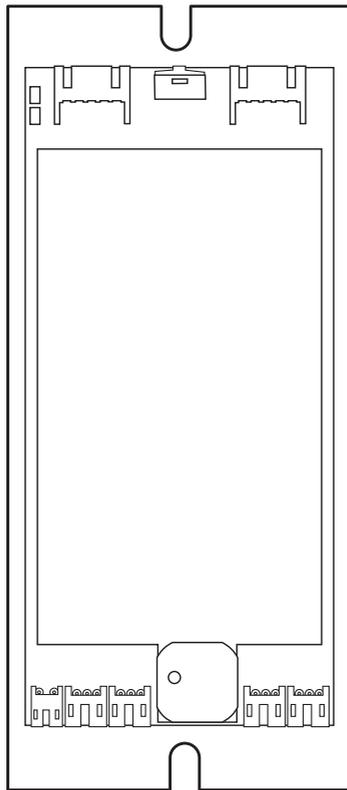


# LEO 4 Manual



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# SafeLine LEO 4

## Technical data main unit

<b>Micro-SD</b>	max 32 GB (FAT/FAT32 format)
<b>Loudspeaker:</b>	8 ohm, 1-3 W
<b>Display:</b>	4 inch 800x480 pixels, 24 bit colour depth, parallel interface
<b>Bluetooth:</b>	BLE 5
<b>Supply voltage:</b>	20-28 VDC
<b>Supply current:</b>	24VDC typical 30 mA, maximum 120 mA
<b>Inputs and outputs:</b>	4 IO
<b>Input voltage:</b>	20-28 VDC
<b>Input current:</b>	3.1 mA to 4.2 mA, @24VDC 3.5 mA
<b>Output current:</b>	max 200 mA (PTC protected)

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# Programming notice

## **CiA417 mode:**

All parameters are programmable with the Toolbox and CANwizard. These are the recommended programming interfaces. Any other programming method will not be supported by the SafeLine technical support.

## **SafeLine Proprietary CAN:**

The only way to configure the IPS with the SafeLine LEO 4 is through the SafeLine LYNX app (previously SafeLine CONNECT app). See app settings for actual programming possibilities.

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# General information

This unit was built with state-of-the-art technology and to generally recognised safety related technical standards currently applicable. These installation instructions are to be followed by all people working with the unit, in both installation and maintenance.

It is extremely important that these installation instructions are made available at all times to the relevant technicians, engineers or servicing and maintenance personnel. The basis prerequisite for safe handling and trouble free operation of this system is a sound knowledge of the basic and special safety regulations concerning conveyor technology, and elevators in particular. The unit may only be used for its intended purpose. Note in particular that, no unauthorised changes or additions may be made inside the unit or individual components.

## Exclusion of liability

The manufacturer is not liable with respect to the buyer of this product or to third parties for damage, loss, costs or work incurred as a result of accidents, misuse of the product, incorrect installation or illegal changes, repairs or additions. Claims under warranty are likewise excluded in such cases. The technical data is the latest available. The manufacturer accepts no liability arising from printing errors, mistakes or changes.

## Declaration of conformity

Download "The declaration of conformity" at our website: [www.safeline-group.com](http://www.safeline-group.com)

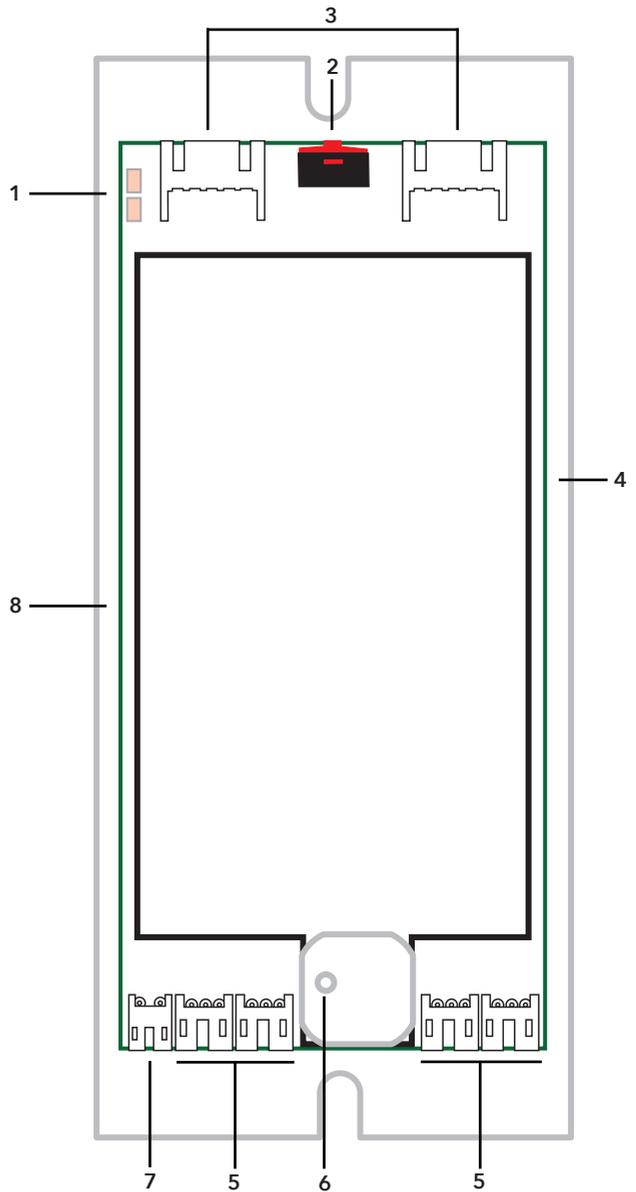
## Safety Precautions!

- Only trained professionals, who are authorised to work on the equipment, should install and configure this product.
- This quality product is dedicated for the lift industry. It has been designed and manufactured to be used for its specified purpose only. If it is to be used for any other purpose, SafeLine must be contacted in advance.
- It should not be modified or altered in any way, and should only be installed and configured strictly following the procedures described in this manual.
- All applicable health and safety requirements and equipment standards should be considered and strictly adhered to when installing and configuring this product.
- After installation and configuration this product and the operation of the equipment should be fully tested to ensure correct operation before the equipment is returned to normal use.

Electrical and electronic products may contain materials, parts and units that can be dangerous for the environment and human health. Please inform yourself about the local rules and disposal collection system for electrical and electronic products. The correct disposal of your old product will help to prevent negative consequences for the environment and human health.



# Overview



# Overview

## 1. CAN LED's:

Two LED's indicating the current status of the CAN bus. They also flicker back and forth during the CAN bus auto baud rate detect.

## 2. CAN Termination

Slide switch used for setting the termination resistor, either on or off.

## 3. CAN connectors

Two connectors used for connecting the CAN bus and power to the product.

## 4. Breather LED:

Early during the boot process, the breather LED is lit, and it remains fully lit until the SafeLine LEO FDT4-CAN application takes over and the LED begins to "breathe".

## 5. Inputs and outputs

The SafeLine LEO FDT4-CAN have a total of 4 inputs and outputs. All of them are I/O.

## 6. Internal speaker

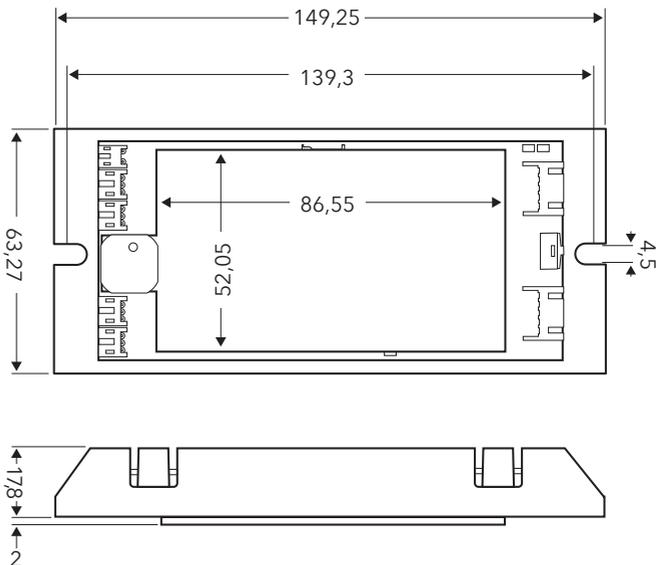
Intended to be used only for arrival chime. For any other sound use an external speaker - connect to .7.

## 7. Loudspeaker

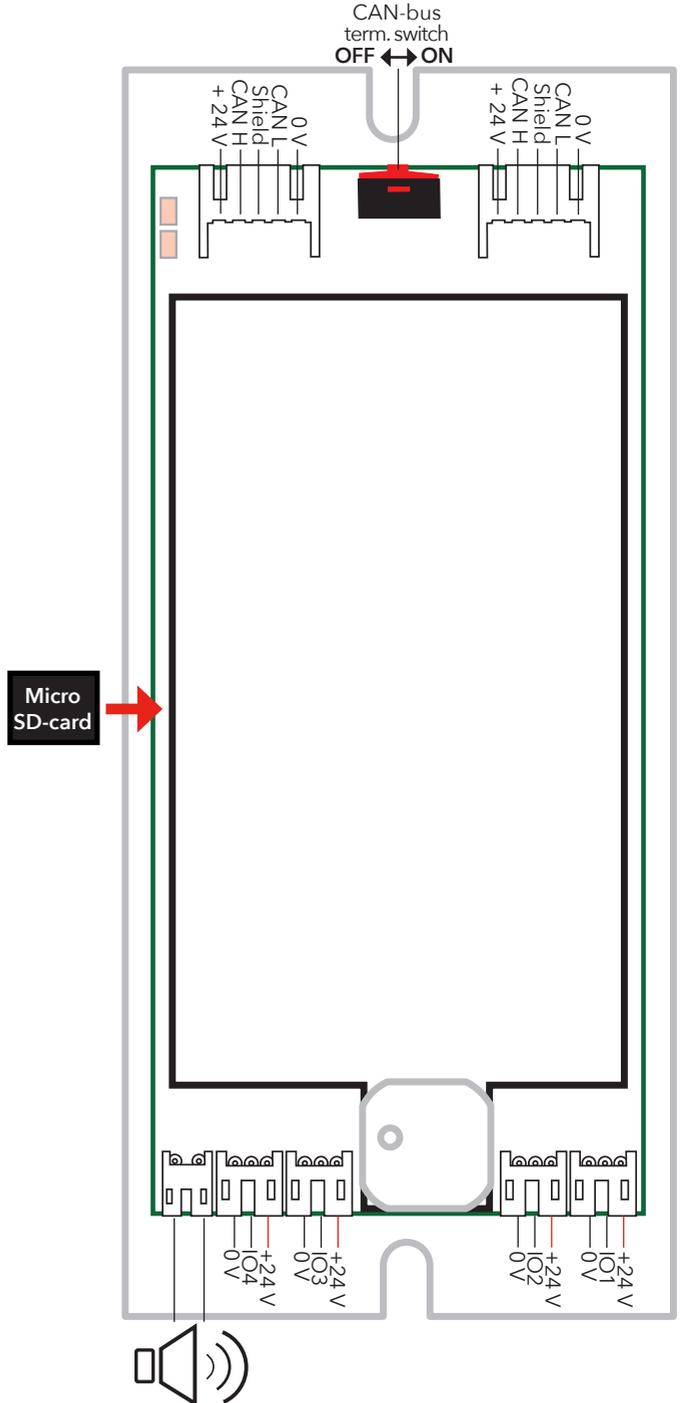
This connector is used for an optional loudspeaker, used for floor speech, button acknowledgment or other sounds.

## 8. SD-card

Stores the optional graphic and sound files. May also be used for upgrading the built-in software.



# Wiring instructions



# SafeLine LEO 4 Software

If any special setting/feature is needed, please contact your local SafeLine support.

The software for SafeLine LEO 4 handles different hardwares and operation modes. **The programming is done using either a CANopen connection, or through BLE with SafeLine LYNX app (previously SafeLine CONNECT app)**

- 2 operation modes (CiA417, SafeLine Proprietary CAN)
- Programmable via CANopen or BLE

Many of the following features are optional and may be selected as on/off. The actual active features depends on the programming and the used lift controller in the CAN network.



## Special features CANopen car display

- Direction arrows (static and moving)
- Static text (e.g. "8 Persons, 630 kg")
- Next stop (text announcement)
- Door animation
- Voice announcer for floor
- Background music

## Special features CANopen floor display

- Direction arrows (moving)
- Hall lantern arrows
- Static text (e.g. "You are on floor 4")

## Special features SafeLine Proprietary CAN display

- Backward compatible with the FD1600 and IPS
- Direction arrows (static and moving)
- Hall lantern arrows
- Voice announcer for floor

## The software can be updated in two ways:

- Via CANopen connection tool
- Via: SD card, Bluetooth and SafeLine LYNX app (previously SafeLine CONNECT app)

# Program features description

## Operation modes

The main operation mode of the display may be selected between "CiA417" and "SafeLine Proprietary CAN" operation mode. The "CiA417" CANopen operation mode is factory default. If the operation mode must be changed it is only possible through the SafeLine LYNX app (previously SafeLine CONNECT app)

## Display rotation

The display may be mounted in four directions, giving a versatile installation where the connectors, SD card and LED's may be in the the optimal direction. Recommended installation is pointing the JST connectors downward.

## Company logo

A company logo may be added to the visuals of the display. The SafeLine logo is factory default. Any custom made logo must be added to the SD card.

## Door animation

An animated door icon may be shown, following the real door movement from the door controller (CAN bus). A countdown timer also shows how long it takes before door movement begins.

## Static text (like "8 Persons, 630 kg")

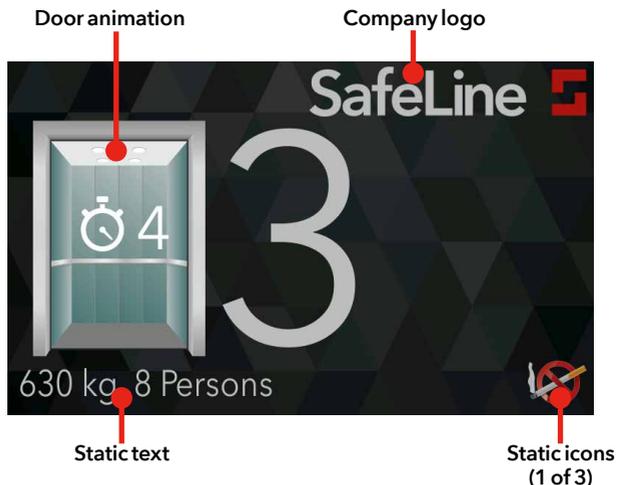
The static text is freely definable, and may be used for static information. The text is always visible, and can never be defined longer than room for in the display (this text never rolls/scrolls).

## Special text messages

Special text messages for fire, overload, service etc. are free to be defined by the user. Only text with highest priority (lowest number) is shown on screen, the rest are idle, and are activated as soon as they get the highest priority.

## Acknowledgement tone

Acknowledgement tone for button pressed or button light on (acknowledge light), can be defined to suit the installation and environment. The tone pitch, length and volume are defined by the user.



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# Program features description

## Icons

Up to three static icons may be visible in the display. Some commonly used icons are already installed in the display. Any custom icons must be installed on the SD card.

All icons are 16 bit colour and in three sizes, small (72x72), medium (128x128) and big (256x256). Icons must be standard "PNG" files, 16 bit colour depth. Sounds must be 16kHz sample rate / 8 or 16bit / mono.



## Voice announcer special messages

Special speech messages are also user-definable. As opposed to the special text messages, there is no priority. The speech message that is triggered first is also played first (FIFO). If more speech messages are active at the same time, they are all played in loop, as long as they are active.

## Direction arrows (static and moving)

Direction arrows are normally only used in car displays to visualize the direction of travel, also showing a moving arrow when the lift is moving. Optionally: it is possible to show the moving arrow also on the floor displays.

## Hall lantern arrows

The hall lantern mode (big arrows) is shown at the floors where the display is installed on floor.



## Next stop (text announcement)

It is possible to show the next stop (next floor) on the display. This text is shown instead of any active special text message, but only for a short time.

## Voice announcer for floor

When arriving at a floor it is possible to get an audio (speech) announcement of the floor. If other speech messages are active, this floor announcement is "pushed" in between and played as soon as possible.

## Background music

For background music it is possible to set up two time intervals when music is active. The two intervals are typically one for week days, and one for weekends. The intervals may also be used for the same days, but different time intervals (i.e. morning and evening).

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# Sound

## **Application sounds**

The application and used Linux driver supports multiple sample rates and channels, but it is recommended to use: 16kHz sample rate/8 or 16 bit/mono.

## **Start-up**

At start-up the unit can play a sound or jingle.

## **Call button acknowledgement**

The acknowledgement tones from pressing a call button is generated internally. The level, frequency and length can be set by the user.

## **Announcement**

All sounds for floors, arrival and special messages must be placed on the SD card.

## **Floor names**

With CAR displays, the announcement of arrival to floor may be used. The sound of each individual floor can be set and freely selected by the user in any language (given the right language is available on the SD card).

## **Special messages**

Sounds for special messages, if used, can be set freely to any sounds that are available on the SD card.

## **Arrival sound**

Floor arrival sounds are normally used on FLOOR displays, and can freely be set to any sound or voice output. Alternatively an internally generated "gong" may be used.

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# Resource files

When a resource file like an icon, logo or sound file is searched for, the resource is searched for on the SD card and then internally. That means that a resource file with same name, both internally and externally, is taken from the SD card. The SD card has the highest priority.

It is not necessary to include the file extension in the resource names. Remember that the Linux<sup>®</sup> file system do care about if letters are capital or not, meaning that "File.txt" is not the same as "file.txt". Icons and logos must be standard "PNG" files, 16 bit colour depth.

Sounds must be either wave files 16, 22.05 or 44.1 kHz sample rate, and 8-16 bit mono/stereo, or MP3 files with bitrate 64-256 kbit mono/stereo. If using MP3 files: recommended bit rate is 128 kbit.

## External resources (SD card)

Customer/user files on the SD card used for icons, logos and speech announcements, must be placed according to requirements below.



### Icons and logos

Icons and logos are all placed in sub folder "/PIC/".



### Sound files

All sound files are placed in sub folder "/WAV/".  
Optional music files are placed in "/WAV/MUSIC/".



### Music files requirements

The music files are all stored in "/WAV/MUSIC/" folder. All files in this directory are played in a loop as long as the music is enabled. Don't install one large music file with all the music. Divide the file in natural segments or melodies. Keep the size of the individual music files smaller than 20 MB.

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# Troubleshooting

**NOTE:** In case of a "Hash failure", the product can not be operated in any way and must be serviced.

## Hash failure

All three LED's are flashing in a fixed tempo to indicate a failed HASH check.

### Cause:

1. The hash array is unprogrammed
2. FLASH chip is faulty
3. BLE chip is faulty
4. On-board file system error
5. Faulty software update

## EU Declaration of Conformity

Product: Lift floor display  
 Type / model: **FDT4**  
 Article no: \*FDT4-CAN-COP, \*FDT4-CAN-OEM, \*FDT4-CAN-REC  
 \* FDT4-CAN-REC-SP  
 Manufacturer: SafeLine Sweden AB  
 Year: 2019

We herewith declare under our sole responsibility as manufacturer that the products referred to above complies with the following EC Directives:

### Directives

Radio Equipment (RED):	2014/53/EU
RoHS 2:	2011/65/EU

### Standards applied

EN 81-20:2014	Lift: Safety & Technical requirements
EN 81-50:2014	Lift: Test and examination requirements
EN 81-70:2003/A1:2004	Lift: Accessibility to lifts for persons including persons with disability
EN 12015:2014	EMC: Emission, Electromagnetic compatibility
EN 12016:2013	EMC/Lifts: Immunity, Electromagnetic compatibility
EN 62368-1:2014/AC:2015	LVD: Information Technology Equipment
EN 50581:2012	RoHS: Technical doc. for assessment of restriction of RoHS.

For RED 2014/53/EU, the conformity assessment procedure "Module A" used as described in Annex II. Accordingly, respective manufacturer has done the radio modules conformity assessment:

Standards applied	Article of Directive 2014/53/EU
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Module	Notified body	Address	NB nr	Test nr
EN 60950-1:2006+A11:2009+A1:2010+A12:2011				3.1 (a): Health and safety of the user
CONNECTable	FORCE Technology	Venlighedsvej 4, 2970 Hørsholm	0199	119-24187-1, 119-24187-2
EN 62311:2008				3.1 (B): Electromagnetic Compatibility
EN 301 489-1 V2.1.1 + EN 301 489-52v1.1.0 Draft				3.2: Effective use of spectrum allocated
EN 301 489-17 V3.1.1				
EN 300 328 V2.1.1				

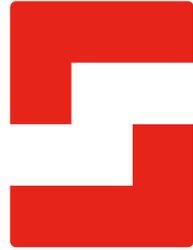
### Firmware used during assessment

SafeLine FDT4:	1.00
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Tyresö, 2019-06-26



Lars Gustafsson,  
 Technical Manager, R&D, SafeLine Group



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