CiA 406 via the CANopen interface. The default setting of the LIMAX3CP resolution is 1 mm.

## Interface:

In order to transfer the position and speed data of the cabin to the lift control unit, a CANopen (DS406) interface is used. The CANopen interface is also used for diagnostic purposes, to request a relay test, and to retrieve safety-relevant parameters (shaft image and configuration). On request, CANopen (DS417) and customer-specified device profiles are possible.

## Status LEDs:

The LIMAX3CP housing front has eight status LEDs which serve for various messages, e. g. operational readiness or error states of the dual channel system as well as the functional state of the magnetic tape.

## Connections:

Standardly, the LIMAX3CP measuring system is provided with two or three 3.0 m long signal cables with open wire ends. Other cable lengths or plug connectors are available on request.

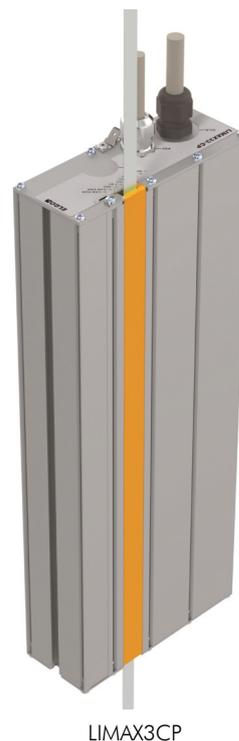
## Sensor Installation:

In order to attach the sensor to the lift cabin, the mounting angle kit LIMAXCP MW SET (see drawings next page) can be used, which is available as an ELGO accessory. This mounting kit also includes the required screws with sliding nuts which can be inserted into the mounting groove of the sensor housing in order to fix the angle to the sensor housing.

With the remaining long holes, the unit can be fastened on the cabin roof. The tape guidance at the sensor permanently ensures the correct distance between magnetic tape and sensor.

## Magnetic Tape Installation:

The certified mounting kits S-RMS or S-RMS2 (see accessories on last page) makes the tape assembly very easy and straight forward. The magnetic tape must be installed freely suspended in the shaft. At the lower end, the tape is tensioned while it is guided along the cabin by a plastic guidance at the sensor. The actual measurement resp. scanning is basically contactless. The guidance merely serves to keep the correct distance to the sensor.



# LIMAX3CP - Magnetic Absolute Shaft Information and Safety System

## Technical Data:

Mechanical Data	
Measuring principle	absolute, redundant
Repeat accuracy	± 1 increment
System accuracy in $\mu\text{m}$ at 20 °C	± (1000 + 100 x L) L = measuring length in meters
Distance sensor / tape	the correct distance is guaranteed by the magnetic tape guidance
Basic pole pitch (tape)	8 mm
Housing material	aluminium
Housing dimensions	L x W x H = 354 x 136 x 54 mm
Required magnetic tape	AB20-80-10-1-R-D-15-BK80
Max. measuring length	260 m
Connections	2 outlets with open wire ends for PIO and SCA cables (plug connectors on request); M12 4 pole male for eSGC; according to ICE61067-2-101
Sensor cable (PIO, SCA)	standard length: 3.0 m (others on request)
Weight	approx. 1400 g without cable cable: approx. 60 g per meter

Electrical Data	
Power supply voltage	18 ... 30 VDC (stabilized); a SELV/PELV power supply must be used!
Residual ripple	< 100 mV
DZO output	+ 24 VDC –20 %, max. 200 mA (PNP)
Reverse polarity protection	integrated
Current consumption	max. 600 mA at 24 VDC
Interface	CANopen DS406 or DS417 others on request
Resolution	configurable up to 62.5 $\mu\text{m}$ default setting: 1 mm
Operating speed	max. 10 m/s
Cycle time	< 55 ms
Digital input voltage	18 ... 30 VDC for HIGH level; open for LOW level
Relay contact rating OC, SR1, SR2	0 ... 230 VAC (max 250 VAC), max. 2 A; or 24 VDC (max. 30 VDC), max. 1 A; or 110 VDC, max. 250 mA; each with a resistive/inductive load with L/R < 40 ms
Rating for external supply of SGC-actuator	24 VDC, min. 18 V; max. 30 V; constraints for connected trip coil must be observed

Miscellaneous	
Maximum operating time	20 years
Safety relay contact reaction time	< 55 ms
Solid state contact (eSGC) reaction time	< 45 ms

Conformance / Standards / Certifications	
Achieved SIL	SIL3 (TÜV-certified)
Fulfilled standard	EN81-20
Type-examination	EU according to EN81-20

Environmental Conditions	
Storage temperature	–25 ... +85 °C
Operating temperature	–20 ... +65 °C (–25 ... +85 °C on request)
Operation height	max. 2000 m above sea level
Humidity	95 %, non-condensing
Protection class	IP54 (according to EN60529), higher on request
Interference emission / immunity	EN 12015 / EN 12016
Vibration / shock resistance	EN 60068-2-6 / EN 60068-2-27 EN 60068-2-29

## Type Designation:

### DESIGNATION 1 (Main Information)

LIMAX3CP -  $\overline{\text{A}} \overline{\text{A}} - \overline{\text{B}} \overline{\text{B}} \overline{\text{B}} - \overline{\text{C}} \overline{\text{C}} \overline{\text{C}} \overline{\text{C}} - \overline{\text{D}} \overline{\text{D}} \overline{\text{D}} \overline{\text{D}} - \overline{\text{E}}$

#### A Version

- 00 = standard version
- 01 = first special version (etc.)

#### B Signal Cable Length

- 030 = 3.0 m (standard)
- 050 = 5.0 m (other lengths on request)

#### C Resolution

- 1000 = 1000  $\mu\text{m}$  = 1.00 mm at delivery state\*
- \* Freely configurable according to CiA 406

#### D Interface

- COX = CANopen [special protocol, defined by version no.]
- CO0TG = CANopen [encoder profile DS406]
- CO1TG = CANopen [elevator profile DS417 on request]

**REMARK:** The CAN interface is terminated by 120 R (T) and galvanically separated (G)

#### E Floor Sensors:

- 0 = no floor sensors
- 1 = 1 floor sensor
- 2 = 2 floor sensors

### DESIGNATION 2 (Additional Information)

P-0001 / AAAA / B / C

**P-0001** = Configuration Parameter Set (defined by customer with the order). All required parameters are listed in the [table on the next page](#) ☞

#### A CAN-Bitrate

- 125k = 125 kbps
- 250k = 250 kbps
- 500k = 500 kbps

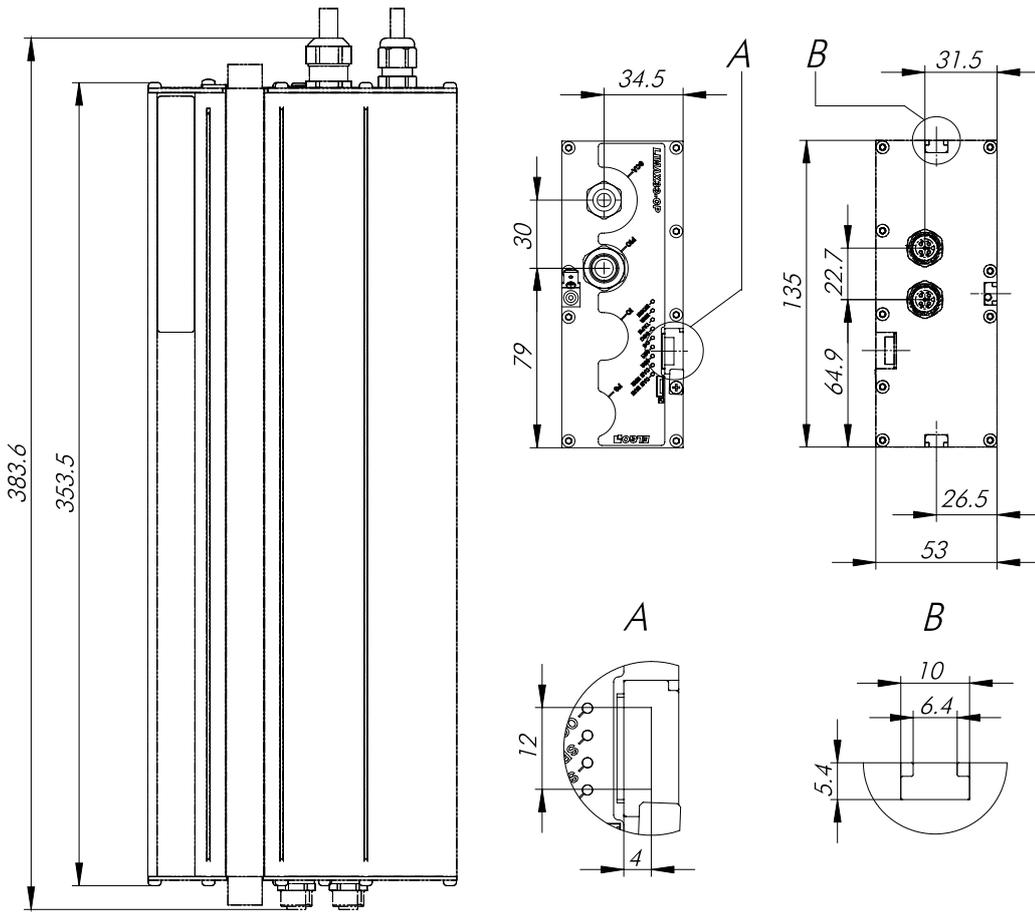
#### B eSGC-Actuator:

- 0 = without eSGC
- 1 = with eSGC

#### C Number of "SR" Relay Pairs:

- 0 = no safety relay pair
- 1 = 1 safety relay pair
- 2 = 2 safety relay pairs

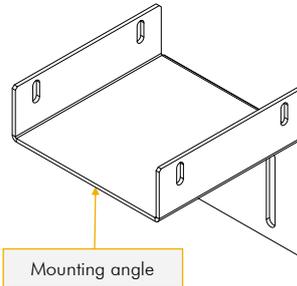
## Dimensions of LIMAX3CP:



## Configuration Parameter Set:

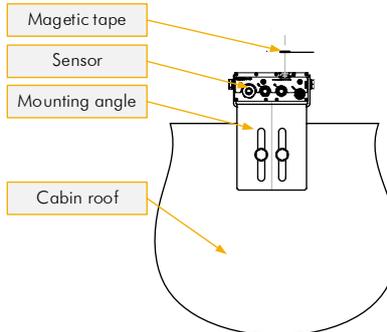
No.	Configuration Points	Option, Unit, Range
1	Tripping direction (safety gear)	BOTH /ONLY DOWN
2	Short Head	JA / NEIN
3	Short Pit	JA / NEIN
4	Nominal speed of lift	0 ... XXXX cm/s
5	Pre tripping speed	0 ... XXXX cm/s
6	Final tripping speed	0 ... XXXX cm/s
7	Pre tripping speed in inspection	0 ... XXX cm/s
8	Final tripping speed in inspection	0 ... XXXX cm/s
9	Offset upper final limit switch	X ... X cm
10	Offset lower final limit switch	X ... X cm
11	Offset first upper insp. limit switch	X ... XXX cm
12	Offset first lower insp. limit switch	X ... XXX cm
13	Offset 2nd upper insp. limit switch	X ... X cm
14	Offset 2nd lower insp. limit switch	X ... X cm

## LIMAXCP MW SET (Accessory):



Mounting angle

## Cabin Roof Installation:



## Accessories for LIMAX3CP:

Order designation	Description
LIMAX3CP MW SET	Mounting angle for LIMAX3CP for mounting the sensor
AB20-80-10-1-R-D-15-BK80	Magnetic tape for LIMAX3CP, absolute coding, single track system
LIMAX S-RMS	Magnetic tape mounting kit for rail mounting
LIMAX S-RMS2	Magnetic tape installation kit with tape detection for tight spaces
LIMAX3CP Service Set	Spare part set consisting of guiding rail and plastic pad

