THOR
Engineering GmbH

THOR-LiftApp Software Reference & Manual

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1 Versioning

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3 Copyright

4 Table of Contents

5 About this Manual

The THOR Software Reference Manual (SRM) is the official guide to parameter and use THOR's LiftApp software, powering the THOR reference hardware. This volume, contains general information, information about assembling, parameterization, testing, maintenance and helpful hints for trouble shooting.

6 About the Examples

Except as noted, all examples refer to the THOR reference hardware featuring standard parameters. Real lift installations may be different and require more and specific handling.

7 Error Reports

In a complex technical manual, errors are often found after publication. When errors in this manual are found, they will be corrected in a subsequent version. Updates will be published via the company's homepage.

Bug reports can be sent to us by e-mail. hq@thor.engineering

Submitted reports must be clear, complete and concise. Reports must include an e-mail address and enough information, so that the bug can quickly be verified from the report. So please describe the bug and the steps that produce it.

8 Abstract

The THOR lift controllers are exciting high-performance microcomputers with superb user interface and multitasking capabilities. Their technologically advanced hardware is designed around a modern Embedded Linux® system and sophisticated custom hardware design. Thor's unique system software provides technicians with unparalleled power, flexibility and convenience in designing state-of-the-art lift applications.

This manual is the defined source of information on the functions and parameters in THOR's lift application (LiftApp).

Written by the technical experts of THOR Engineering, this manual is an essential reference tool for all lift engineers and technicians that want to take full advantage of THOR's impressive capabilities.

9 Abbreviations, signs & symbols

This icon is used to highlight information and notes.

This icon is used to accentuate warnings.

This icon is used to emphasis restrictions, limitations or faults.

This icon is used to highlight risks or threats.

This icon is used to highlight helpful hints.

These icons are used to point-out that an operation requires higher password/security privileges. The yellow key indicates 'Service' password privilege and the red key 'Setup' password privilege.

This icon is used to highlight information about safety requirements given.

The used icons have been licensed from Axialis IconWorkshop™.

- In this manual the term 'lift' is used rather than 'elevator'.
- The term 'LiftApp' is used to refer to the lift controller application software.
- The term 'OS' is used to refer to the Embedded Linux® operating system.
- The term 'THOR NX-T/E' or simply 'THOR' refers to the unit made from the reference hardware and reference software package.

10 Purpose and Intended Use

The THOR lift controller is specially made for lift/elevator applications only. To ensure safe operation, the device shall only be operated in accordance with the instructions given.

11 Safety Information

Before commissioning, assembling and/or maintaining this unit, read the safety instructions carefully and pay extra attention to any warning label attached to the cabinet or units itself.

- Make sure that the warning labels are not hidden or damaged.
- Replace any missing or damaged warning label.

This device may only be installed and operated in conjunction with this documentation. Commissioning, installing and operation of the unit shall only be done by qualified employees, having an electrical engineering qualification.

Qualified employees, in the sense of the safety instructions in this documentation, are further persons, who have the authorization to put devices, systems and electrical circuits, according to the standards of safety engineering, into operation.

Make sure, that you protect the important settings in the Lift Controller by setting a proper 'Setup'-Password. You can do that via the user interface, following '*System Menu → Security*'. The password should be at least 6 characters long.

If the lift installation is connected to a cloud solution, please inform the lift owner about the use of this service and which provider you use. Also, check if the provider complies with data protection requirements, product and privacy policies in your country. Appoint a person in your company who is responsible for the administration and management of cloud access and who can block access if misuse is suspected.

12 Hardware

Information about the THOR reference hardware can be found in the THOR hardware manual.

The Hardware Manual contains information about operating voltages, temperature ranges, terminals and mechanical parameters as well as some example circuit schematics and wiring diagrams.

https://www.thor.engineering/documentation.html

13 Life Cycle & Cybersecurity

Information about the Life Cycle & Cybersecurity can be found in the document of the same name.

The document contains information on how we comply with ISO 8102-20 and what measures are required from the maintenance company and the operator to ensure protection against possible attacks.

https://www.thor.engineering/documentation.html

14 The User Interface

14.1 Orientation

The THOR unit features a touch-based user interface ('UI') using capacitive touch technology. Beside the touchable display area, the unit has five fixed hardware buttons that can be operated by touching them. If being operated in landscape mode, the hardware buttons are on the right side of the display. Being operated in portrait mode, the buttons are below the display.

14.2 Hardware Buttons

These buttons have the advantage of being never covered or invisible, like user interface elements in the display. These buttons allow to quickly 'jump' between main branches in the user interface and enter the right part of the UI.

Opens the 'Settings' menu, containing all settings, parameter and options.

Open the menu for 'Service & Assembly' that contains the maintenance features, learning trip assistant, UCM-testing assistant and everything else related to assembling, installing, maintenance and repair.

Open an icon view 'Favorites' providing a quick way to enter the log-book, statistics, terminal setup and unblocking the lift, if a fault has blocked further operation.

A quick way to enter the 'Enter Calls' menu, allowing to enter car and landing calls for testing and maintenance.

This button cancels the current menu, dialog or message box and return the user interface back to the desktop.

14.3 Operation Indicator

Right next to the battery you will find a green LED, that is turned on shortly after the system has been powered and indicates the start of the system. It will start to 'breathe' when the lift application has been started, indicating that the system is 'alive' and the user interface should be operational.

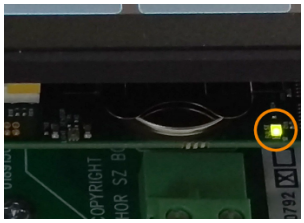


Figure 1: Operation Indicator - 'Breathing LED'

14.4 Desktop

The desktop is the main interface between the user and the machine. It is the first visible part of the UI after opening the cabinet. Usually the light sensor on board will detect that the cabinet has been opened and turn on the background light automatically. If not, just touch the display.

The unit may be operated in landscape or portrait mode. You can easily switch between both orientations. To change the orientation press the 'Favorites' hardware button and go to 'System Menu' → 'System' → 'More' → 'Display orientation'.

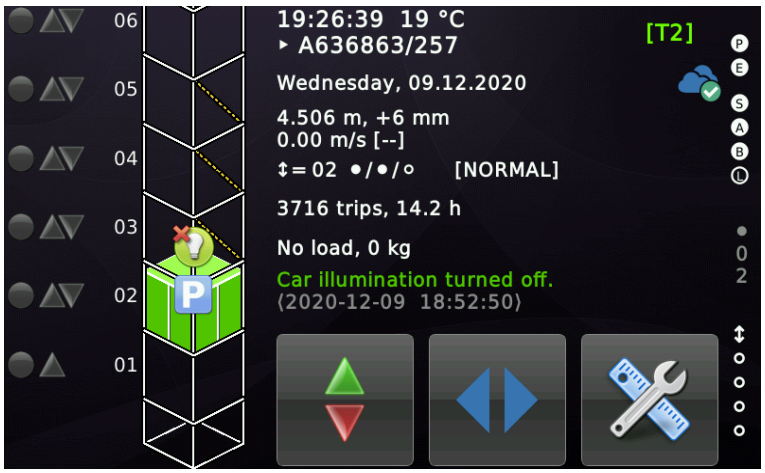


Figure 3: Desktop in landscape mode

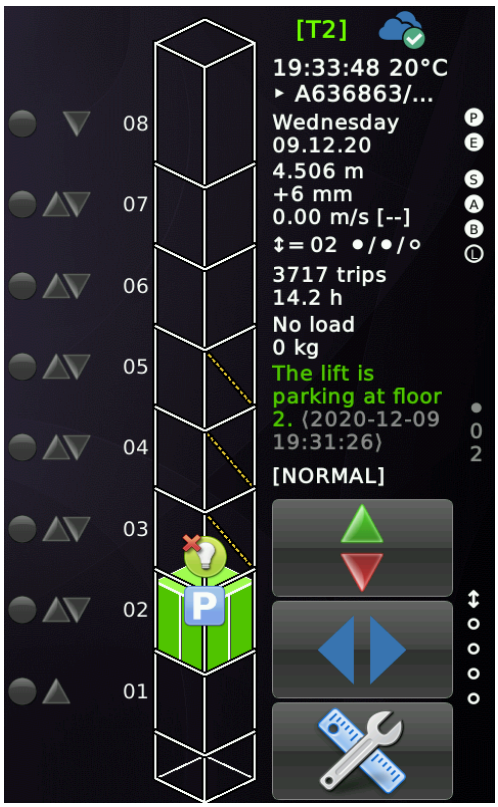


Figure 2: Desktop in portrait mode

14.5 Desktop Elements

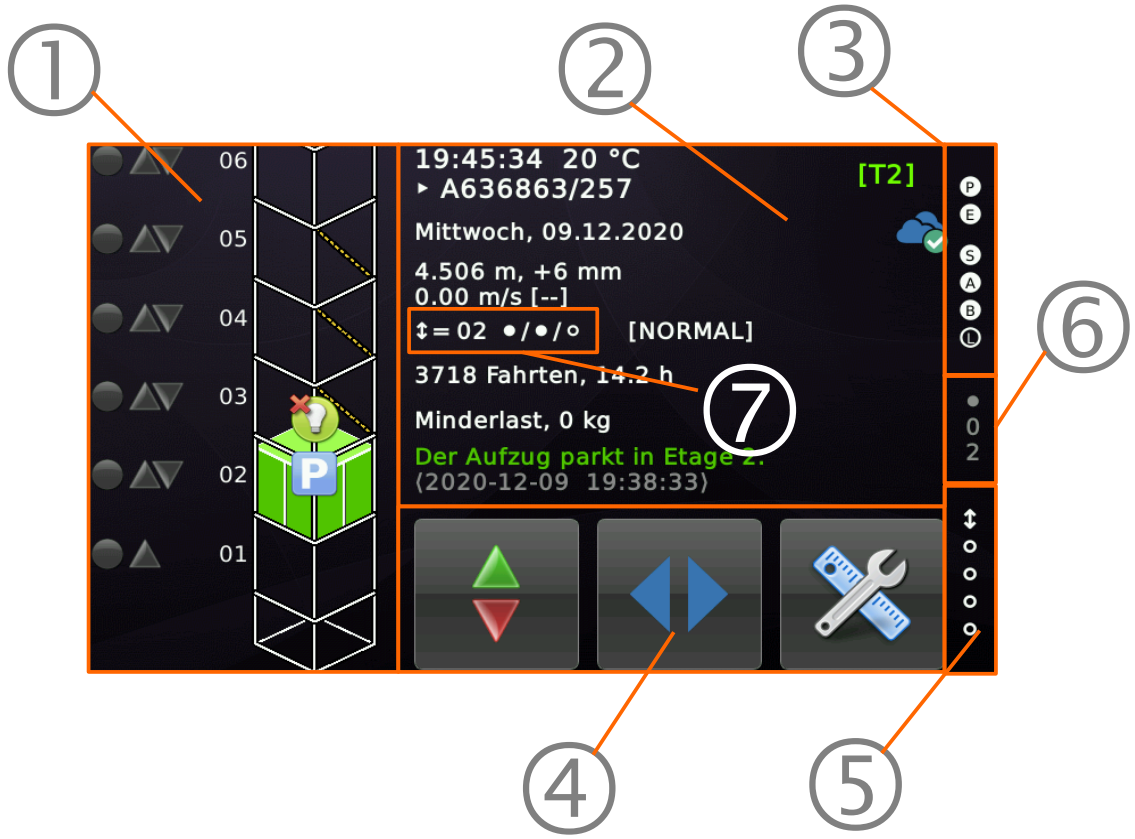


Figure 4: Desktop

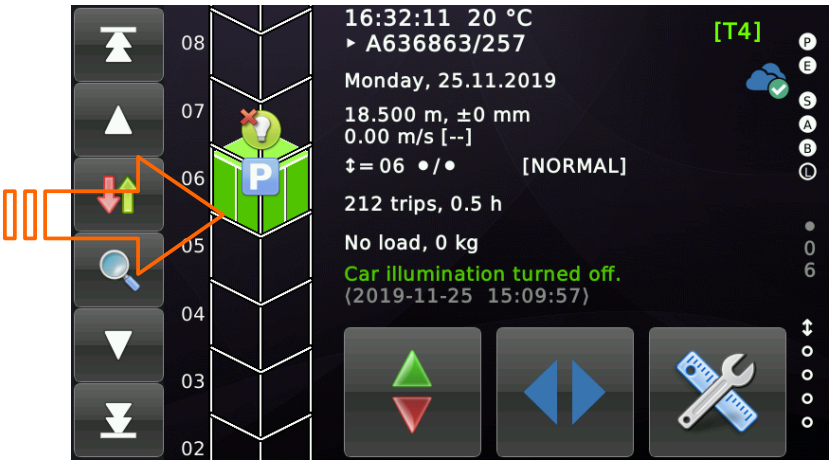
1. The hoistway view including pending car, landing & priority calls.
2. The process data view, providing the lift's position, load situation, direction, pending notifications, warnings or faults.
3. The safety chain view, showing the current state of the safety chain inputs.
4. The maintenance buttons for turning the landing control off, keeping doors closed and activating maintenance operation.
5. The view that shows the state of the pilot relay function 1...4 and the resulting direction of travel. This view is independent of where the pilot control relay functions were actually parameterized.
6. Permanent floor and (encoder) door zone indicator.
7. Direction, Level, Floor, ●-External Zone / ●-Internal Zone / ○-Door Bridging

14.6 Swiping and Gestures

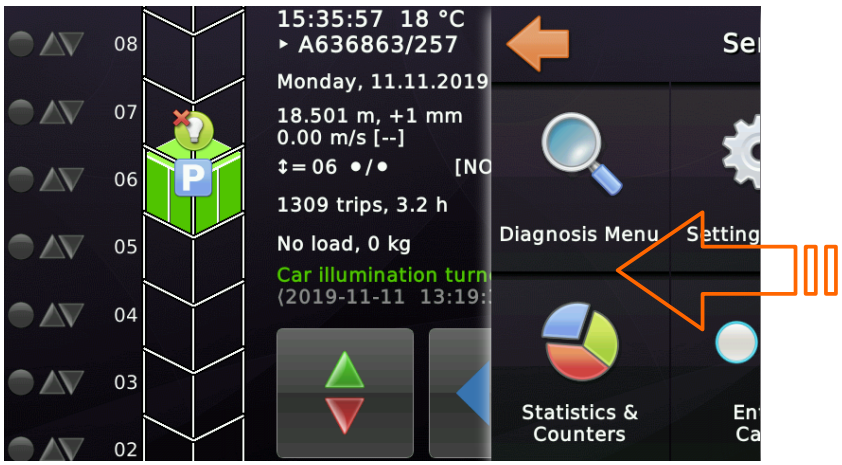
The touch based user interface supports gestures, like 'Swiping' or 'Hold & Move'.

Here is a summary of the most common gestures that can be used at the desktop:

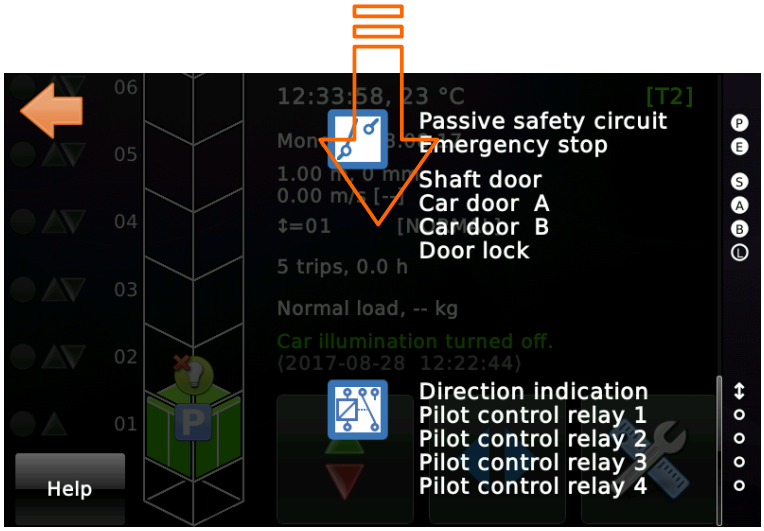
1. Swiping from the left edge of the display to the right results in opening the 'Call Panel', containing buttons for quickly entering a call to the next floor above or below and as well as a call to the bottom or top floor. Using the button in the middle, will open the 'Call Dialogue' with further options.



2. Swiping from the right edge of the display to the left results in opening the 'Favorites' view, presenting icons for the most often used menus and dialogues.



3. Swiping from the top edge of the display downwards result in shifting the I/O-view above the desktop. The I/O-view being translucent allows you to 'see through' being able to watch what the lift is actually doing but keeping an eye on the state of the inputs and outputs.



The IO-view has in fact three pages. By swiping again from top edge of the display downwards will open the next and over next page.

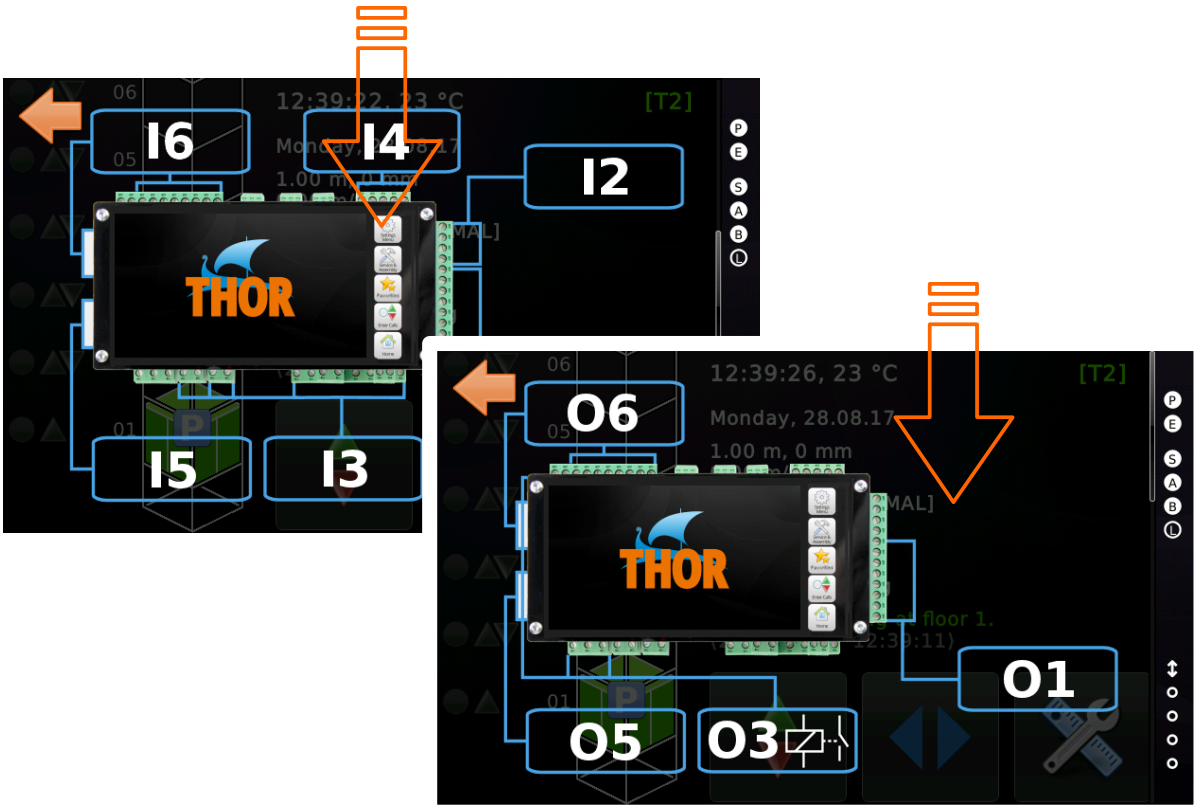


Figure 5: I/O-View swiped down at the desktop

The IO-view has in fact another layer. By touching the labels of the input/output ports, you can open another translucent view that shows the current state of the signals at that very port.

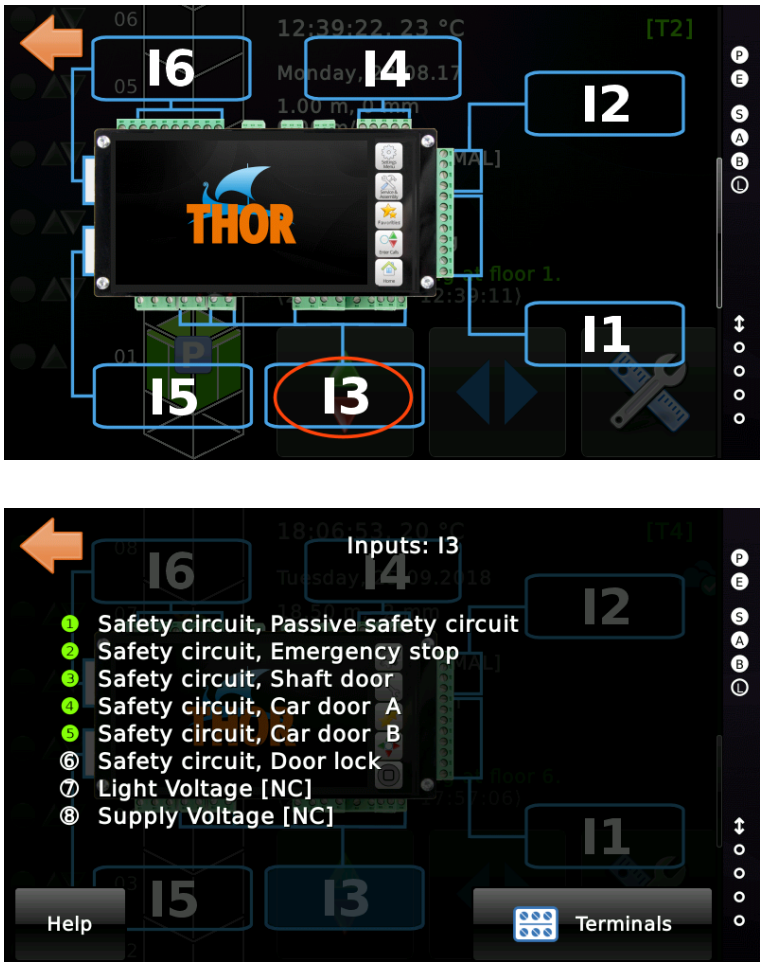
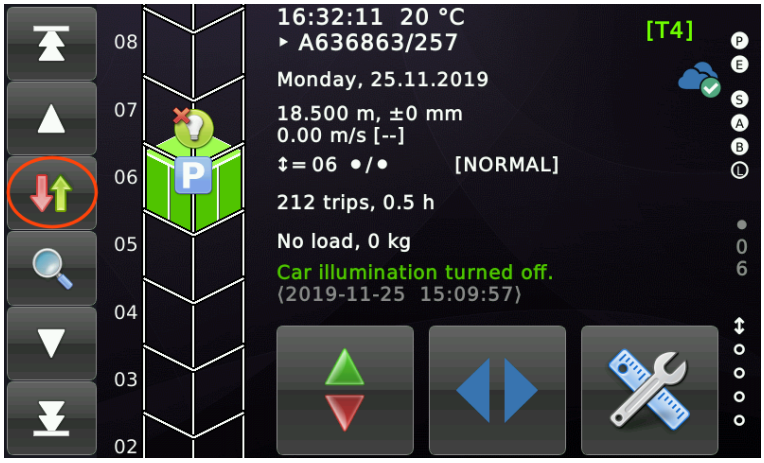


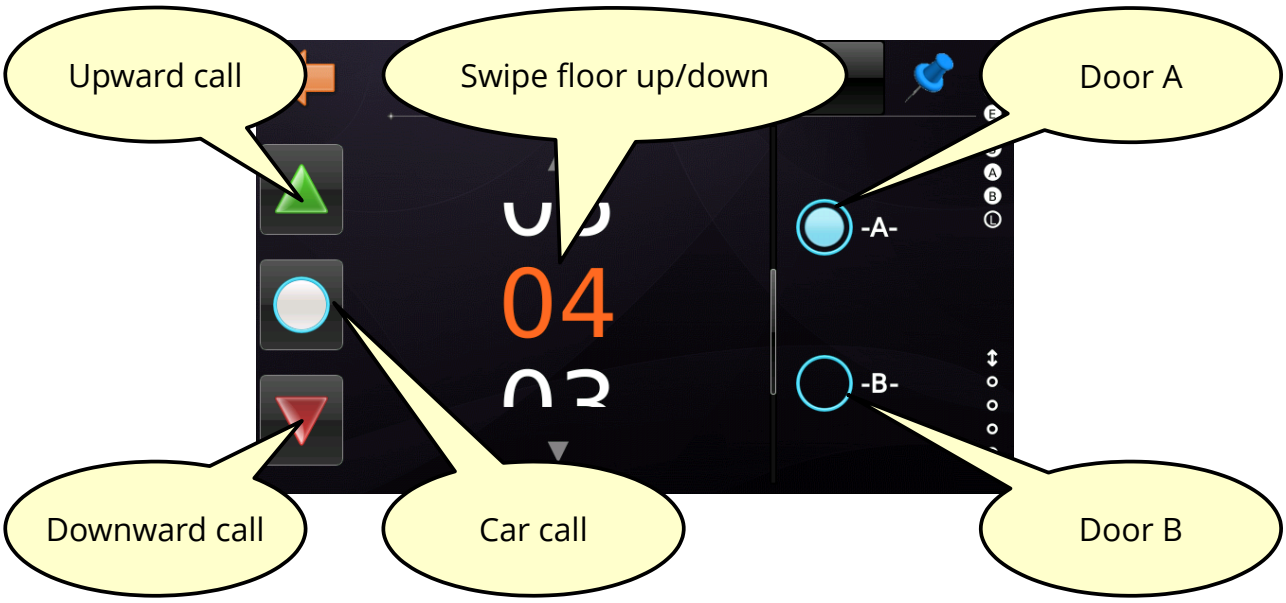
Figure 6: Signal state of an input port

All dialogues have usually a 'Help' button that give you a short introduction to the function of the current view.

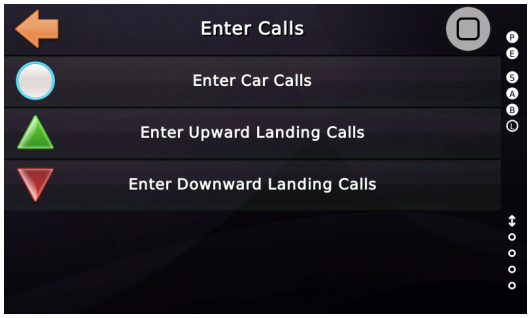
14.7 Entering Calls

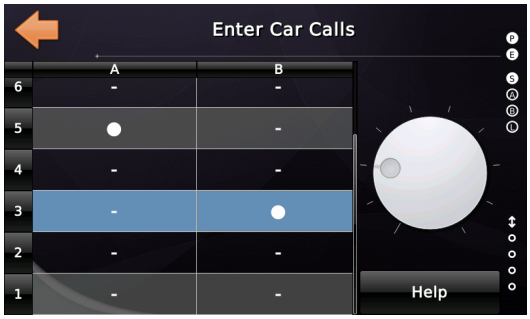
Beside the 'Call Panel' containing buttons for quickly entering a call to the next floor above or below and as well as a call to the bottom or top floor, the user may open the 'Call Dialogue' with further options, by touching the middle button.





Beside this method, the user can use a more classic call table, that can be found by pressing the hardware button 'Service & Assembly' and then go to 'Enter Calls'.





To enter a call via the table just Tap'n'Hold a cell. The rows represent the floors and the columns the available doors.

14.8 The Maintenance Buttons

You have surely recognized the three big buttons at the desktop surface.

These buttons are required regarding to the EN81 to give quick access to:

	Turning the landing control off and on.
	If activated keeps the doors closed, usually in combination with some kind of maintenance work, being in progress.
	Used to activate or deactivate the maintenance mode. If the maintenance mode has been turned on, no faults will be recorded or forwarded to any kind of data gateway. Automatic parking is deactivated as well.

▶ In order to ensure that the user does not accidentally turn off the landing control or keep the doors closed, an 'Are you sure?' message box has to be answered to proceed the function.

14.9 Inspection Pit Activation Reset

One of the EN81-20 requirements is that the lift shall not enter normal operation automatically, if the inspection panel in the pit had been used.

Regarding to the regulation it needs to be reset by an input from an electrical reset device outside the well or pit.

14.9.1 Standard Inspection Pit Reset via an Input Function

For the Thor unit this can be done via the input function '*Inspection in the pit reset signal*', e. g. using a key switch outside the well near the door leading to the pit.

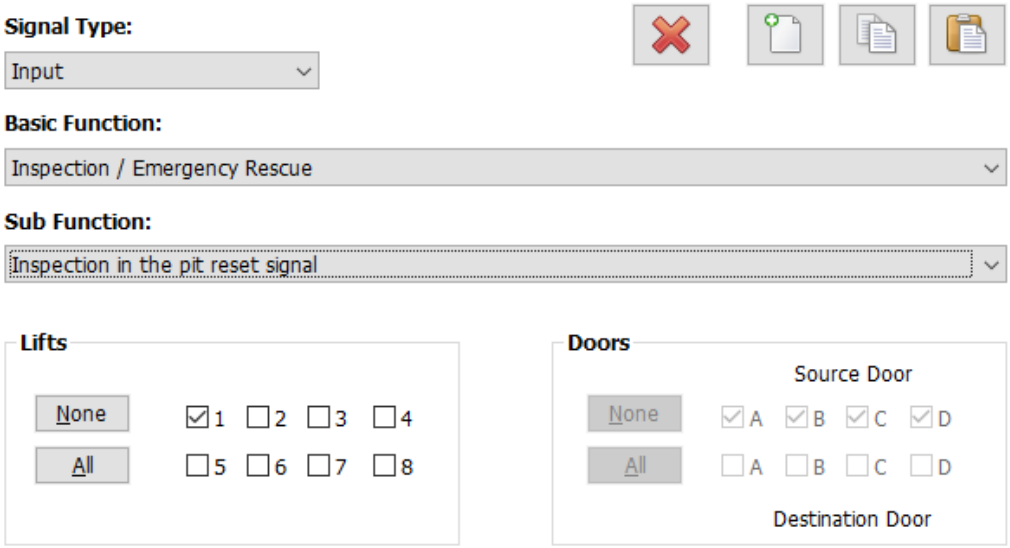


Figure 7: Inspection pin panel reset signal

If you install and run a lift team (group) and connect the input signal via **CAN2**, keep in mind to select the proper lift for the signal.

If you lift controller is in a closed and locked cabinet near the door leading to the well pit, you may activate the option to unlock the inspection pit operation via the lift controller's display. Depending on your local rules and different interpretations of the regulation this may be allowed or not allowed.

If you require an output signal that will be turned on, when the Inspection Control panel in the pit has been activated and will be dropped again, when the inspection operation mode in the pit has been reset, you may use this function:

'*Lift status indication → Inspection pit activated indication, lift 1, all floors, all doors*'.

14.9.2 Optional Inspection Pit Reset via the Display

If allowed by local rules and the lift controller cabinet being in a locked and closed cabinet near the door, leading to the pit, you may activate the option to finalize the inspection pit operation via the display.

You will find the corresponding option by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Basics' → 'More' -> 'Inspection control panel in the pit, policy'.

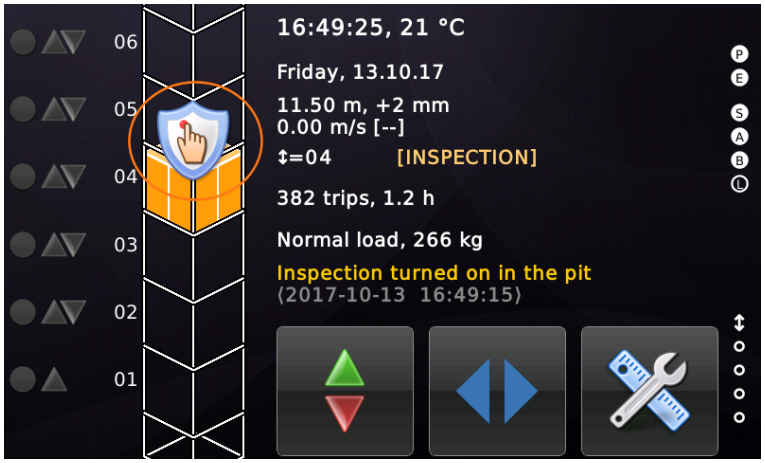


Figure 8: Lift waiting for inspection pit reset

Figure 9: Confirm to reset the pit inspection operation

After having confirmed to reset the inspection pit operation, the lift will leave the operation mode, if the **safety chain is completely closed**, to fulfil EN regulations. Otherwise the operation will fail with an error notification. To archive this, the lift will turn on the door lock magnet, if the lift is equipped with some.

This feature is only allowed, if the lift controller is in a closed/locked cabinet near the door leading to the shaft/hoistway pit. You may ask your local notified body about it.

14.9.3 Optional Inspection Pit Reset via the lowest Landing Call

Optionally, the inspection control in the pit can be reset using the landing call button in the lowest landing, if there are no local rules and different interpretations of the standard to prevent it.

You will find the corresponding option by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Basics' → 'More' -> 'Inspection control panel in the pit, policy'.

The following sequence is required for the controller to reset the inspection in the pit:

- First the technician switches the inspection in the pit control panel off.
- Then the landing door is opened and re-closed – for at least two seconds. This shall ensure, that the technician has left the pit.

  If using automatic power driven doors, the door lock contact (L) is checked. If using classical swing doors, the swing door contact (S) is checked.

- The Landing call button at the lowest landing shall be pressed 3 times in a row – one second per press.
- The lift controller will respond by blinking the landing call lamp three (3) times.
- The Landing call button at the lowest landing shall now be pressed 2 times in a row – one second per press.
- The lift controller will again respond by blinking the landing call lamp two (2) times.
- The controller now tries to establish a closed safety circuit and then resets the pit control. To do this, automatic power driven doors are closed and an existing door/cam-lock magnet will be engaged.

14.10 Unblocking the Lift Controller

If the lift controller has entered '*Blocking*' operation mode, because of a supervision function that not allow to let the lift go back to normal operation automatically, like some safety circuit or UCM faults, you can manually unblock the lift by touching the unblocking icon right on the cabin or the icon view.

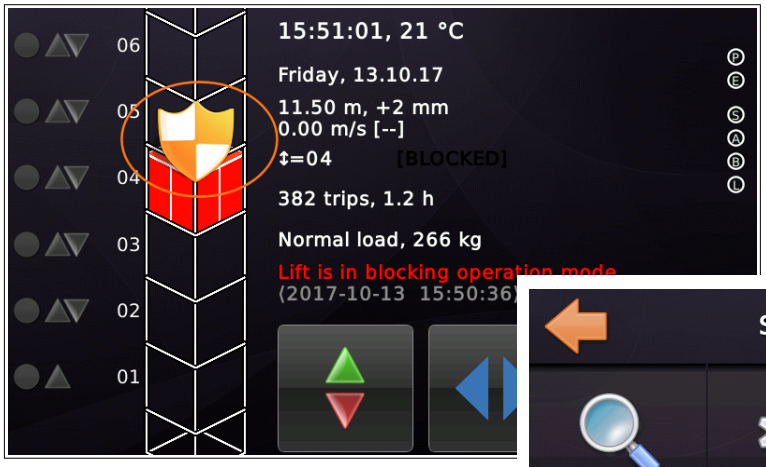


Figure 10: Blocked Operation Mode

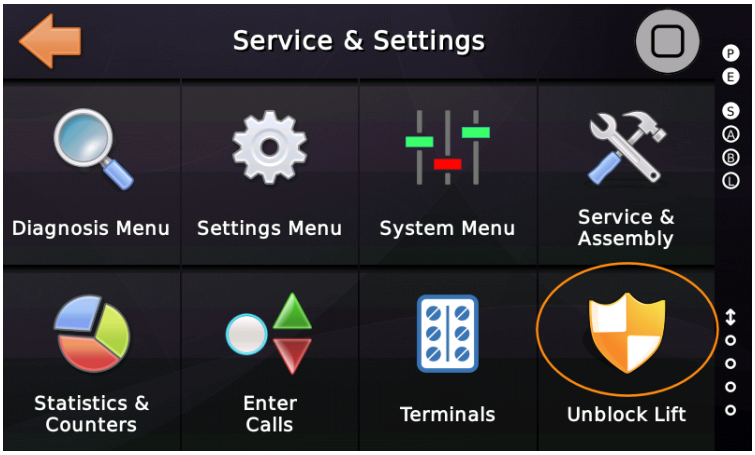


Figure 11: Unblocking via Icon View

If having confirmed to unblock the lift, the system will try to go back to normal operation. This may fail, if still some fault is pending that requires staying in the blocking operation mode.

In the given screen shots above, the passive safety chain input is missing, so unblocking the lift would fail.

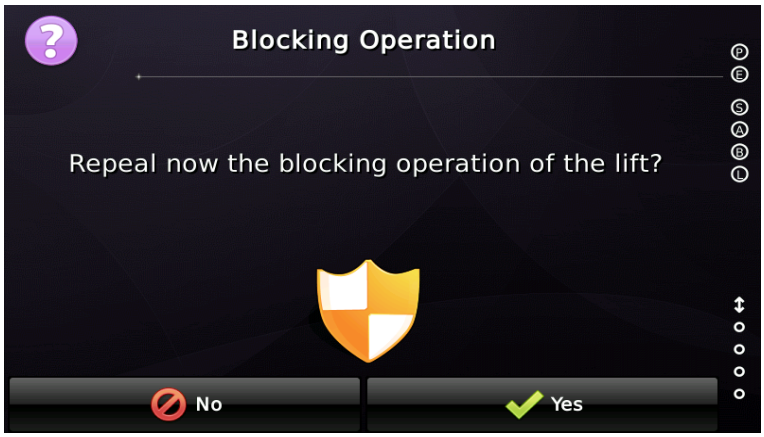


Figure 12: Confirm unblocking the lift

14.11 The Main Menu Structure

The root structure of the menu looks basically like this:

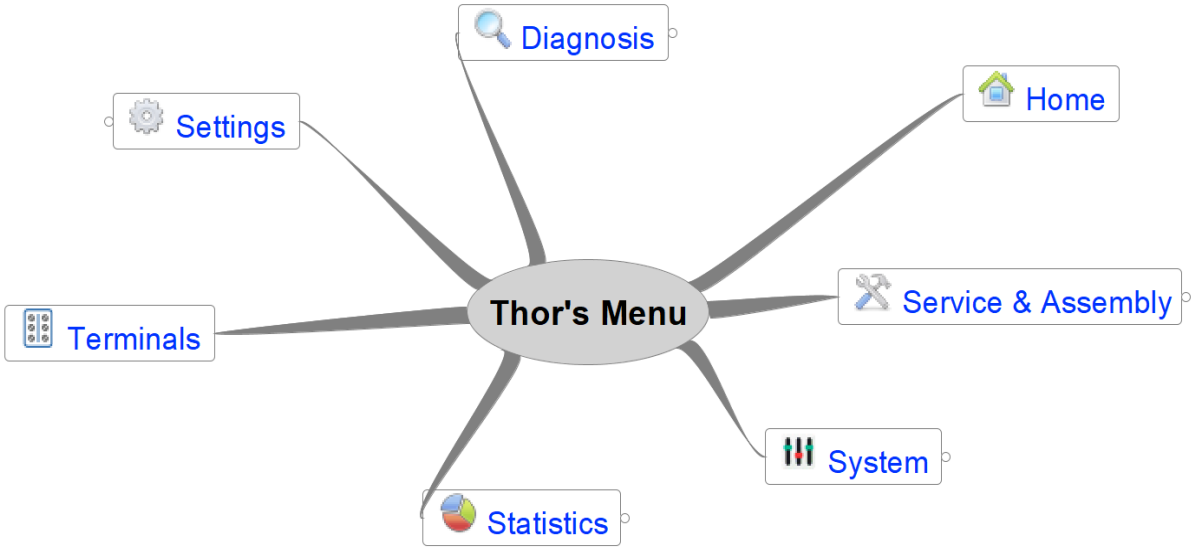


Figure 13: Thor's Menu Root Structure

The corresponding icons can be found on the hardware buttons as well as in the icon favorites view. Touching them will bring you to the selected branch of the menu.

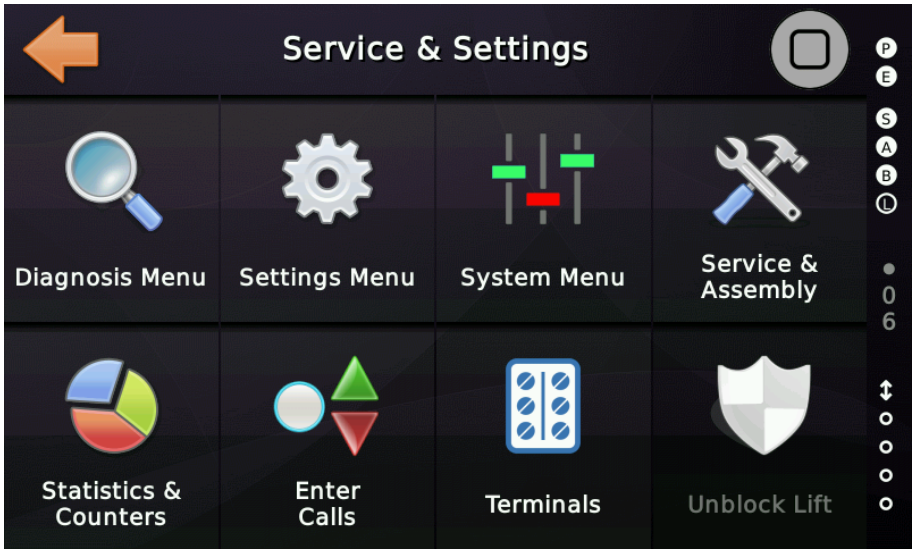


Figure 14: Favorites icon view

The Hardware buttons allow you to quickly switch between menus by keeping your current position inside the menu. Pressing the 'Home' button will always home **all** menus, so that you start at the beginning of the menu when entering.

14.12 Menu Navigation

The menu navigation is straight forward. Touching a menu button will enter the item and the back-arrow button will simply bring you back on menu level. A touchable menu item, might be a:

- A branch into a sub-menu, usually labeled with an arrow on the right border.
- A parameter item that allows you to change the given parameter.
- A dialog or assistant, like the one used for Learning Trip or the Limit Switch test.

The next figure shows a typical menu level. The first two menu items are parameter and the three others are branches into sub-menus, easily recognizable by the little arrow on the right border of the item.

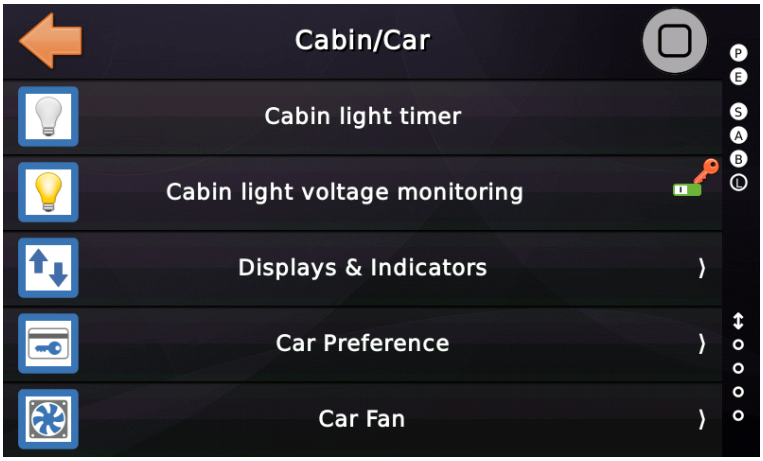
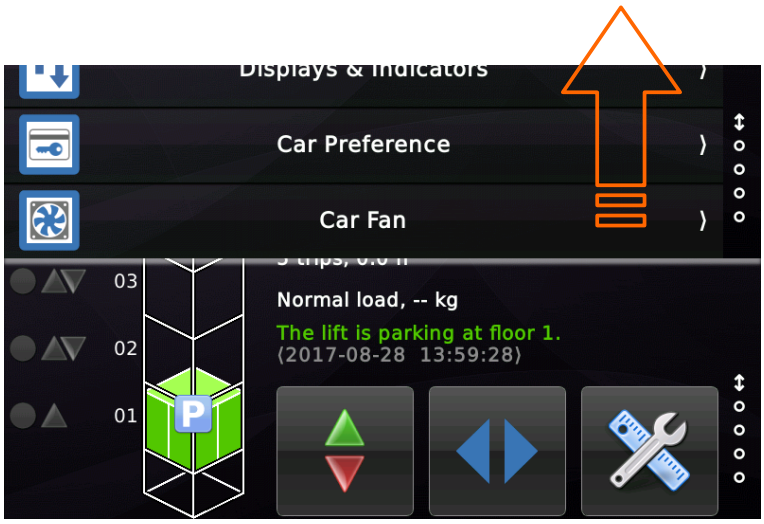


Figure 15: Typical menu level

If you want to stay in a menu position, already being in some sub-sub...menu, but on the other hand wanting to return to the desktop, do not use the home button. Instead just swipe the menu from down to up out of the way.



14.13 Password Privileges

If browsing through the menus you might find a yellow or red overlay icon on some menu items. These indicate that you will have to enter a 'Service' (yellow) or 'Setup' (red) password in order to alter their value/setting.

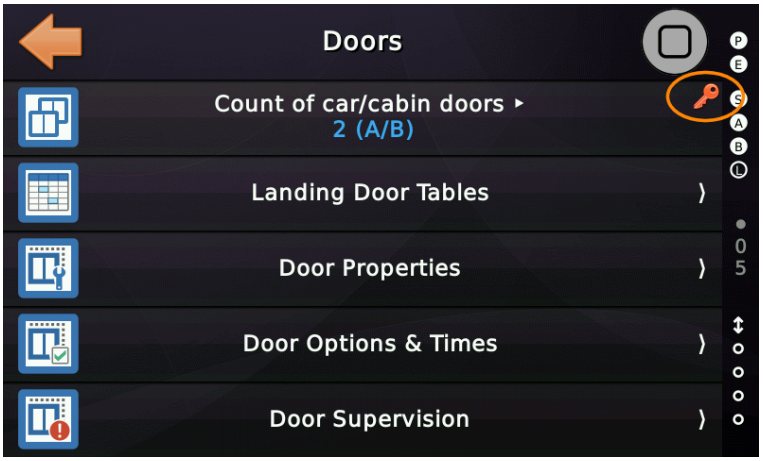
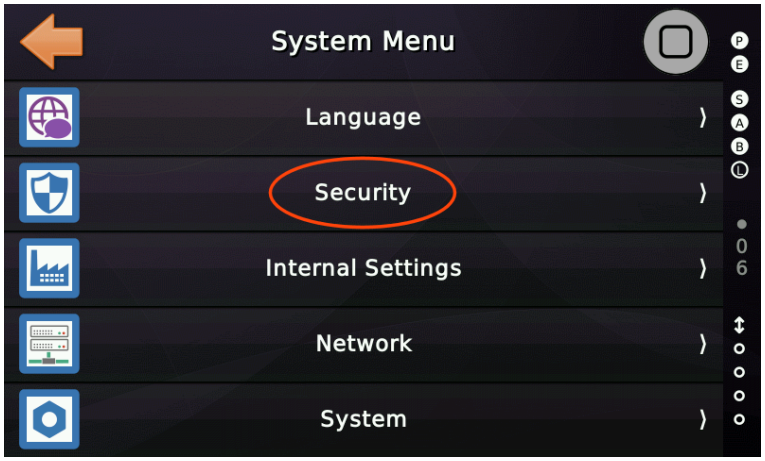


Figure 16: Menu item requiring setup password privilege

Menu item requiring 'Service' password privilege.

Menu item requiring 'Setup' password privilege.

To setup/alter the 'Service' and/or 'Setup' password, press the 'Favorites' hardware button and go to 'System Menu' → 'Security'.



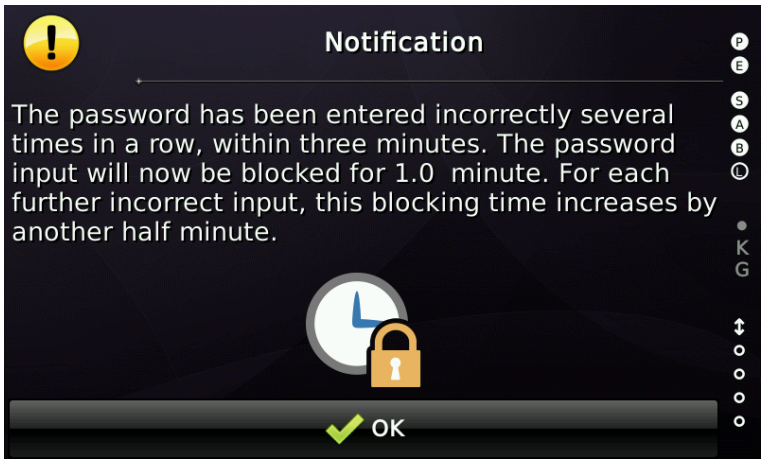
The Setup and Service password shall be 8 digits, containing characters and numbers.

The setup password (red key 🔑) secures parameters such as contactor monitoring times or the orientation of the position encoder used. The service password (yellow key 🔑) secures settings such as parking times or settings for the onward journey display.

Passwords are generally **not** stored in the lift controller's storage. Instead a salted SHA-1 (hash) of the password is stored. That means the lift controller can safely check the password input for being legit but it is not possible to calculate back from the hash to the readable (visible) password string.

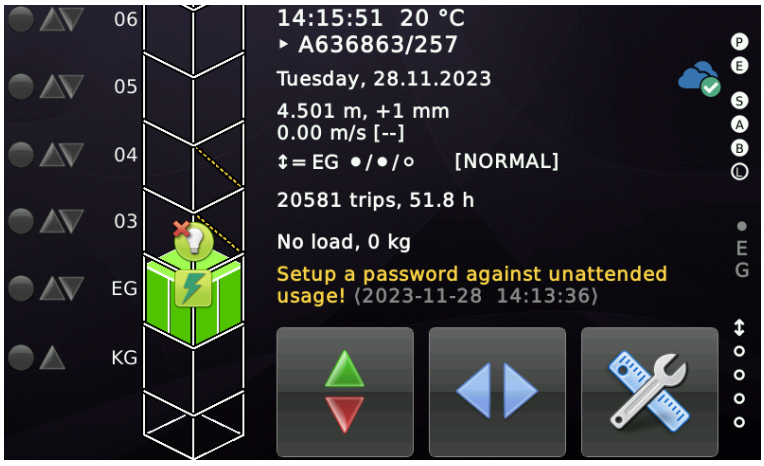
Since version V1.24.18 (12-2023)

If the password has been entered incorrectly three times in a row, within three minutes, then the password input will be blocked for one minute. For each further incorrect input, this blocking time increases by another half minute. If fifteen minutes have been passed, since the last wrong attempt, the internal counters are reset and three wrong password attempts are granted again.



Since version V1.34.02 (09-2023)

After completing the setting trip, the technician is asked to create at least one SETUP password.



15 Backup Battery Indication

The THOR unit contains a backup battery (CR2032) used to keep the on-board real-time clock going, if the unit has been powered down. You find the battery right to the 'Breathing LED'.

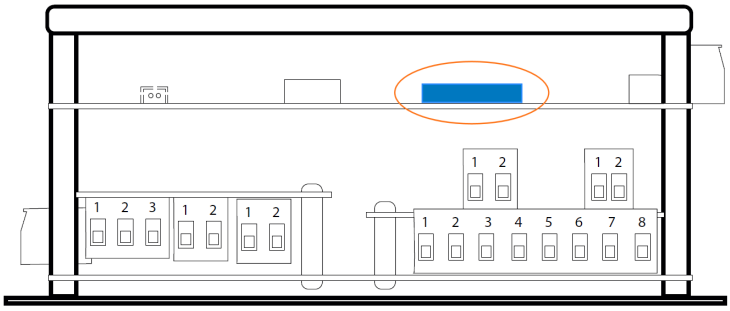


Figure 17: Backup battery for time/date

If the battery runs low on energy, you will be notified with an icon in the right top corner of the desktop.

If the battery is flat, the system will lose the time/date settings if being powered down and all time-stamps for new items in the logbook will be in the past then.

	The battery has reached down under 2.5 V. It shall be replaced on the very next maintenance.
	The battery is flat and has to be replaced immediately. If this symbol appears, the clock will lose its current time/date settings, if the unit is powered down. As a side effect, all time-stamps in the log-book for new items will be back to a date in 2017.

Always power the unit down in order to replace the battery!

Be careful when pulling out and pushing in the battery. You may use a small pliers for pulling it out.

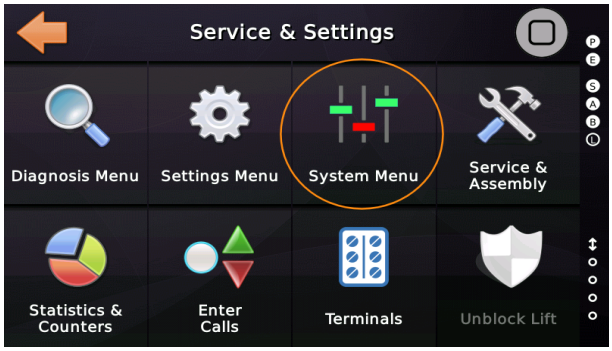
Once you have replaced the battery you have to setup the system time/date new. You will find the time & date settings in the 'System Menu' → 'System' → 'Date & Time'.

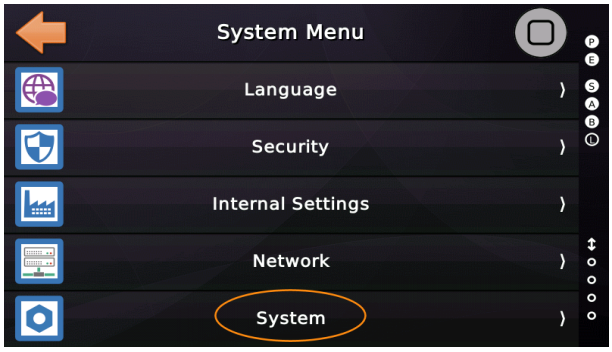
16 Time & Date Settings

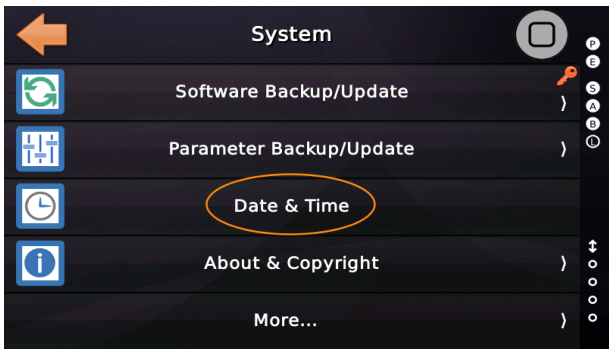
The internal real-time clock ensures that the time & date of the system is always up-to-date. In order to keep the date & time settings, the system has an on-board backup battery. You may have a look at the chapter 'Backup Battery Indication' for more details.

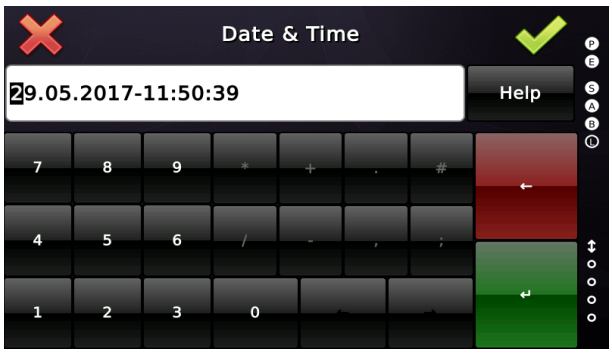
Once the system has been installed and every time the backup battery has been replaced, the system date and time settings have to be setup.

To open the 'Time & Date' settings press the hardware button 'Favorites' and then go to 'System Menu' → 'System' → 'Date & Time'.









▶ The date has to be entered in *day-month-year* style dd.mm.yyyy, e. g. **18.05.2017**.

▶ The time has to be entered in *hour-minute-second 24h* style, e. g. **15:42:36**.

After having the date and time settings changed, you will find the new time and date at top of the desktop.

17 Language Settings

Speaking the language of the customers is quite important.

The THOR lift application allows you to setup not just one of several available languages, but in fact three language at the very same time.

- The primary language is the language, that has been chosen to be the active language when the system starts.
- The alternative language is the language, that can be switched to, by using the gesture called 'Tap'n'Long Hold'.
- The optional third language is the language, that can be switched to, by using the gesture called 'Tap'n'Long Hold' again a second time. As for most of the regions, two languages are good enough, the third one is optional.

This allows you to switch to your secondary or third tongue '*on the fly*' without leaving the menu or dialogue, in which you currently are.

This feature is not only useful for countries, having more than one main language, like Belgium or Switzerland, but can also help working with English speaking support teams.

To try it out, setup two different languages. Press the 'Favorites' hardware button and go to 'System Menu' → 'Language'.

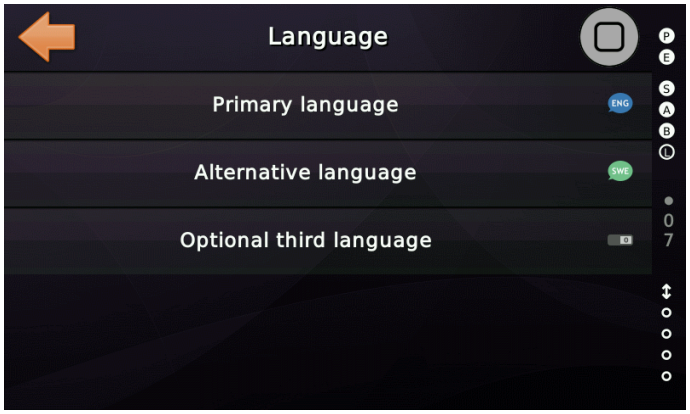


Figure 18: Selecting primary and alternative language

In the given example, we can see at the right edge of the menu buttons, that we have selected '*English*' as primary language and '*Swedish*' as secondary language.

If you now 'Tap'n'Long Hold' the finger for a while on the screen, a pop-up dialogue will appear telling you (already now in Swedish) that the language has been switch over to the alternative language.

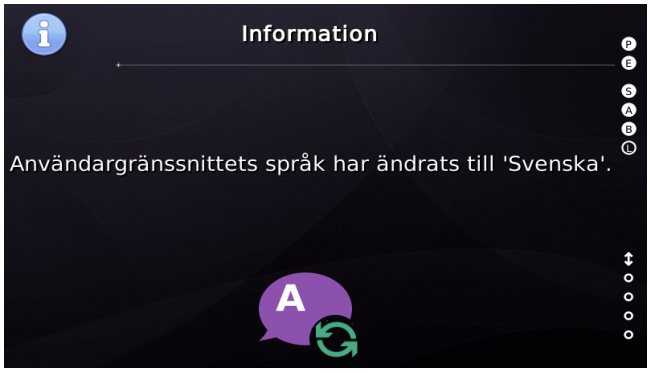


Figure 19: Switch to alternative language

Don't mind if you do not speak Swedish yet. Just redo it again to switch the language back. At the next system startup at the latest, the selected primary language will be active again.

▶ To switch back to the selected primary language, just 'Tap'n'Long Hold' again.

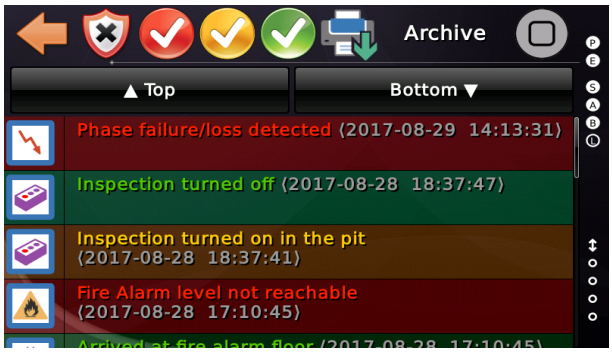
18 USB Mass Storage Support

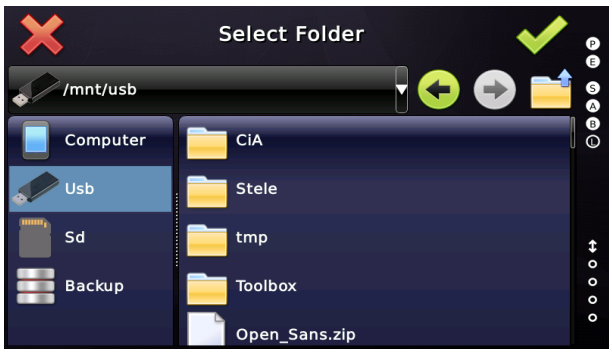
Using a smart USB mass storage in order to store the content of the Log book (Event Log) or the parameter set as a XML file or as a printout in readable form, is quite a useful function. Making a backup of the running software or doing an update of the running lift application is possible as well.

Currently the USB-mass storage has to be FAT16/32 as exFAT is still being under patent protection by Microsoft®. So in order to use the USB mass storage support you will need a USB stick not larger than 128 GB. If the stick does not work, check the file system on a laptop and format the stick using FAT32 then.

18.1 Storing the 'Logbook' content to USB mass storage

Open the Logbook and simply touch the 'Printer' Icon and edit the file name.





Touching the green check mark symbol will now store the printout to the USB mass storage. You will find the events, the help texts and the counter values included in the printout. The text file is UTF8 (Unicode) encoded and shall therefore be fine for usage on any up-to-date system.

18.2 Storing the parameter set to USB mass storage

You can store the parameter set as machine readable XML file or human readable text printout to a USB mass storage. The XML parameter file can also be used to restore a unit or for copying the parameters to another lift controller.

▶ Press the hardware button 'Favorites' and then go to 'System Menu' → 'System' → 'Parameter Backup/Update'.

19 The Logbook & Pending Events

When operating a lift application a lot of events may happen that are worth to be recorded. There are basically three categories:

- Notifications and messages, like '*Car Preference has been activated*'.
- Warnings like '*Keep doors closed operation activated*'.
- Serious fault & errors like '*Safety Chain bridge/bypass detected*'.

▶ The lift application presents two active lists of events. The '**Pending**' list just shows the currently pending events, while the '**Logbook**' is a kind of history containing recorded events of the past.

The lift application records those events together with a bunch of additional information called the 'Fingerprint'. It contains at least this information:

- Date & Time
- Floor and door mask
- Position, distance to next floor level and the velocity in that moment
- Payload status and optionally in [kg] or [%], if having a CANopen load measuring unit.
- Trip counter and operating hours
- Direction change counter
- Lift operating mode
- The 'Maintenance' mode & 'Keep doors closed' mode
- Landing calls enabled/disabled
- Assembly/Installation Operation Mode
- State of the door safety chain bridging via the SZ-board.
- Safety chain signal state, signaling if the doors have been closed/locked
- Drive/pilot contactor state

The safety chain signals, drive contactor signals and the velocity of the car/cabin are recorded for the last two seconds, making it possible to look back two seconds before the event/fault has actually happened.

19.1 Filtering the Logbook

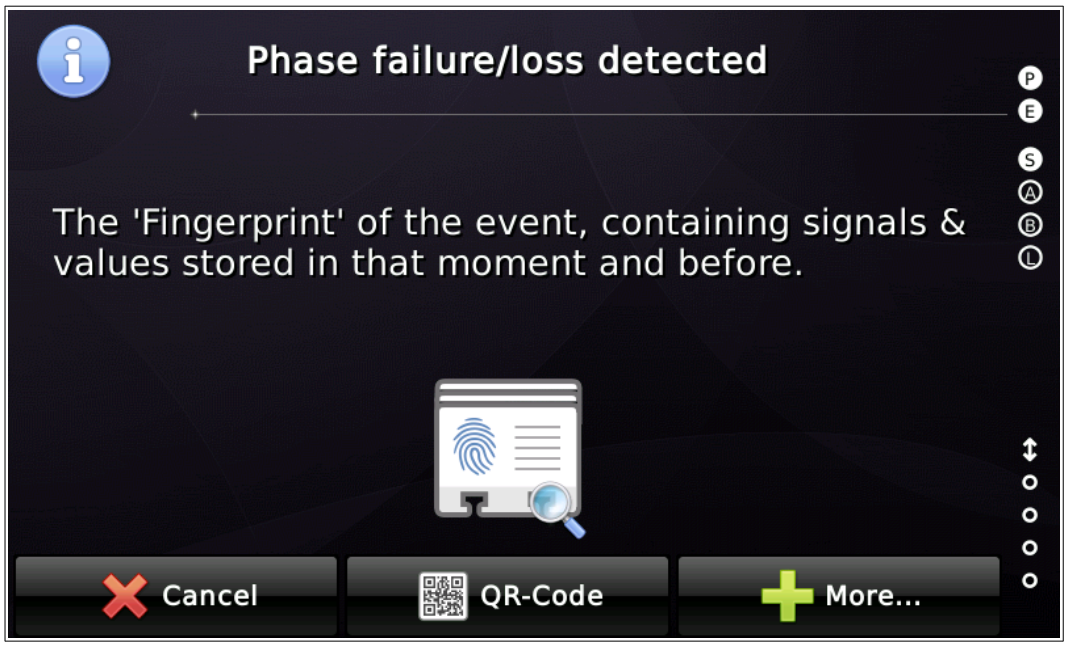
To make it easier to find what you are looking for, you may cross out one or more categories by using the filter on top of the dialogue.

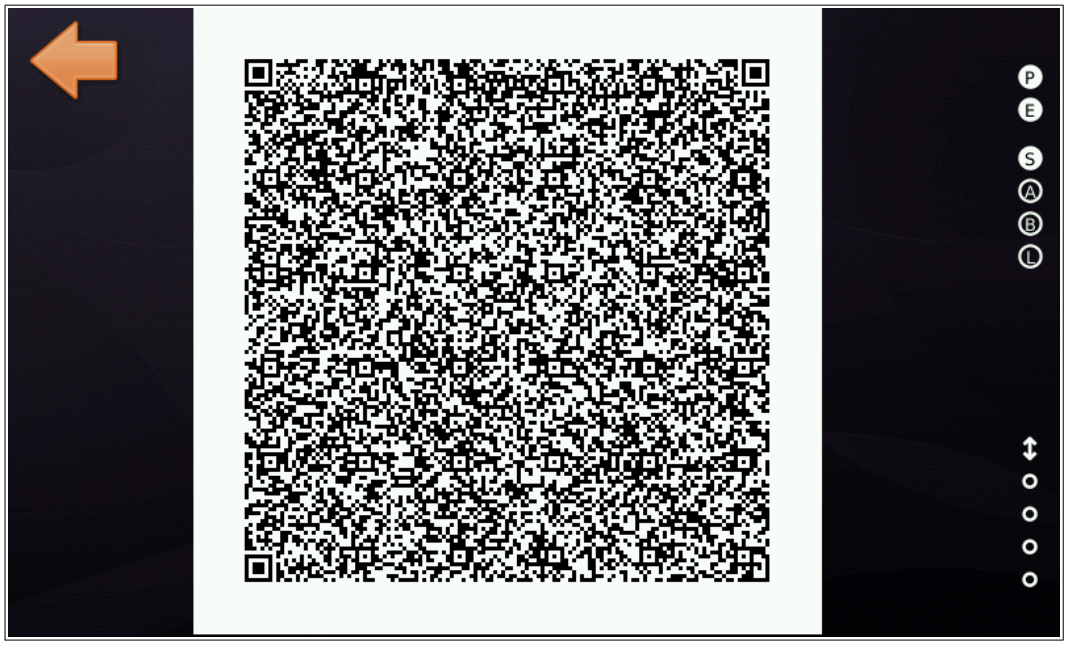
To open the log-book press the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'Logbook'.

19.2 QR-Code representing the log book item

Each log-book item can be shown as a QR-Code including the finger-print stored together with the event itself.

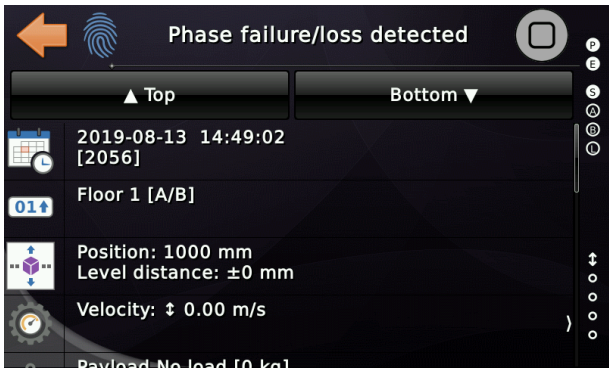
Use a QR-Code App on your smartphone to scan the code and forward the text stored in the QR-code as e-mail to some service technician at your office or headquarter.

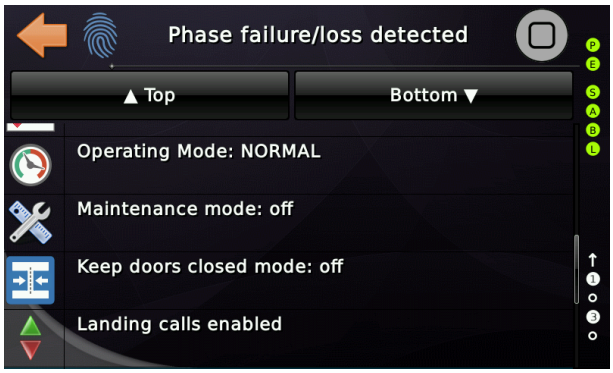


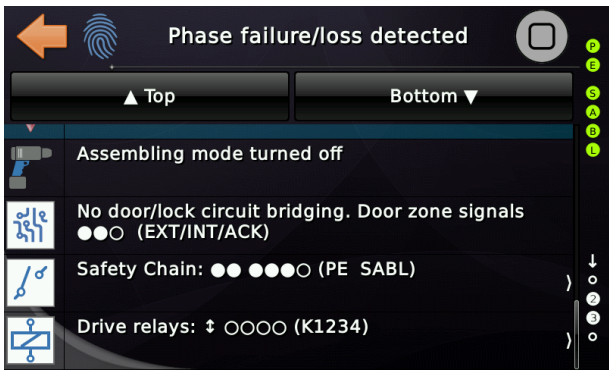


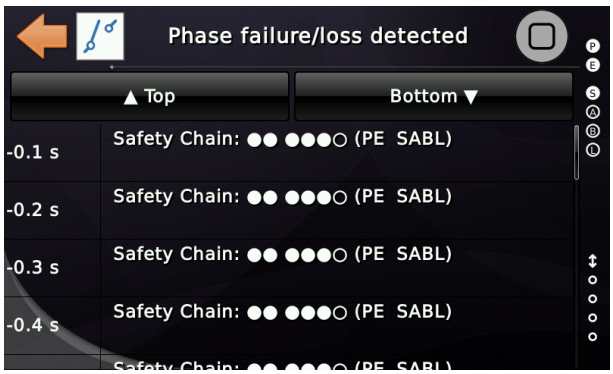
19.3 Fingerprint of the log-book item

Every item in the log-book contains details about the situation, in the moment that the event happened. Some lines, that are marked with a ' **>** ' symbol, do contain a '*back mirror*', were the last two seconds of the safety chain, velocity or position can be seen.









19.4 Quantity List of Faults

It can often be useful to see which faults have occurred most frequently. The pie chart shown below shows just that.

You will find it by pressing first 'Home' and then the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'More...' → 'Quantity List of Faults'.

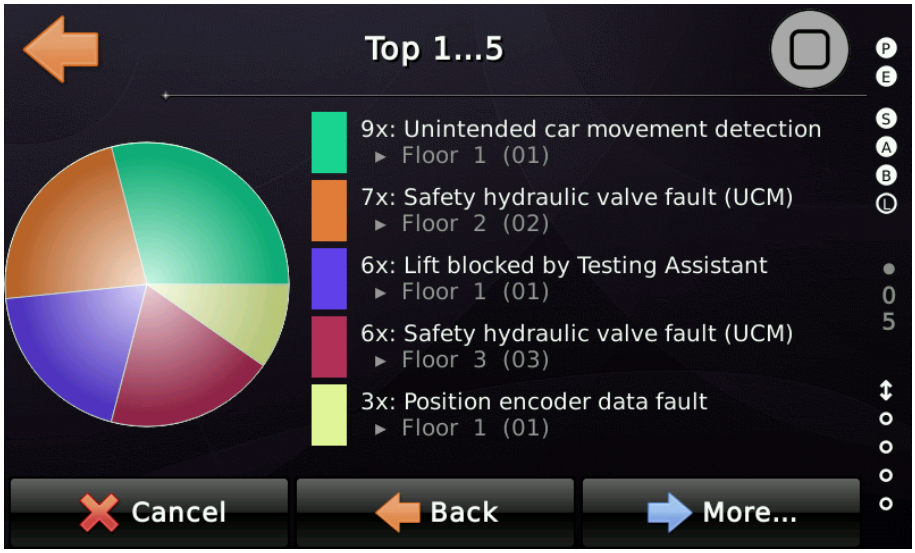
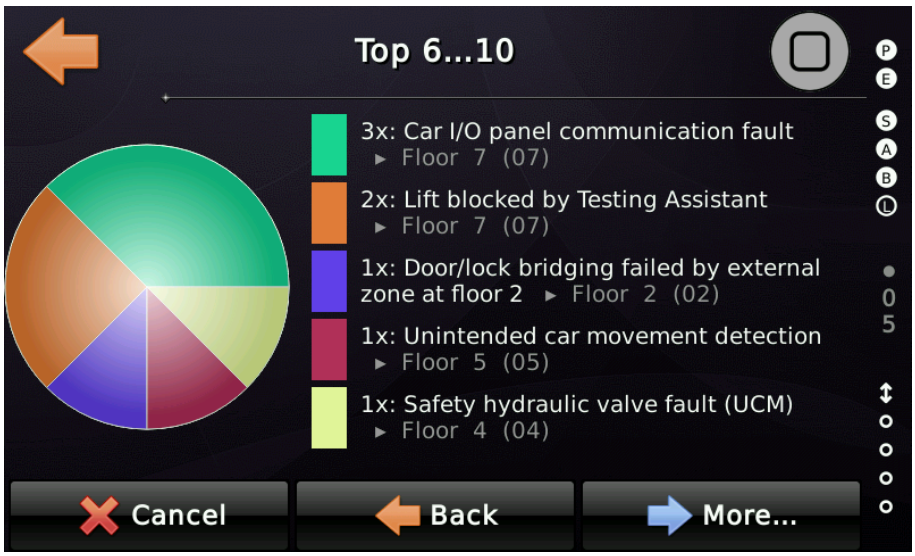


Figure 20: Pie chart showing the top 5 faults

The pages can be changed by swiping to the right and left so that the top 1..20 events are displayed.



You will have noticed, that some faults can be seen on several pages. This is because they have happened on different floors.

20 Lift Parameter Change Log

The parameter change log is a logging file system, storing all changes that had been made to the lift's parameters over time. It stores the last 256 parameter changes locally on the controller board.

The graphical visualization can be found following 'System Menu' → 'Security' → 'Lift Parameter Change Log'.

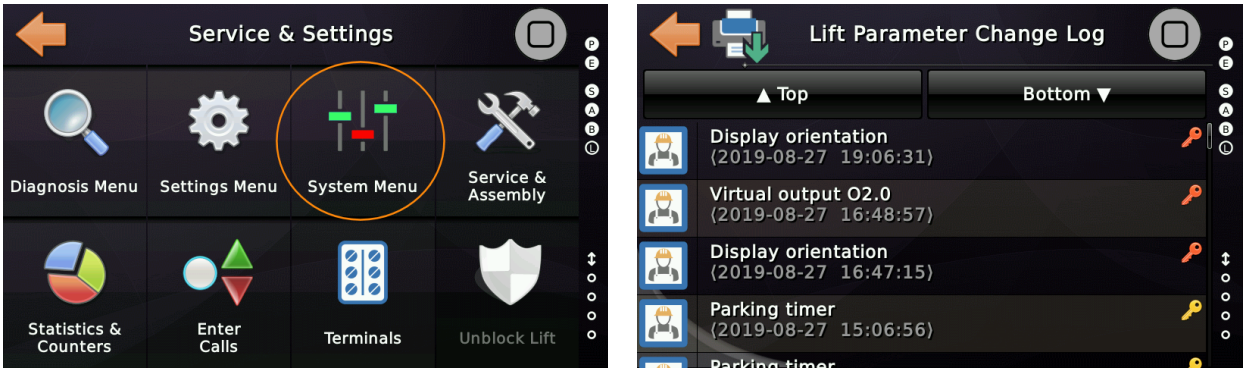


Figure 21: Lift Parameter Change Log found under System Menu → Security

The log file stores:

- What parameter had been changed (name/help text).
- At which date/time the parameter had been changed.

- How the parameter had been changed.
  - locally via the user interface
  - via the bus system
  - remotely (if possible) via the cloud solution

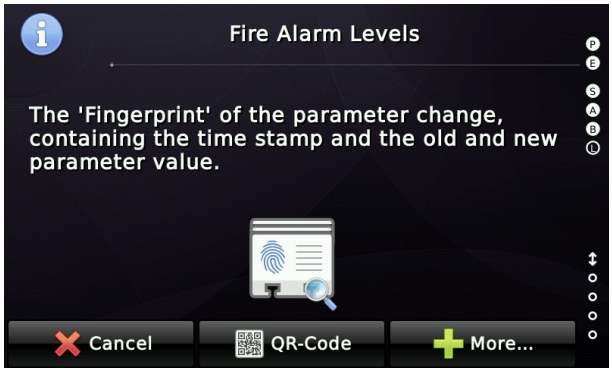
- What kind of privilege had been required to change the parameter (setup/service/no) privilege.
- The old and the new value(s) of the parameter, to put the parameter change in a context.

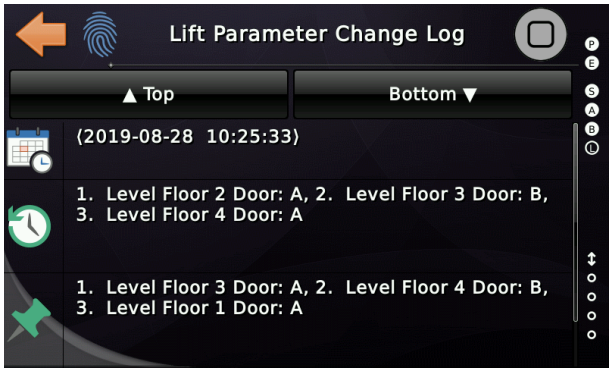
The complete log file can be stored to a mass storage (USB-stick). Single entries can be transferred via QR®-code as well.

20.1 Examples

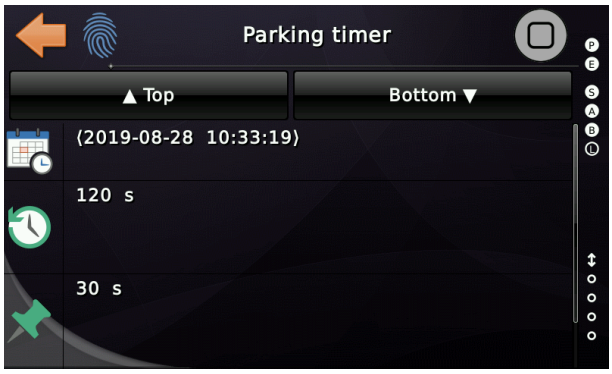
In the first given example the fire alarm levels had been changed to a new set of values. The parameter change log will record which levels had been changed. The second example shows the changes being made to the parking timer. The old and new value had been recorded, including the physical unit.

20.1.1 Example 'Fire Alarm Levels'





20.1.2 Example 'Parking Timer'



21 The CANopen Node List

21.1 Abstract

The CANopen node list can be used to change input and output terminals on any node on the bus, that actually supports this methods. You may change the node-id of existing nodes as well. Keep in mind that '*factory new nodes*' often feature the node-id 125 and will not send any input states or react on output messages as long as the node-id has not been setup.

The lift controller maintains two node lists, one for each physical CAN interface (CAN1 & CAN2).

You find the node list under 'Diagnosis Menu' → 'CANopen Node-List'. Then select CAN1 or CAN2.

The first interface connects all local peripheral units, like...

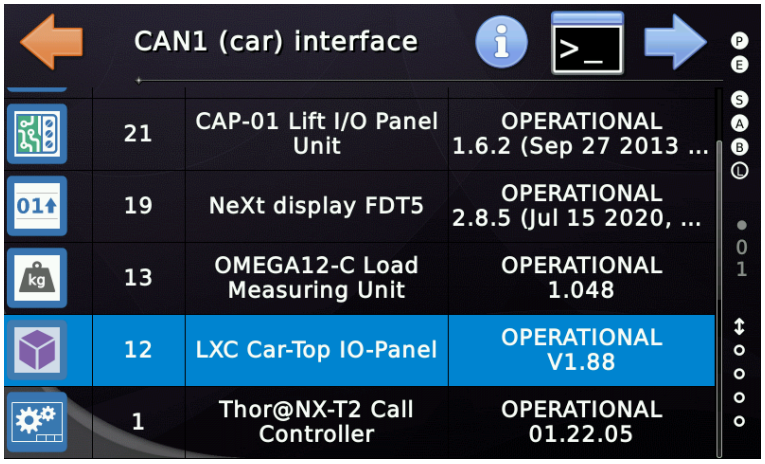
- Door units
- Drive unit
- Position unit / position supervisor unit (SIL3)
- Car-top electronics
- Lift phone (if it is a CANopen unit)
- Car load measuring unit
- Displays and voice announcers

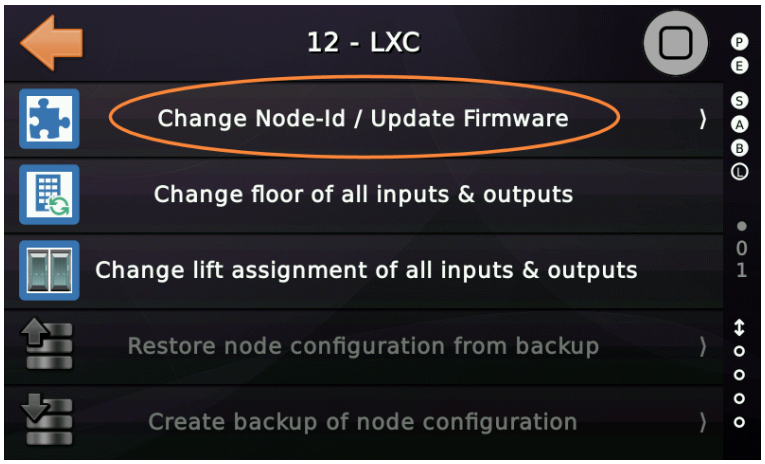
The second interface is connecting all input/output panel units and displays for the landings as well as the other lift controllers, if running in a lift team/group.

Swipe the list up and down and if you found the node you want to change, simply Tap'n'Hold it for a few seconds. Alternatively you may just tap it and then touch the '*Arrow Right*' symbol in the top-right corner. Then you find a menu providing the functions that can be used on this node. The menu item for changing the node-id can usually be found under 'More...'. Some of the nodes may provide a kind of '*text-based-user-interface*'. You may try to use the '*Console*' icon as well. Typically inverter units or door machines feature that text console function but other units may do as well.

21.2 Changing the Node-id of a LXC (Car Top Electronics)

In order to change the node-id of a LXC, Tap'n'Hold the item in the table. Alternatively you can just tap the item and use the 'Arrow-Right' icon. In the new menu that will open, select 'More...' and then go to 'Change Node-Id'.





22 Lift Team Operation

If several THOR lift units have been interconnected via the CAN2 interface to work as a team, landing calls will be processed by the team together. A smart algorithm inside the THOR units dispatches the pending landing calls dynamically.

To make this work each unit must be configured to be a 'Team Member 1..8'.

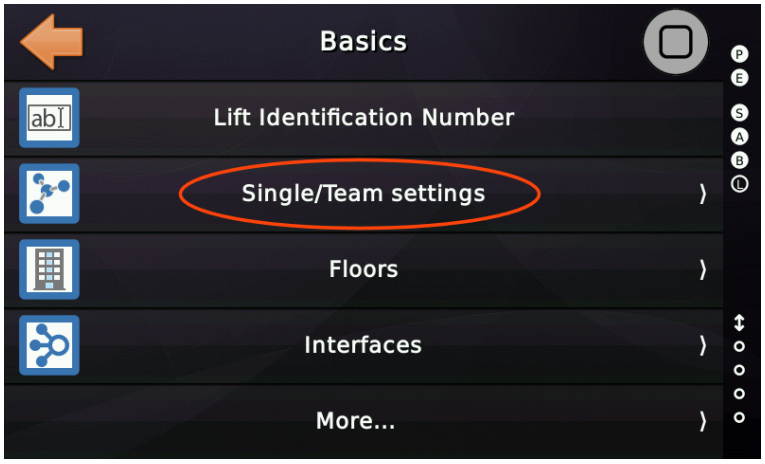


Figure 22: Single/Team Lift Parameter

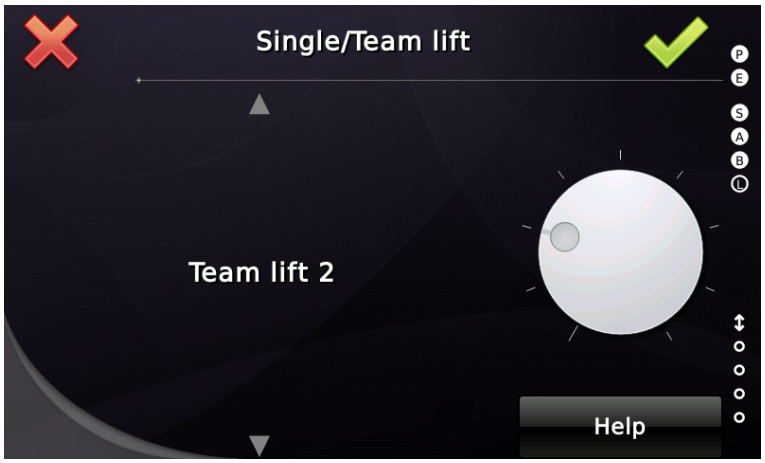


Figure 23: Selecting the Team Member Number

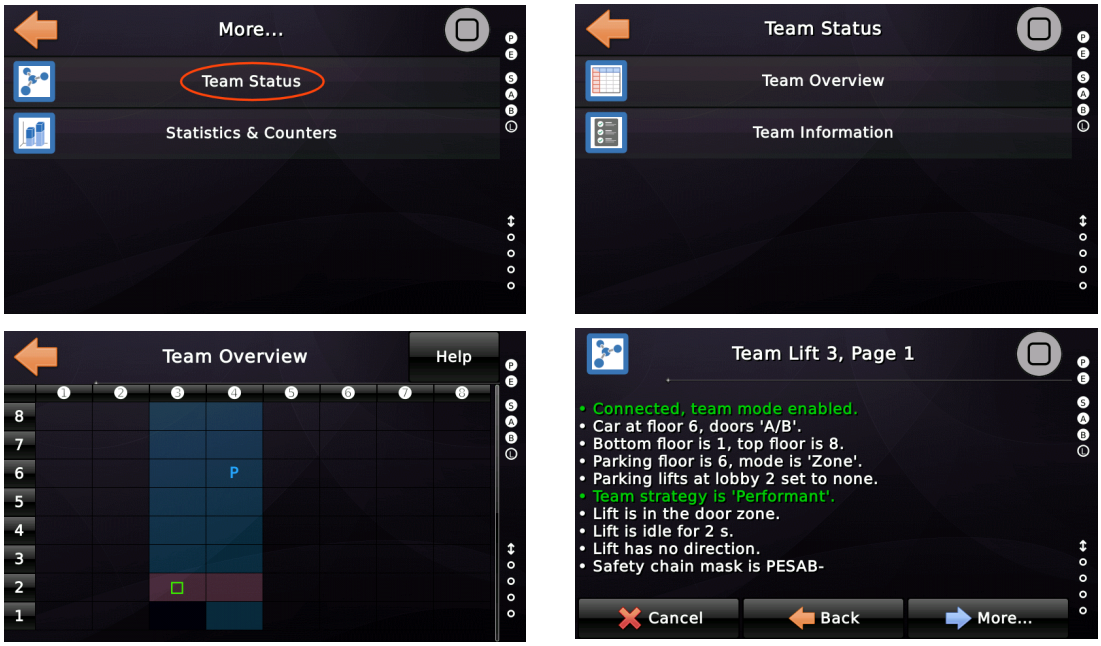
You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Basics' → 'Single/Team lift'.

If several team lifts feature the very same 'Team Number' a node-id conflict on the CAN2 bus will occur, shown as a fault in the 'Logbook' and under 'Pending'.

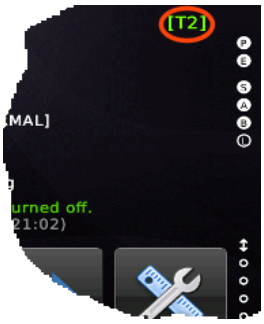
CAN2: Lifts using the same team-id.

22.1 Team Status

To check the '*Team Status*' press the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'More' → 'Team Status'. You will find a graphical overview dialog called '*Team Overview*' and a second dialog, called '*Team Information*', presenting two pages of process data, for each team lift member, about its state, position, velocity, destination and door status.



You may use the buttons '*Back*' and '*More*' or simply swipe the pages horizontally.



On the desktop of each team member, you will have a little symbol on right-top, like [T2] for the second or [T3] for the third team member. The color of this symbol is a hint, indicating if the team operation is working well or if the team member has left the team for any reason, like being on Car Preference or Fire Alarm or simply Out of Order.

22.2 Team Options

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Basics' → 'Single/Team lift'.

22.2.1 Lift team operation strategy

This option defines, if the landing call processing in the team, shall put the main focus on energy consumption or performance. It basically defines, the factors used to decide if another lift shall rush into catching calls, like...

- The factor used for the distance (in floors) between the lift and the destination.
- The factor used to define if a lift actually has to start in order to serve the call. This is one of the 'energy efficiency' factors that you want to eliminate, if 'performant' had been chosen.
- The factor used to keep a lift in energy saving level. A lift still awake is normally seen as the 'better choice'. This is one of the 'energy efficiency' factors that you want to eliminate, if 'performant' had been chosen.
- The factor used to keep a lift parking, especially in the lobby. A lift still not parking is normally seen as the 'better choice'.
- The factor factor to make a lift being in the lobby less attractive than a lift else were. This will prevent a lift 'stolen away' from the lobby just because it is some floor nearer than another lift.
- The factor for a lift moving 'away' from the desired destination. For a lift driving away the next possible 'turn-over' point is calculated and voted, using extra voting points for the stopover.
- The factor used for every 'stop-over' that the lift will do estimated do, before reaching the desired destination. The pending call calls are one of the indicator used with this criteria factor.

22.2.2 Time-span to leave the group, when the swing door has been left open

This option define the time span the swing/manual door has to be left open by a passenger, before the lift will leave the group/team. This will ensure that this lift will not block processing of landing calls.

22.2.3 Reflect on-board landing calls to the bus system

This option is very rarely used and defines if landing calls, that are just wired to one single lift, shall be reflected/broadcast back to the bus system having set the lift mask to '*All Lifts*'.

22.2.4 When full load in lobby floor, send another team lift

This option defines that another team lift shall automatically travel to the lobby floor, if another team lift is leaving the lobby floor with a full car (full load).

23 Assembly/Installation Operation Mode

Installing a lift is always a responsible task, done by well-trained technicians.

Because not all of the lift's sensor and actuators can be installed at the same time, it is necessary for the lift controller to be turned to '*Assembly/Installation Operation*'. In that mode the lift will behave differently from it's normal operation:

- Automatic detection of Safety Chain Bridges is turned off.
- The lift can be driven in inspection/emergency electrical operation operation without the position encoder system being installed.
- As long as there are no '*Assembly/Installation Pre-Limit*' switches installed, the lift will limit the maximum velocity to creeping speed.
- The 'Car Movement-Sense' and 'Rotation-Sense' Monitoring are deactivated.

If the lift limits the speed to creeping velocity under '*Assembly/Installation Operation Mode*', the '*Assembly/Installation Pre-Limit Switches*' have not been installed, but are turned on, which is the default setting. You find the related parameters here under 'Service & Assembling' → 'Assembling & Repair'.

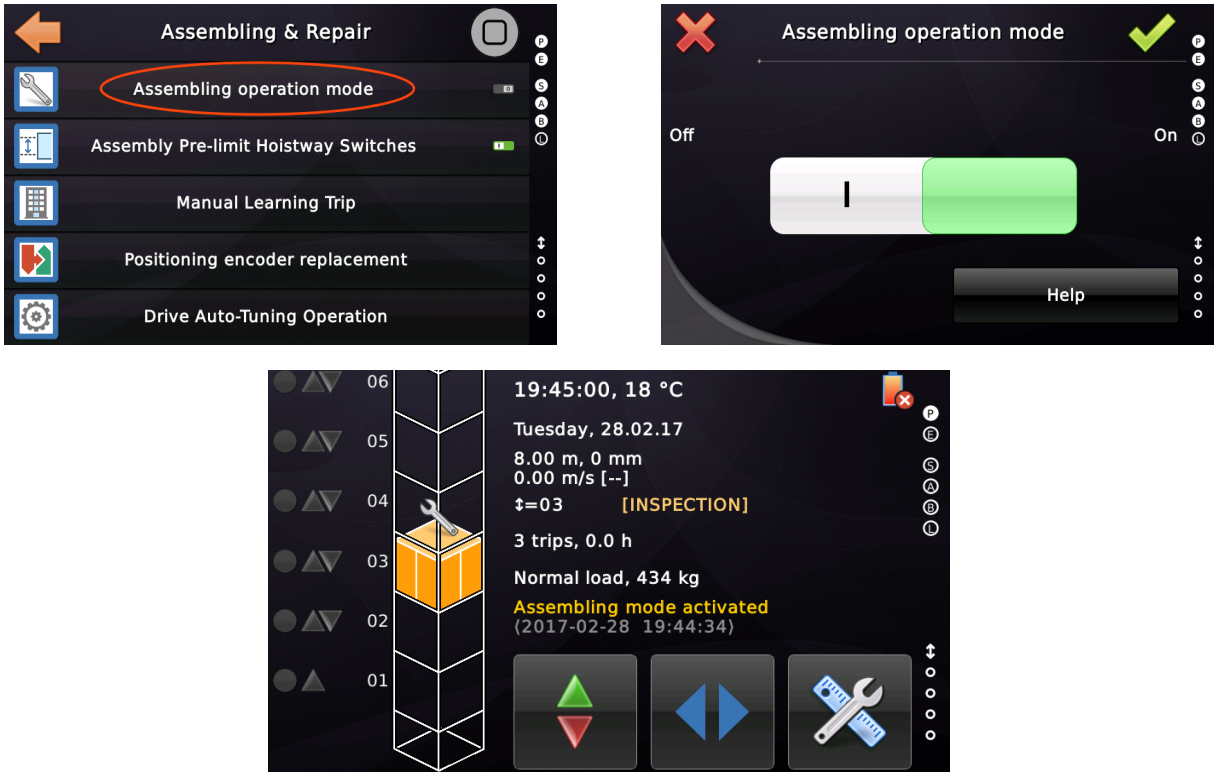


Figure 24: The lift with activated 'Assembling/Installation Operation Mode'

23.1 Preparation

Preparation for the '*Assembling/Installation Mode*' depends partly on the kind of lift installation and used materials. Here a some generic points:

- If running a CANopen drive, check that the drive system is communicating to the CAN1 bus interface. Simply check if the drive CAN status/error LED is green. It should stop blinking green and start being continuously green, when the lift controller has initialized the drive. If the status LED is still red or red blinking, check cabling and bus termination.

- If everything is OK, the drive should show up in the CANopen node list. You find the CANopen node list under 'Diagnosis Menu' → 'CANopen Node-List'.

- Ensure that your Emergency Stop button at your Inspection/Assembly Control Panel does really work! Check that the direction buttons does interrupt the safety chain as well, if being released. Double check it! Your security may depend on this.

- Install 'Pre-Limit Switches' for the time of installation as long as the position encoder system has not been installed, to limit the driveway up/down.

- As long as you have only a platform rather than a car/cabin to drive, ensure that the counter-weight is not to heavy and will not pull the platform upwards, because of the cables slipping over the traction sheave.

▶ The drive system shall be 'operational' in order to proceed with the '*Assembly/Installation Operation Mode*' operation.

▶ Because of the encoder and car-top electronics not being installed in '*Assembly/Installation Operation Mode*', you may terminate the CAN1 communication bus with a 120 Ohm resistor on the CAN-High and CAN-Low terminals in the cabinet where normally the travel cable would be connected.

23.2 Trouble Shooting

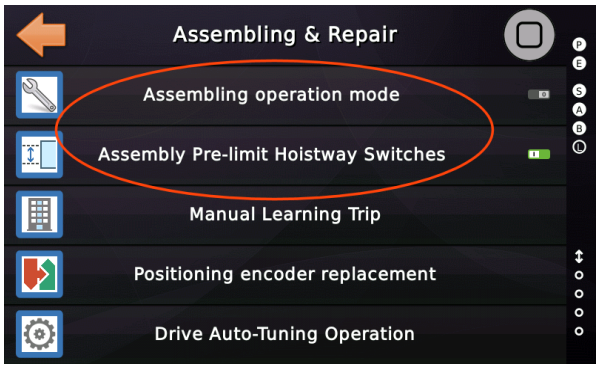
23.2.1 The drive does not start

If the lift controller does not mention any communication issue with the drive, check the drive's own display for more details. If you have a CANopen drive, you may have a look at the drive's display indirectly via the 'CANopen Console' from the lift controller's display. You find that under 'Diagnosis Menu' → 'Drive Unit Display'.

▶ Depending on the drive system you use, there may be more steps to do, if you want to run the drive without motor-encoder. Refer to the drive's manual for that purpose.

23.2.2 The car or platform does only move with creeping velocity

If the lift limits the speed to creeping velocity [V0] under '*Assembly/Installation Operation Mode*', the '*Assembly/Installation Pre-Limit Switches*' have not been installed and wired but are turned on, which is the default setting. You find the related parameters here 'Service & Assembly' → 'Assembly & Repair'.



24 Learning Trip via a simple/normal Position Encoder

One of the most vital parts of a lift installation is the positioning encoder system, which provide directly or indirectly:

- Car/cabin position in raw increments rather than millimeters. [directly]
- Car/cabin position in millimeters. [indirectly]
- Velocity of the car/cabin moving. [indirectly]
- Acceleration of the car/cabin moving. [indirectly]

Because the position in millimeters is calculated from the encoder value in raw increments, it is important that the lift controller works with the right conversion values. For rotary encoder systems, the pulley circumference is the key parameter.

After the positioning encoder system has been installed and now operates properly, the learning trip operation may be started. The car/cabin needs to be ready assembled, including a proper working door machine and a correct installed door sill. Then you may proceed with the next step.

In order to prepare the lift for normal passenger operation, the correct floor level positions have to be taught. These values are vital because all other distances, like...

- Door zone
- Re-leveling zone
- Braking distances (Deceleration)
- Minimum travel distances for velocity selection

... are depending on the correct level positions. So make sure that the floor level position values are really 'spot-on'.

It is a common mistake to modify the floor level positions directly, if the lift does not approach flush on level. It is better to check first whether the lift is overrunning or stopping too early, because the deceleration distances do not fit. Only when the lift actually stops at the taught position, the floor positions shall be adjusted, so that they match the door sill.

24.1 Preparation

Check that the CANopen position encoder system is communicating to the CAN1 bus interface. Simply check if the encoder status/error LED is green. It should stop blinking green and start being continuously green, when the lift controller has initialized the encoder. If the status LED is still red or red blinking, check cabling and bus termination.

If the encoder's LED is not green, then...

- Check that CAN-High (white) and CAN-Low (blue) are not distorted.
- Turn off the controller cabinet and measure the resistance of the CAN-bus between the CAN-High (white) and CAN-Low (blue) lines. The bus should be terminated on both ends with 120 Ohms, the resulting resistance shall be about 60 Ohms. Bare in mind that often the position encoders are already terminated, assuming that they are on the one end of the bus line.

If everything is mint, the encoder should show up in the CANopen node list, like in this example. You find the node list under 'Diagnosis Menu' → 'CANopen Node-List'.

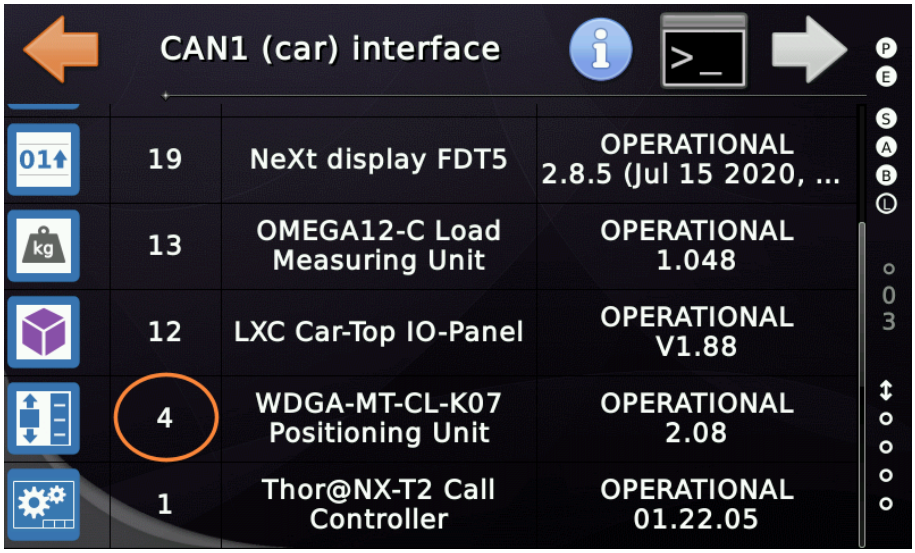
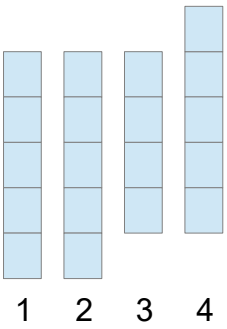


Figure 25: Example of a node-list @ CAN1

The encoder system shall be '*operational*' in order to proceed with the learning trip operation.

24.2 Bottom/Top Floor Parameter



Just to ensure that these parameter have been setup properly when the cabinet was produced/manufactured, have a quick look under 'Settings' → 'More...' → 'Basics' → 'Floors'.

Check the values for the bottom and top floor. The value for 'Bottom Floor' is quite often just one, but in a lift team, it may vary if the team lifts have different floors they (or their hoistway) start from.

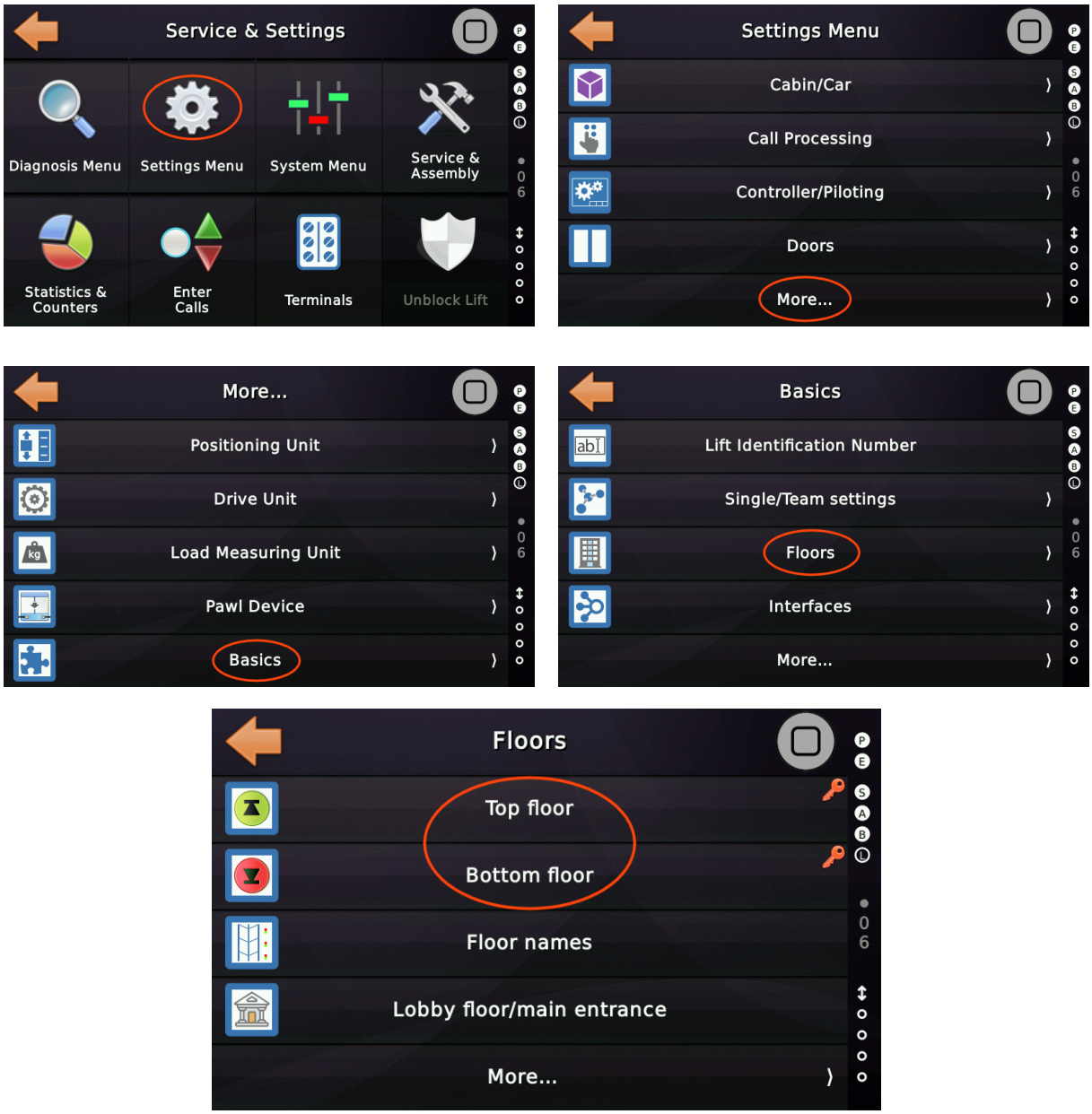


Figure 26: Top/Bottom Floor Level Settings

24.3 Teaching the Floor Levels manually

The classical '*Manual Learning Trip Operation*' can only be activated, if the lift has been turned to inspection/emergency electrical operation first.

Figure : Lift being on inspection/emergency electrical operation.

The manual learning trip assistant can be found under 'Assembling & Service' → 'Assembling & Repair' → 'Learning Trip' → 'Manual Learning Trip'.

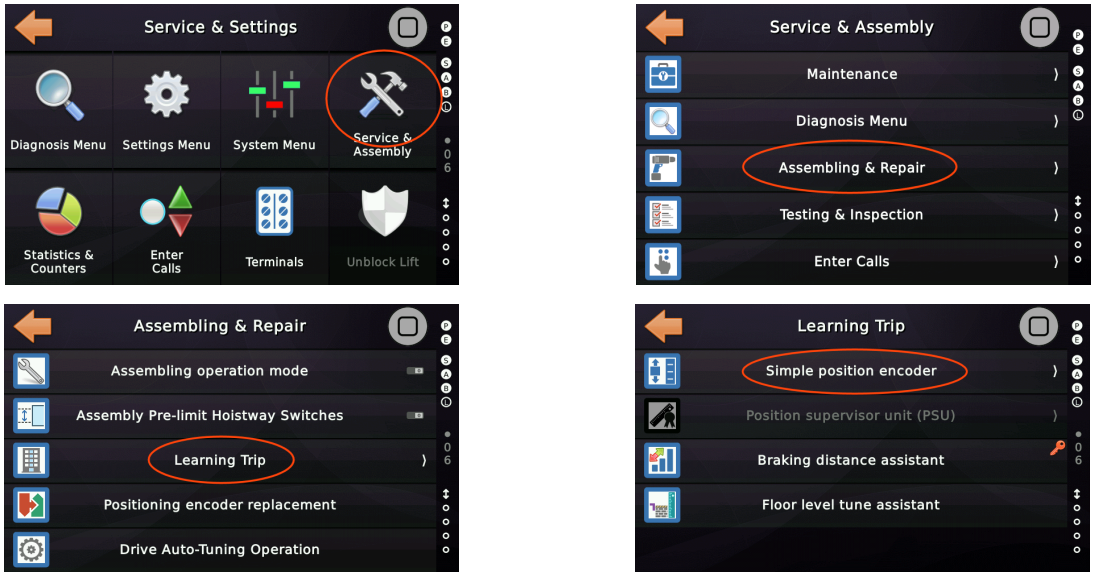
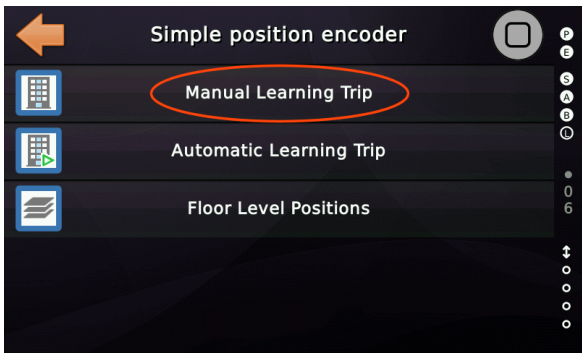


Figure 27: Manual Learning Trip Assistant

▶ Activating the Learning Trip operation will overwrite the existing floor level positions.



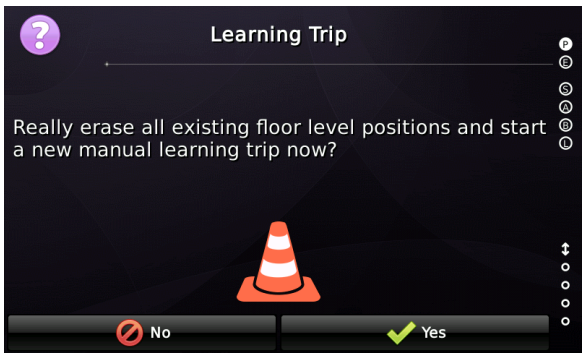
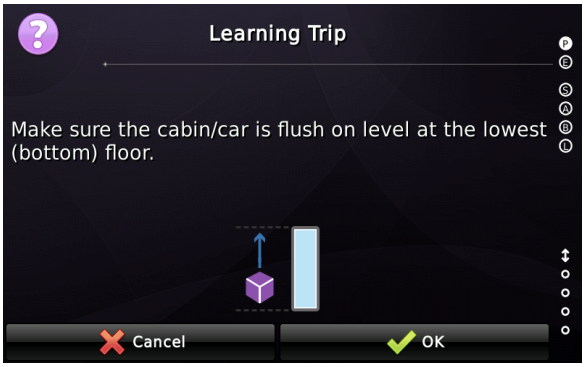
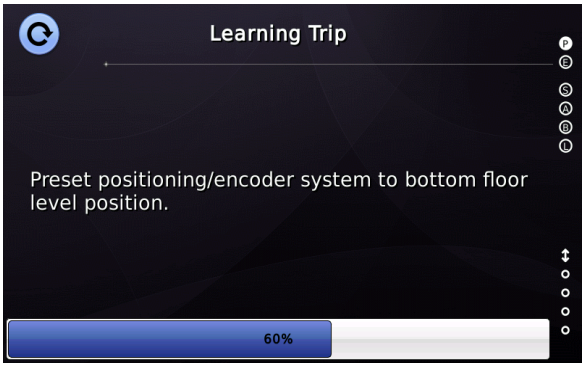


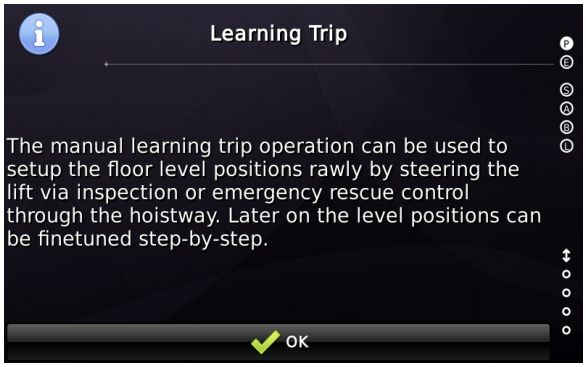
Figure 28: Erasing all existing floor levels

▶ To make it as easy as possible, level the cabin flush on the very first floor, before starting. If proceeding, the assistant will 'preset' the encoder to 1000 mm (1 m) as the first floor level, which is then the base position for every other floor on top of it.





▶ If 'Presetting of the Encoder' has worked well, the positioning encoder should signal that the car is now flush on '1.000 m'. If this is correct, go ahead by tapping on the 'Save' button.



Move the car now by operating the lift via the inspection/emergency electrical operation panel up and down to the next floor level. If you have a second person to support you, it might be easier. Otherwise you can monitor the state of the door zone magnet switch.

▶ It is not important that the floor level values are exact in that stage, because they can be easily adjusted after the 'Learning Trip' has been finished. You will find the taught values in the floor level table, that can be found under 'Settings' → 'More...' → 'Positioning Unit' → 'Floor Level Positions'.

▶ So later on (after the floor levels have been learned) a test drive and a simple ruler to measure the level distance, is all you need to make the cabin going flush to level. But before you actually change the values, just check if the lift really stops at the taught positions, even if they are not correct, to ensure that the deceleration distances are sufficient to stop the car correctly.

If you have reached the next floor level, store (teach) the position by either tapping the 'Save' button on the lift controller's display or (as an alternative) pressing the corresponding 'Car call button' in the car/cabin of the lift. The car call lamps of floors that have already been taught are kept turned on.

Using the car call buttons to store the floor levels means, that you may use a temporary inspection/control panel long enough to be with you in the car, to do your learning trip. If you have saved a floor level position, the floor number will automatically be adjusted.

▶ If you have (for any reason) to undo an already learned position, just tap the 'Undo' button or simply swipe the floor number back.

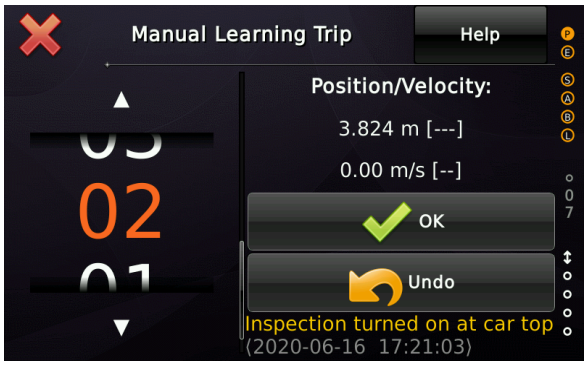


Figure 29: Learning Trip Assistant Main Screen

▶ Proceed with every floor until you have finished the top-floor of your lift.

24.4 Teaching the Floor Levels automatically

In addition to the manual learning trip operation, the lift controller offers an automatic learning trip as well, in which the carefully installed zone magnets are used to determine the floor level position. The floor level positions taught in this way can then be adjusted using the Floor Level Tune Assistant or directly via the position table.

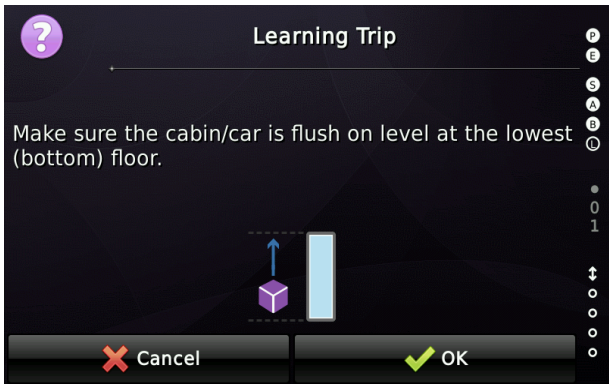
The '*Automatic Learning Trip Operation*' can only be activated, if the inspection and emergency electrical operation has been turned off.

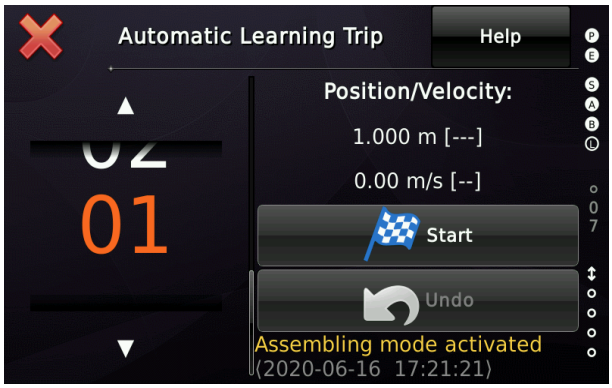
The learning trip assistant can be found under '*Assembling & Service*' → '*Assembling & Repair*' → '*Learning Trip*' → '*Simple position encoder*' → '*Automatic Learning Trip*'.

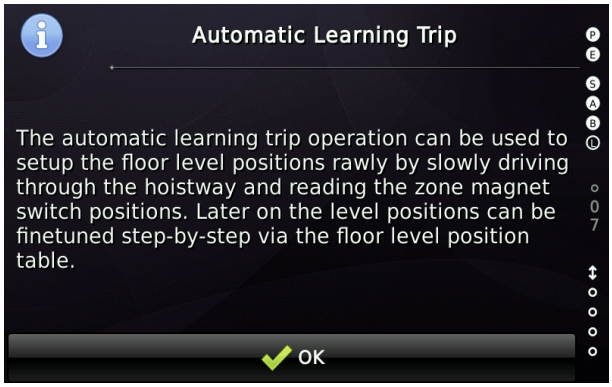
▶ Activating the Learning Trip operation will overwrite the existing floor level positions. To make it as easy as possible, level the car flush on the bottom floor, before starting.

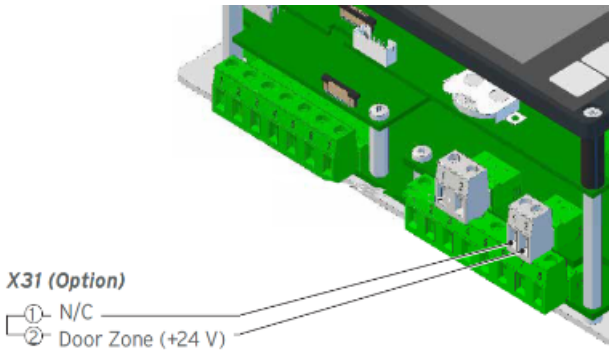
Check the door zone solenoid switch to be turned on (closed), before proceeding. You can easily measure this on the Thor lift controller units itself on terminal X31.2.

If proceeding, the assistant will 'preset' the encoder to 1000 mm (1 m) as the first floor level, which is then the base position for every other floor on top of it.







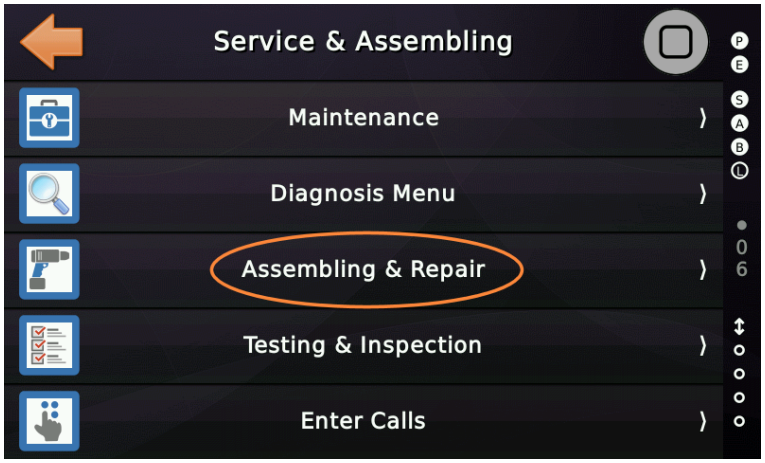


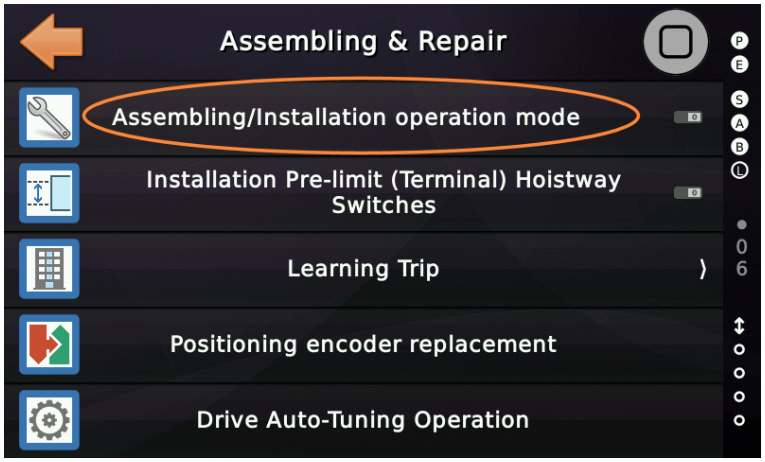
24.5 Assembling/Installation Mode automatically off

The 'Learning Trip Operation' will automatically turn off the '*Assembling/Installation Operation Mode*', if it has been finished successfully.

That means that all deactivated supervision and monitoring functions will be activated then. This includes the 'Safety Chain Bridge' detection.

A common result of this is, that after the learning trip, the lift will getting blocked, because of some Safety Chain bridges being still connected. This is not a fault but a safety feature, ensuring that the lift will not operate normally, if still having some 'forgotten' Safety Chain Bridges' connected.





25 Learning Trip using a Safe Encoder Unit (SIL3)

The PSU is a safe (SIL3) encoder system and monitors the movement of the lift cabin. This enables the PSU to replace physical limit switches and the speed-governor, their functionality is now provided virtually by the PSU.

Being a safety-related unit, each PSU manufacturer implements its own certified setup procedure. This results in a variety of learning trip procedures.

Before starting with the PSU's learning trip, make sure to pass the steps described in the chapters 24.1 and 24.2 .

Check under 'Settings' → 'More...' → 'Positioning Unit' → 'Type of Positioning Unit' → 'Encoder Type' if the chosen option is matching the used PSU.

25.1 Preparation

To switch from the usage of a regular encoder to a PSU, perform the following steps.

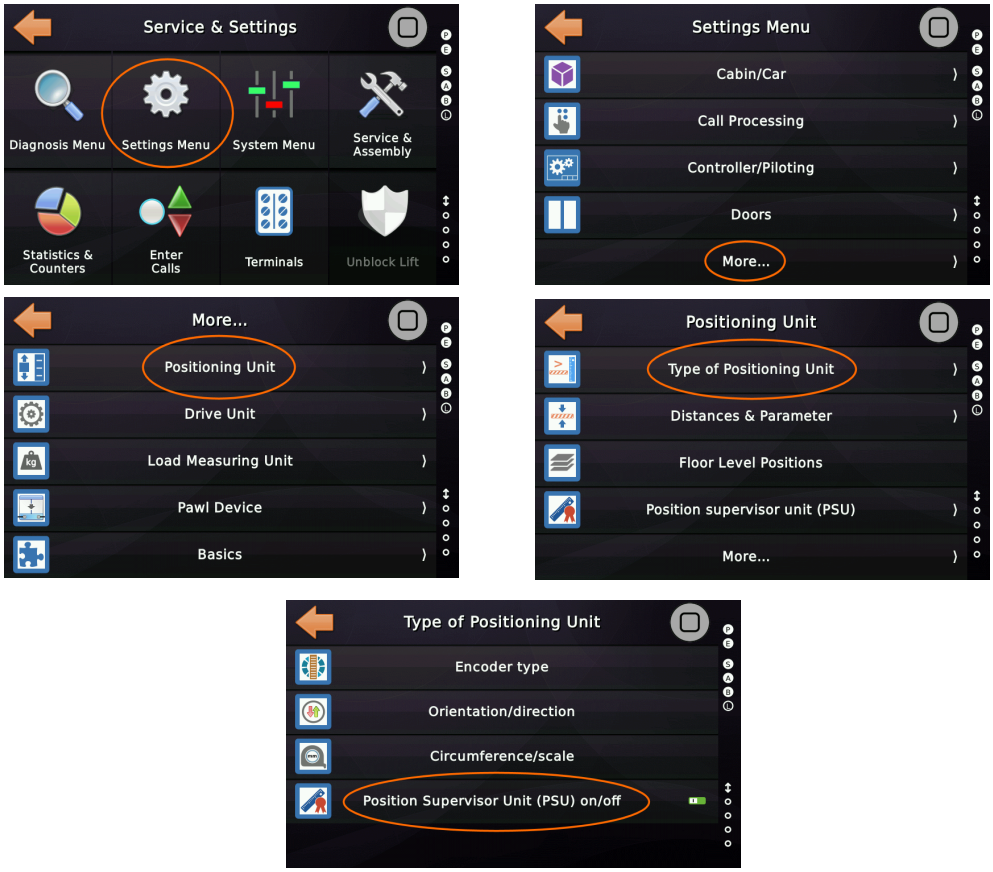


Figure 30: Turning PSU usage On/Off

The following step depends on whether you have the PSU in charge of bridging the doors, commonly used for advanced door opening or for re-leveling. If the PSU shall

be featured for these functions, turn the following option on. If you are using Thor's on-board SMZ, this option shall be turned off instead.

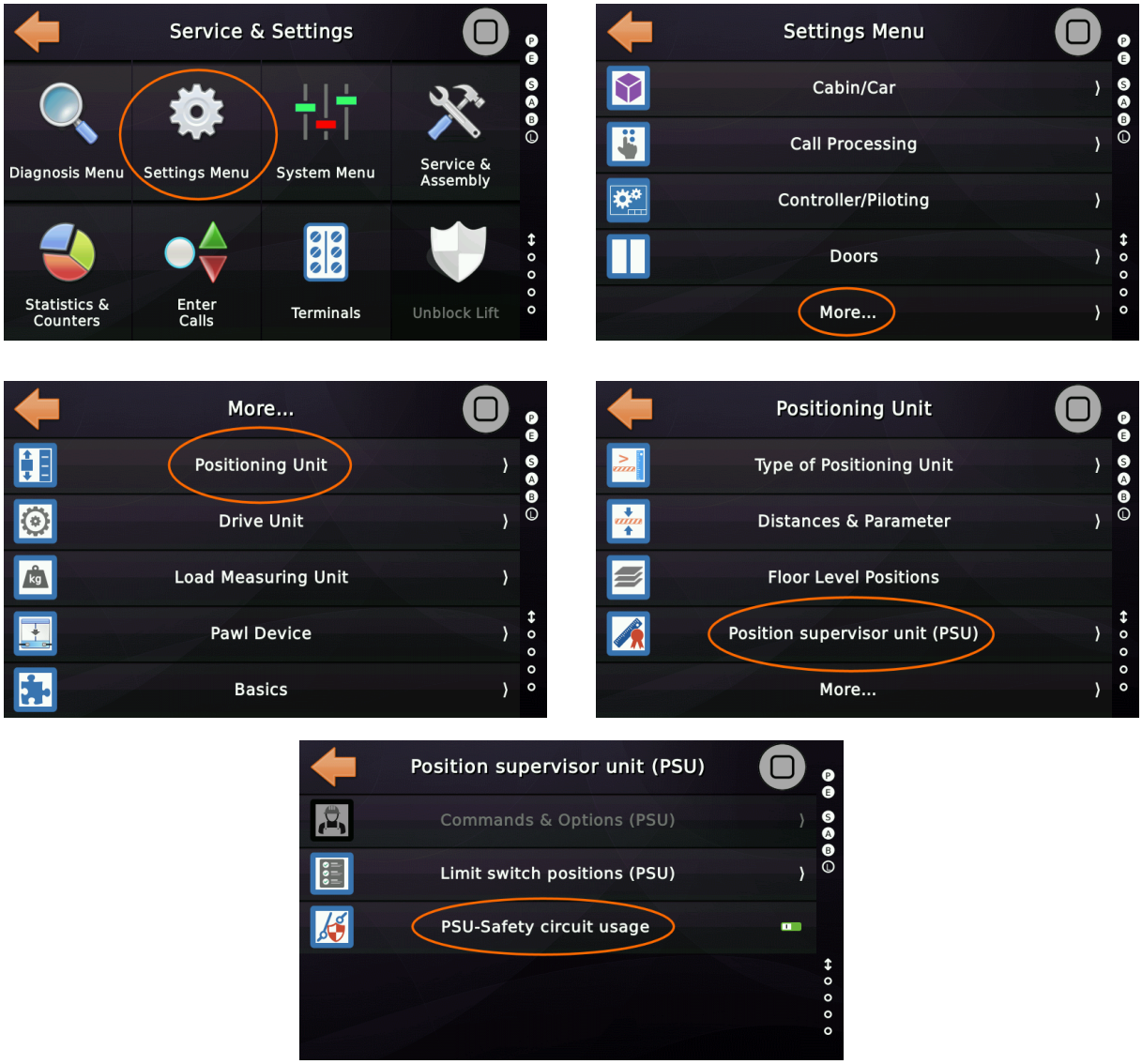


Figure 31: Turning PSU Safety circuit usage On/Off

Before starting any learning trip, make sure to turn the '*Assembly/Installation Mode*' on. This option can be found under 'Service & Assembling' → 'Assembling & Repair' → 'Assembling/Installation Operation Mode'.

25.2 Learning Trip using a SAFE ANTS (LES02) Encoder (SIL3/PSU)

The commands required for setting up the ANTS-PSU can be found in the following menu branch.

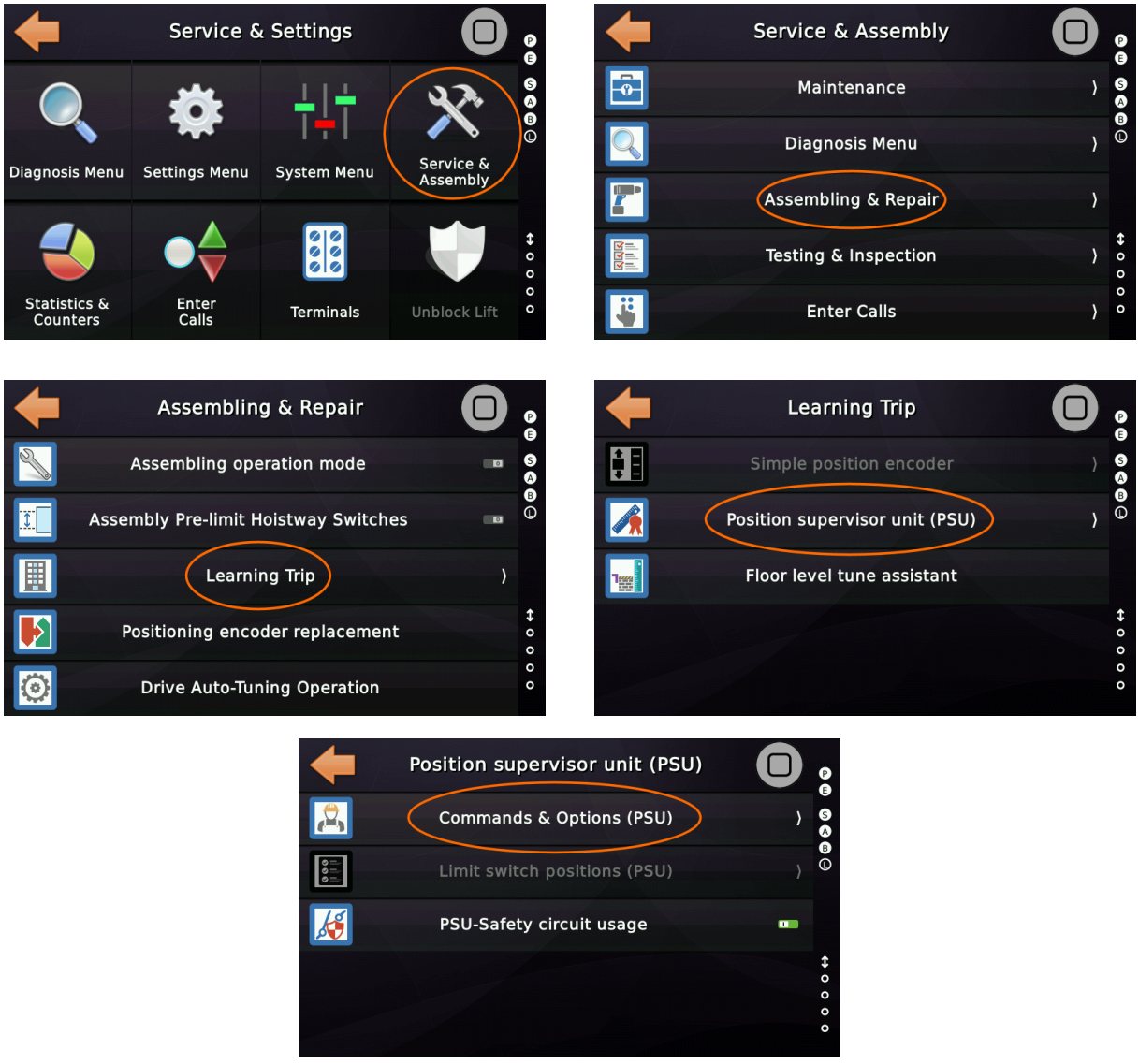
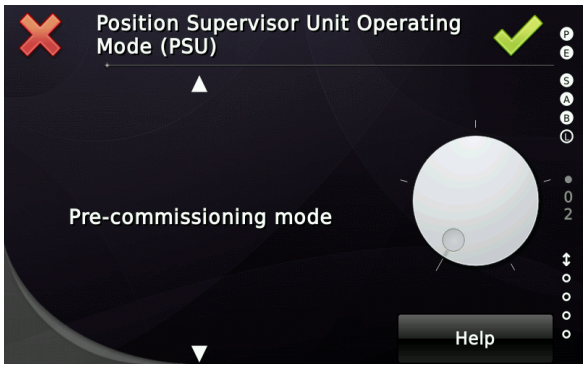


Figure 32: PSU Commands and Options

To start the Learning Trip with the ANTS-PSU, the PSU has to be switched into the 'Configuration Mode' via the user interface.

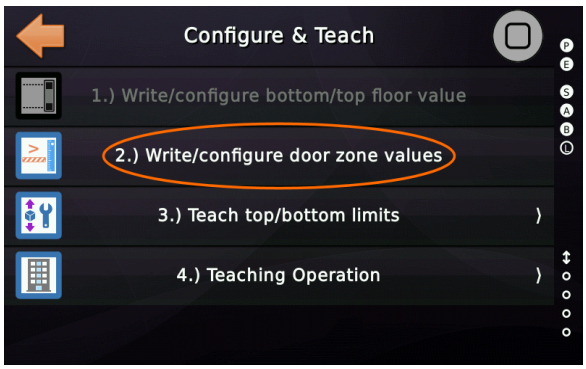
If you want to reset all position data in the ANTS-PSU, for example if the unit had been in use before, put the unit into 'Pre-Commissioning Mode' instead. After clearing all stored data, the unit enters 'Configuration Mode' automatically.



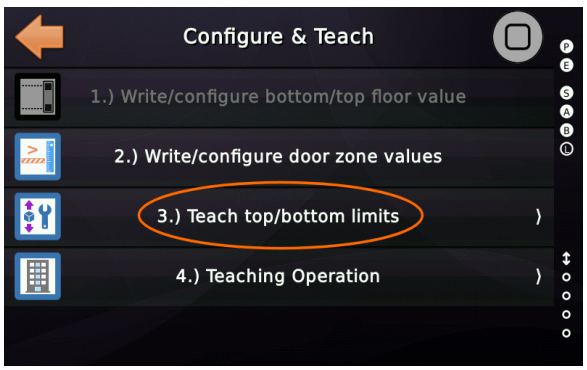
Now that the unit has entered 'Configuration Mode', the PSU can be set up by entering the 'Configure & Teach' menu.

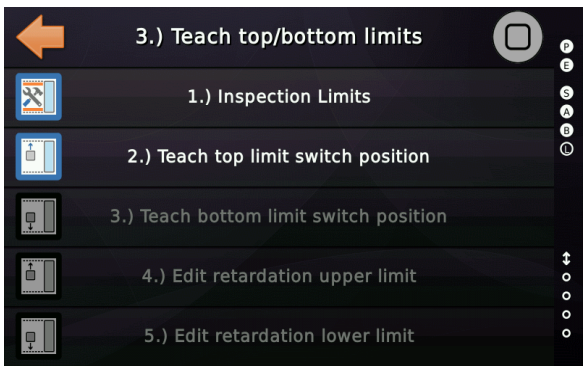
The first menu point is grayed since the Variotech/Kübler ANTS-PSU does not rely on setting up top/bottom floor. Thus the ANTS-PSU configuration starts with the second item. The door zone values that have been set up in Thor are now written to the unit.

The door zone values can be found under 'Settings' → 'More...' → 'Positioning Unit' → 'Distances & Parameter' → 'More...' → 'Door zone below' / 'Door zone above'.



Following up, the limit switches will be taught in. When selecting menu item 3, the branch with the limit switch teaching process is opened. The sequence is fixed, so that only currently valid menu items can be selected, all others are grayed.





The ANTS-PSU uses fixed inspection limit offsets of 1200mm relative to the limit switch position. You can select which inspection limits actually do exist:

- No inspection limits
- Only inspection limit top
- Only inspection limit bottom
- Inspection limits top and bottom
- No inspection limits, but inspection is connected to ANTS-PSU unit.

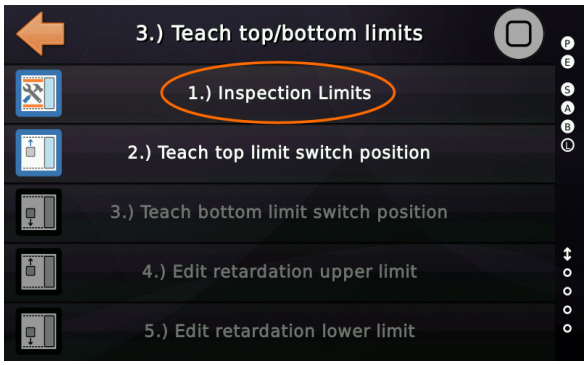


Figure 33: Teaching the inspection limits

By default, no inspection limits are set. If this is the case, the parameter does not have to be changed, instead you can continue directly with the learning of the upper limit switch.

In the next step of the limit switch teaching process, the current position is stored as the upper limit switch position. Before selecting the corresponding menu item, make sure that you have moved the car to the position of the upper limit switch, using the emergency electrical operation. After pressing the button, the upper limit switch position is stored non-volatile.

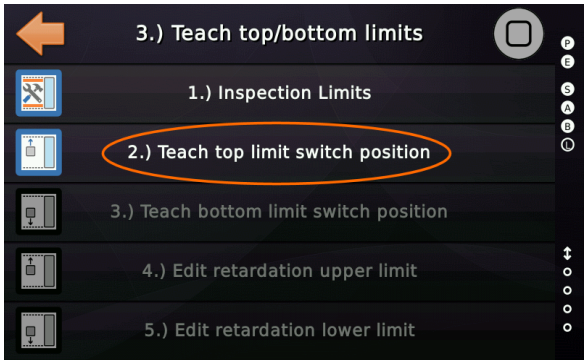


Figure 34: Teaching the top limit

The upper limit switch is followed by teaching of the lower limit switch. For this, the lift is moved to the position of the lower limit switch, using the emergency electrical operation again. By pressing the button, the current position is stored as the lower limit switch.

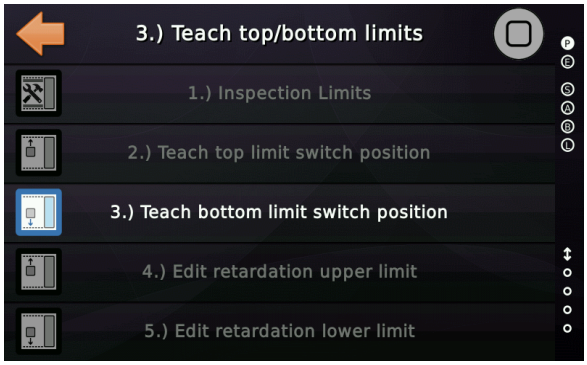
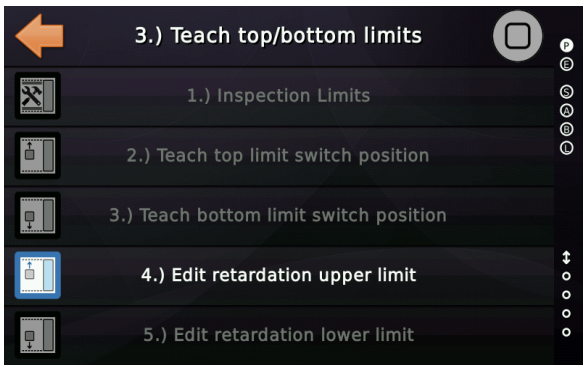
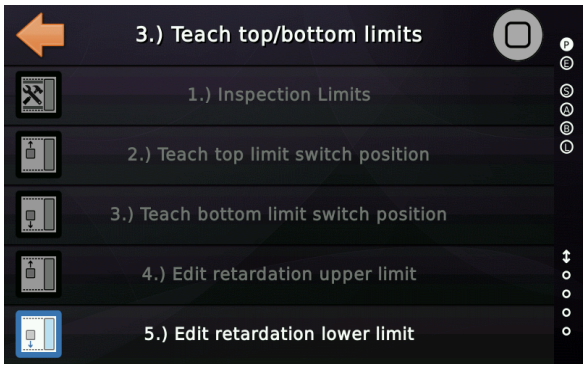


Figure 35: Teaching the bottom limit

After having defined the upper and lower limit switches, the retardation switches are defined. These are defined as an offset to the previously defined limit switches. The entered value indicates the distance of a retardation switch from the respective limit switch in the direction of the hoistway center.





As soon as the limit switches and retardation positions have been taught, the learning trip can be started. To do so, change to the corresponding menu and select the learning trip. The current floor level positions are deleted. Before starting the learning trip, the car must be moved flush to the lowest floor, using the inspection/emergency electrical operation control. This is the starting point for the learning trip. Afterwards, the assistant is opened for the manual learning trip operation.

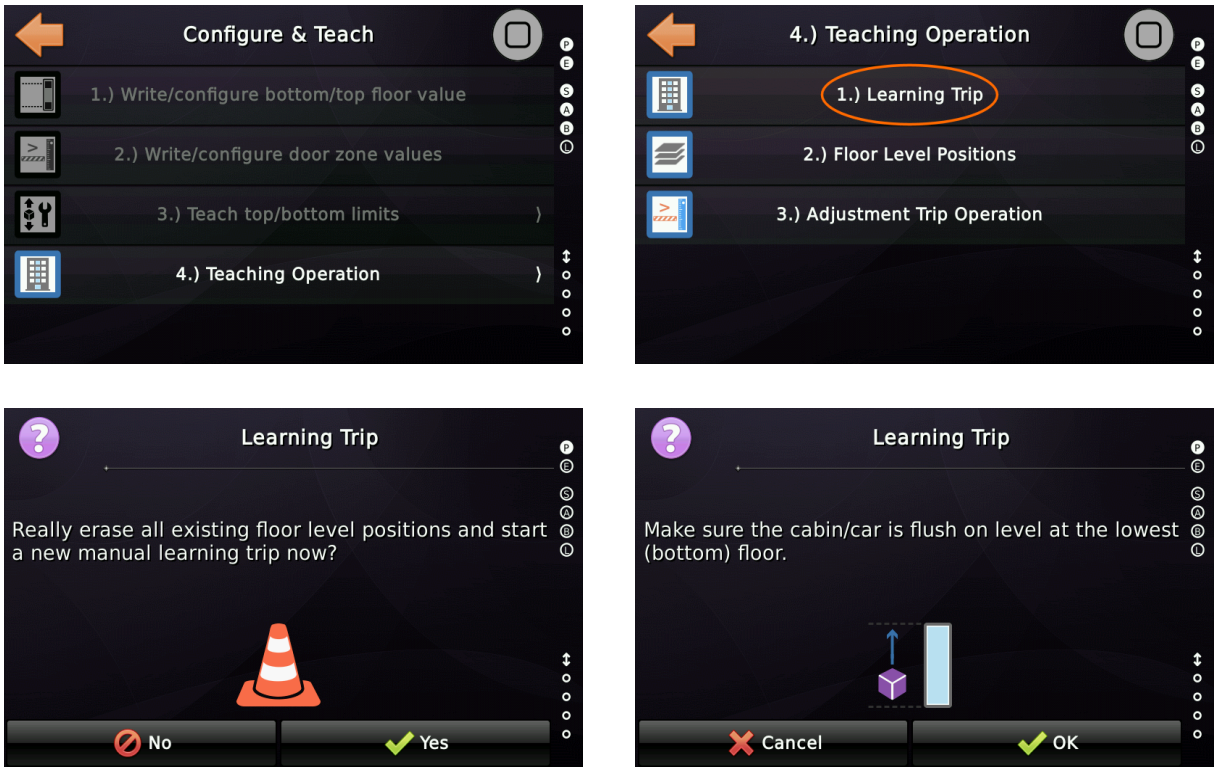
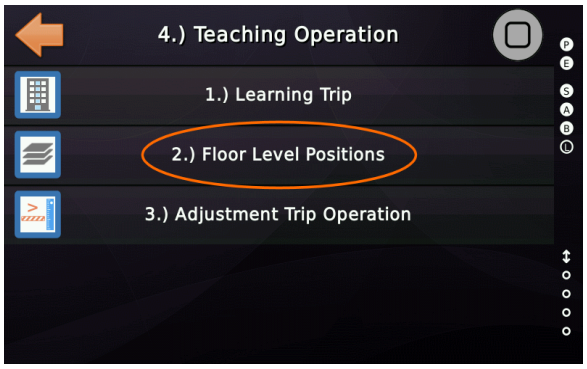


Figure 36: Manual Learning Trip Assistant

Using the inspection/emergency electrical operation control, all floors, starting with the lowest one, can now be taught using the 'Save' button.

As soon as all floors have been taught, the assistant closes and you return to the learning/adjustment trip menu. If not all floor level positions could be reached accurately, they can be adjusted under item 2.



After the learning trip has been finished, it is now possible to drive the lift using nominal velocity. Before continuing with the 'Adjustment Trip' in the next step, the floor level positions, braking distances, drive parameters can be optimized until the lift stops flush on every floor.

The reason for this is that the position encoder ANTS-PSU only stores the floor level positions during the 'Adjustment Trip'. During the 'Learning Trip', the floor level positions are stored in the lift controller only. Once the floor positions have been stored in the position encoder, they can not be changed again. For this reason, the 'Adjustment Trip' shall only be performed, when the lift is running perfectly.

As soon as the lift system has been adjusted optimally, the adjustment trip can be started, used to teach the floor levels to the PSU unit. Each floor has to be approached twice. To put it into a nutshell, the adjustment trip is divided into two rounds – it's done two times.

In the first round the floors are indicated to the PSU. In the second round they are approached again and re-viewed after every stop. This is used by the PSU to verify the floor level positions once again.

Teaching the floor levels to the PSU encoder unit can be done in two different ways:

- automatically, which is the preferred way
- manually, if for any reason the automatic process would fail

25.2.1 Automatically teaching the floor levels to the PSU

The automatic assistant safes you the trouble to manually visit every single floor twice and engage the teach button.

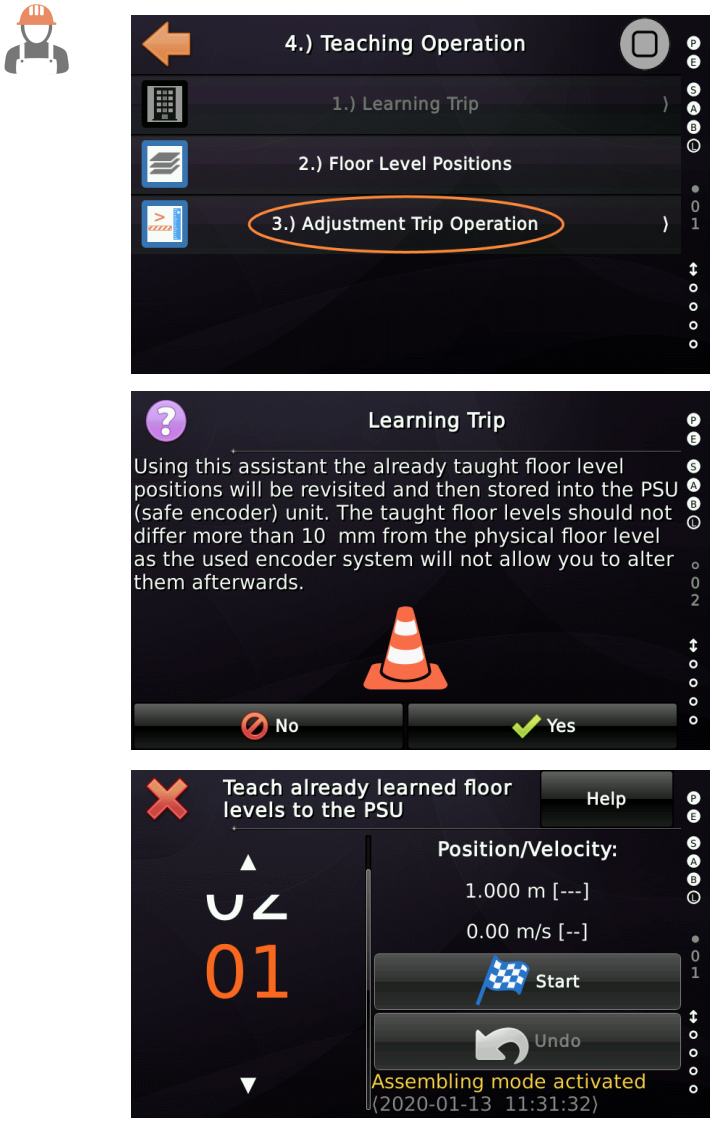


Figure 38: Automatic Learning Trip Assistant

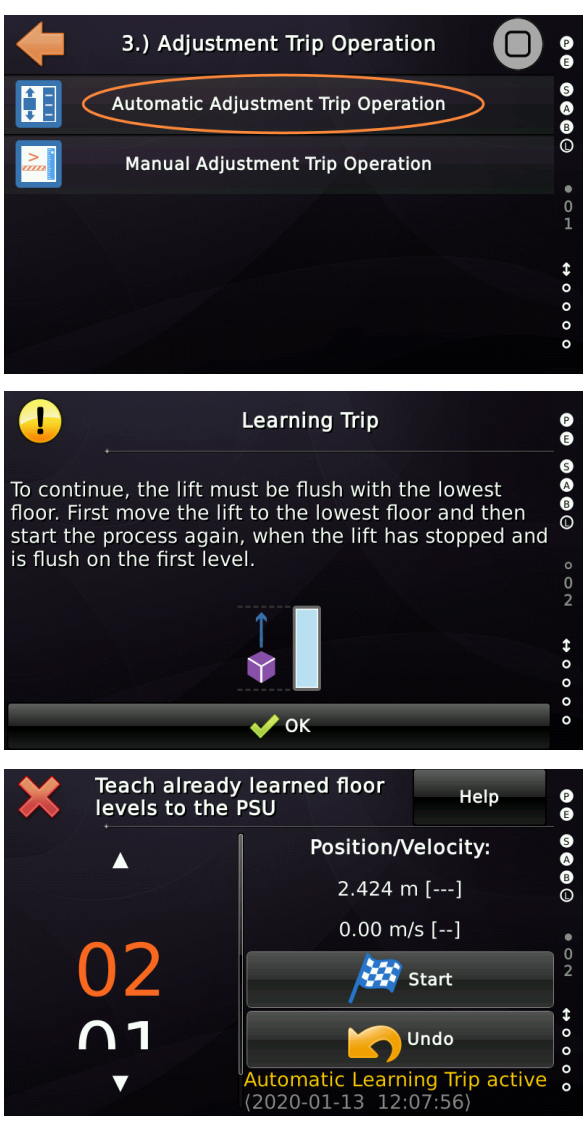


Figure 37: Automatic Adjustment Trip Assistant

Pressing the 'Start' button starts the automatic learning trip. The car automatically moves from the lowest floor to each floor and stores the position in the PSU.

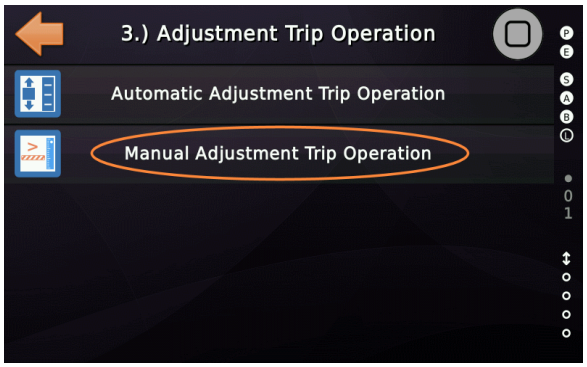
As soon as all floors have been reached once, the learning trip assistant will redo the process and re-visit all floors again, from bottom to top. This is required by the PSU unit to be sure, that all floors have been visited.

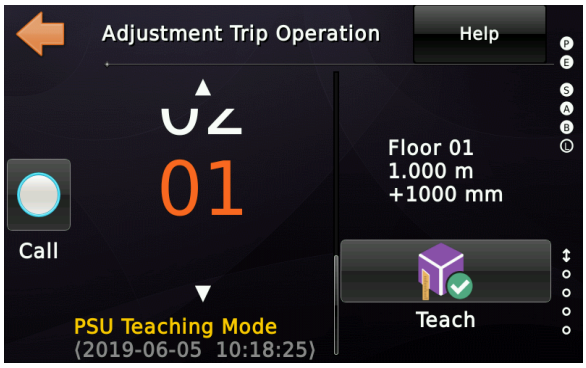
Once the automatic adjustment trip has been finished, the PSU is successfully set up and should turn to normal operation mode automatically. If not, the operation mode can be set manually using '*Commands & Options (PSU) → Change Operation Mode (PSU)*'.

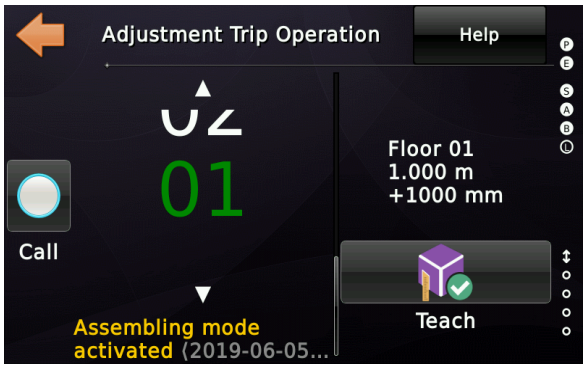
25.2.2 Manually teaching the floor levels to the PSU

You may want to use the automatic variant of this operation. But if for any reason that fails, you can use the manual variant as described below.

The procedure for both rounds is the same. The currently selected floor can be reached using the call signal on the left-hand side. As soon as the floor is reached, the floor value can be taught in the PSU by pressing the 'Teach' button, in the second round it is confirmed by pressing the 'Teach' button as well. If a floor has not yet been reached, it will be displayed in orange when selected. If a floor is approached in round 1, the color changes to blue. After all floors in round 1 have been approached, round 2 starts. As soon as the same floor in round 2 is approached again, the selection is highlighted in green. This shows which floors have already been visited twice.







Each floor must be visited again in round 2, **including the one where the car was located at the begin of the second round**.

Once the automatic adjustment trip has been finished, the PSU is successfully set up and should turn to normal operation mode automatically. If not, the operation mode can be set manually using '*Commands & Options (PSU) → Change Operation Mode (PSU)*'.

25.3 Automatic Teaching operation using a SAFE ANTS (LES02) Encoder (SIL3/PSU)

As a safe encoder does not feature a door zone magnet, it is not possible to do an automatic learning trip operation. But if the lift has already taught floor levels or was delivered with such, it is possible to teach those floor positions to the safe encoder.

The commands required for setting up the ANTS-PSU can be found in the following menu branch.

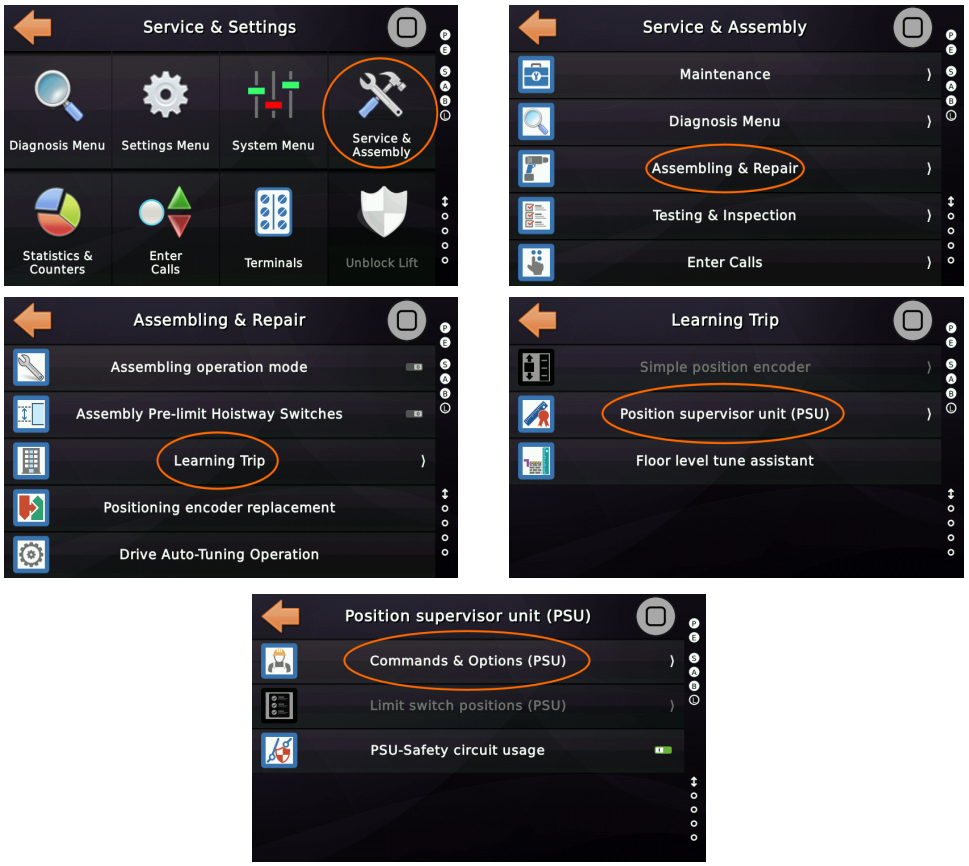
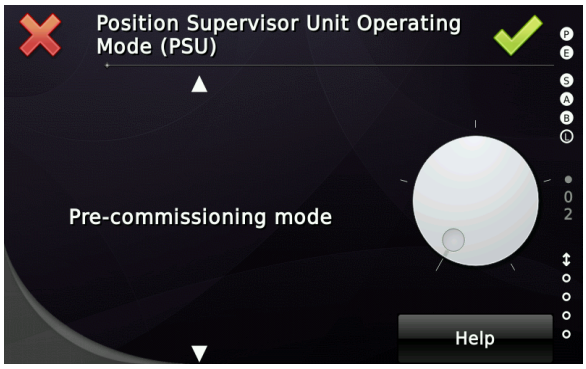


Figure 39: PSU Commands and Options

To start the Learning Trip with the ANTS-PSU, the PSU has to be switched into the 'Configuration Mode' via the user interface.

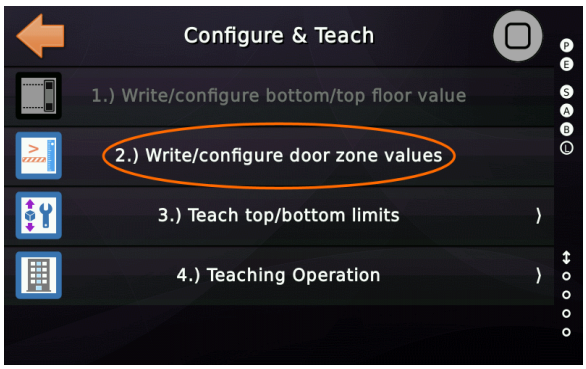
If you want to reset all position data in the ANTS-PSU, for example if the unit has been in use before, put the unit into 'Pre-Commissioning Mode' instead. After clearing all stored data, the unit enters 'Configuration Mode' automatically.



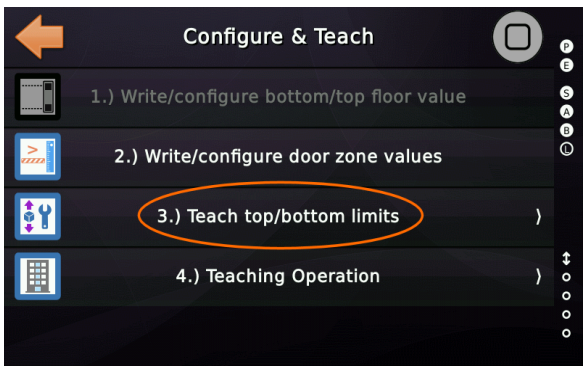
Now that the unit has entered 'Configuration Mode', the PSU can be set up by entering the 'Configure & Teach' menu.

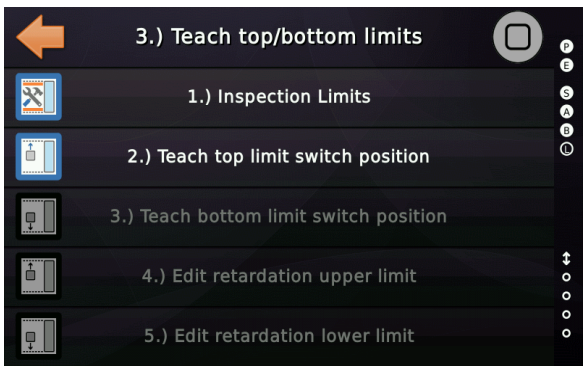
The first menu point is grayed since the Variotech/Kübler ANTS-PSU does not rely on setting up top/bottom floor. Thus the ANTS-PSU configuration starts with the second item. The door zone values that have been set up in the Thor are written to the unit.

The door zone values are found in 'Settings' → 'More...' → 'Positioning Unit' → 'Distances & Parameter' → 'More...' → 'Door zone below' / 'Door zone above'.



Following up, the limit switches will be taught in. When selecting menu item 3, the branch with the limit switch teaching process is opened. The sequence is fixed, so that only currently valid menu items can be selected, all others are grayed.





The ANTS-PSU uses fixed inspection limit offsets of 1200mm relative to the limit switch position. You can select which inspection limits actually do exist:

- No inspection limits
- Only inspection limit top
- Only inspection limit bottom
- Inspection limits top and bottom
- No inspection limits, but inspection is connected to ANTS-PSU unit.

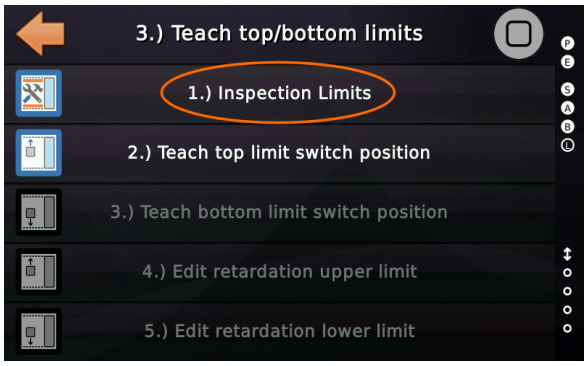


Figure 40: Teaching the inspection limits

By default, no inspection limits are set. If this is the case, the parameter does not have to be changed additionally, instead you can continue directly with the learning of the upper limit switch.

In the next step of the limit switch teaching process, the current position is stored as the upper limit switch position. Before you select the corresponding menu item, make sure that you have moved the car to the position of the upper limit switch with the emergency electrical operation. After pressing the button, the upper limit switch position is stored non-volatile.

Figure 41: Teaching the top limit

The upper limit switch is followed by teaching of the lower limit switch. For this, the lift is moved to the position of the lower limit switch, using the emergency electrical operation again. By pressing the button, the current position is stored as the lower limit switch.

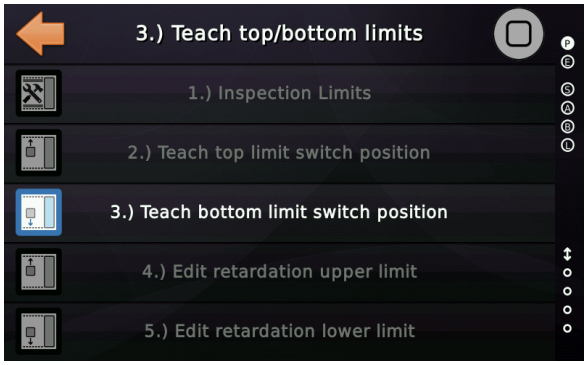
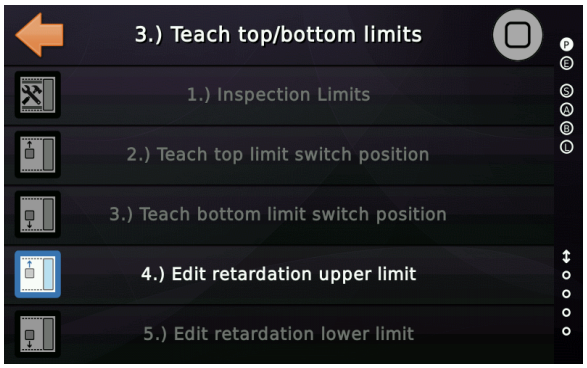
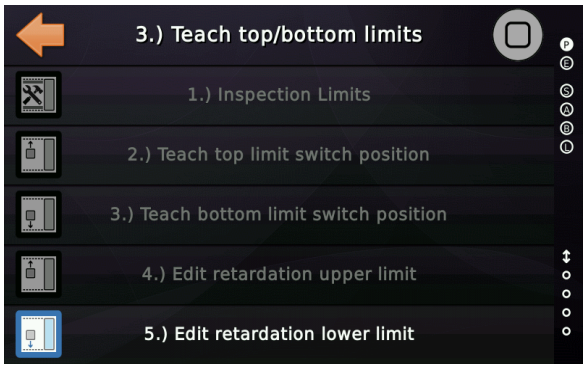


Figure 42: Teaching the bottom limit

After having defined the upper and lower limit switches, the retardation switches are defined. These are defined as an offset to the previously defined limit switches. The entered value indicates the distance of a retardation switch from the respective limit switch in the direction of the hoistway center.





As soon as the limit switches and retardation positions have been taught, the learning trip can be started. To do so, change to the corresponding menu and select the learning trip. The current floor level positions are deleted.

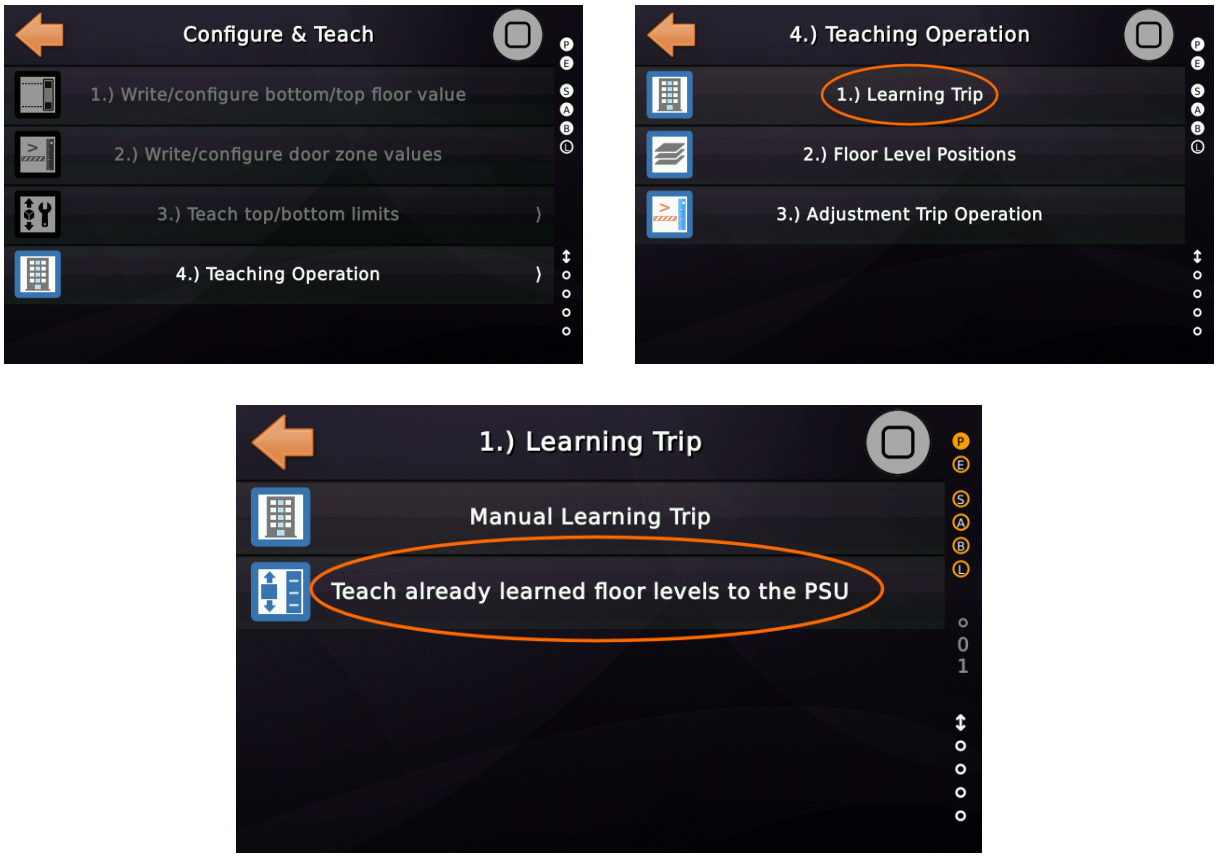


Figure 43: Automatic Learning Trip

The following assistant guides through the teaching process.

Figure 44: Automatic Learning Trip Setup

Pressing the 'Start' button starts the automatic learning trip. The car automatically moves from the lowest floor to each floor and stores the position in the PSU.

Figure 45: Automatic Learning Trip Assistant

As soon as all floors have been reached once, the learning trip assistant will redo the process and re-visit all floors again, from bottom to top. This is required by the PSU unit to be sure, that all floors have been visited.

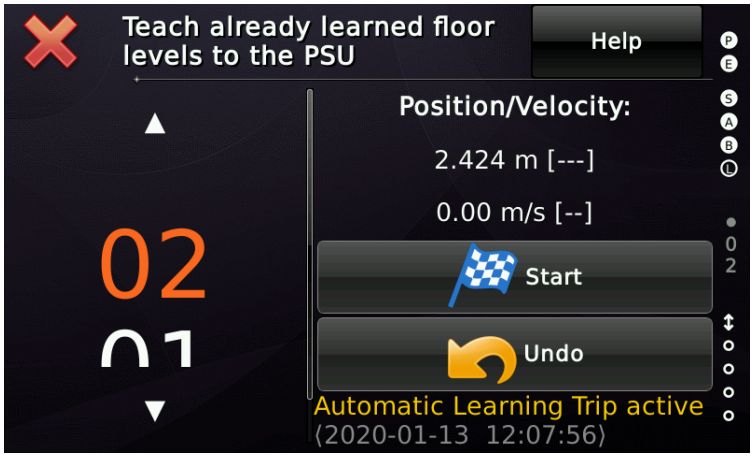


Figure 46: Automatic Adjustment Trip Assistant

Once the automatic adjustment trip has been finished, the PSU is successfully set up and can be turned back to normal operation using the PSU assistant.

25.4 Learning Trip using an ELGO LIMAX33CP (SIL3/PSU)

The commands required for setting up the Limax33CP can be found in the following menu branch.

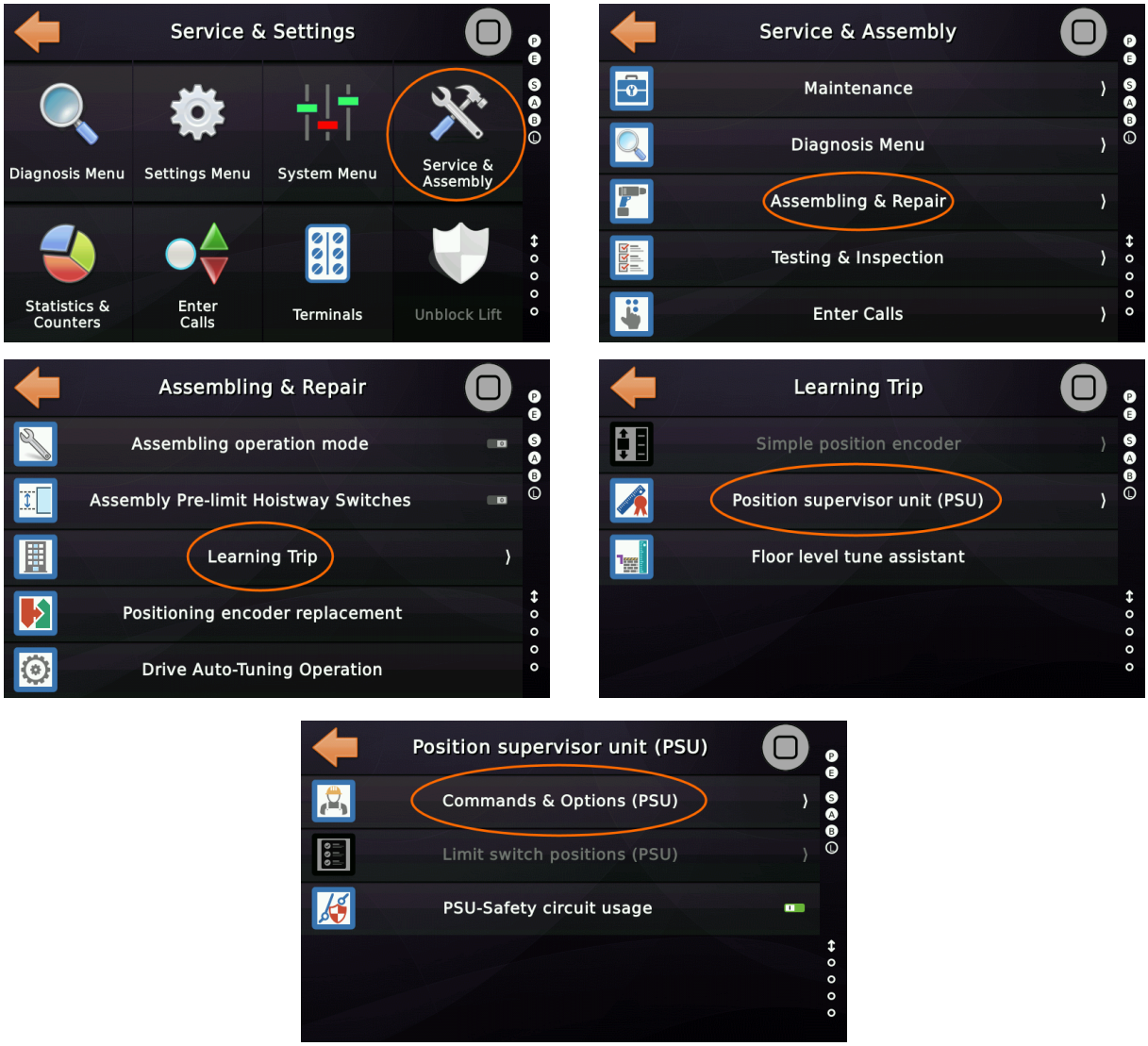
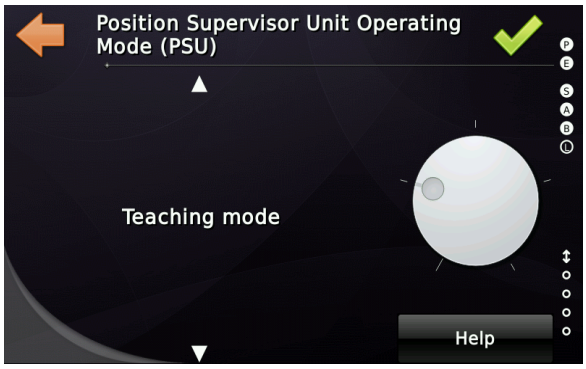


Figure 47: PSU Commands and Options

To start the Learning Trip operation using the Limax33CP, the PSU has to be switched into the '*Teaching Mode*' via the user interface first.

If you want to reset all position data already stored in the Limax33CP, e. g. if the device was already in use before, set the device to '*Pre-Commissioning Mode*' instead. All stored data will be erased. In order to start the teach-in run then, you have to switch manually to the '*Teaching Mode*' again.



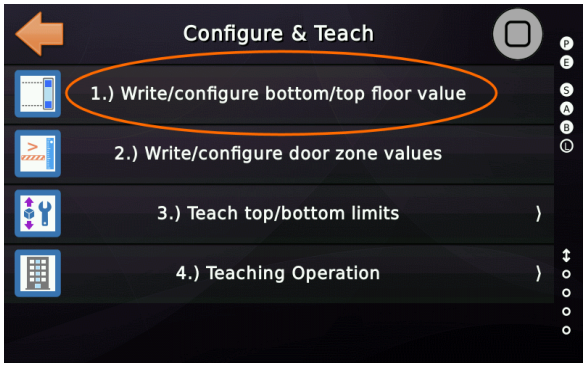
If the unit has entered '*Teaching Mode*', the PSU can be setup by entering the '*Configure & Teach*' menu.

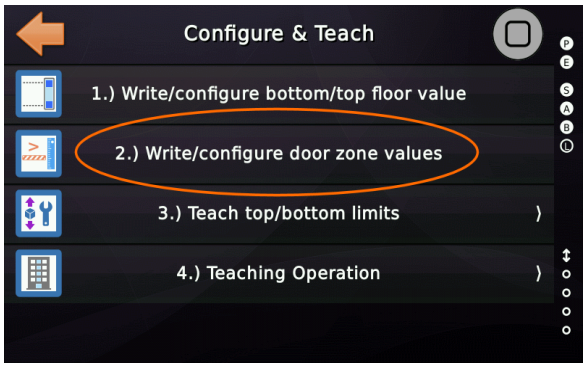
The Limax33CP configuration procedure starts with writing the top/bottom floor values and the door zone value to the PSU.

The parameters for the top/bottom floor can be found following 'Settings' → 'More...'. → 'Basics' → 'Floors' → 'Top floor' / 'Bottom floor'.

The door zone values can be found following 'Settings' → 'More...' → 'Positioning Unit' → 'Distances & Parameter' → 'More...' → 'Door zone below' / 'Door zone above'.

Figure 48: PSU Configure and Teach





If turning the PSU unit to '*Teaching*' operation has been failed, a corresponding message will be shown, indicating that the PSU is not in teaching mode.

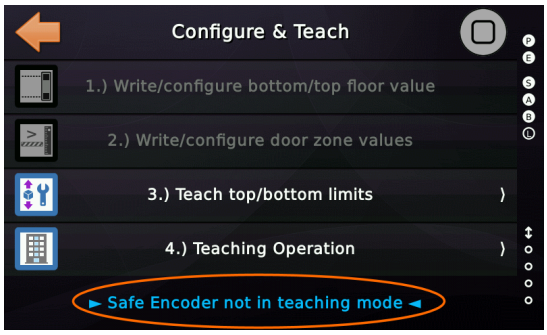
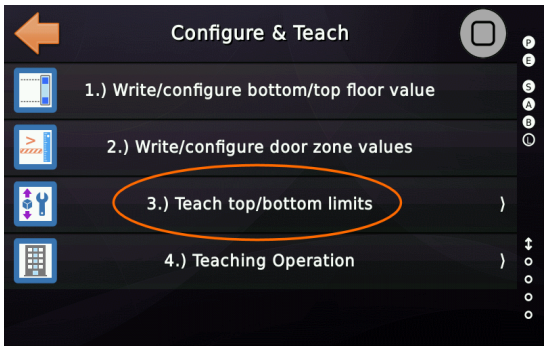
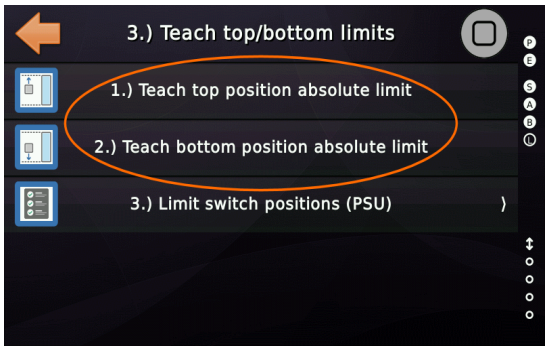


Figure 49: Hint PSU not being in Teaching Mode

In step 3.) the positions for the various limit switches will be set. To do this, the reference positions will be defined first. The reference positions indicate the point where the car/counterweight touches the buffers.

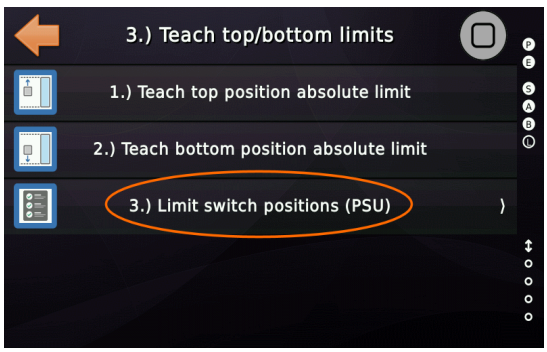
Please note, that if you ordered the Limax 33CP without the functionality of handling the limit switches, you will not need and will not be able to set the reference points! In that case simply proceed with the next step.

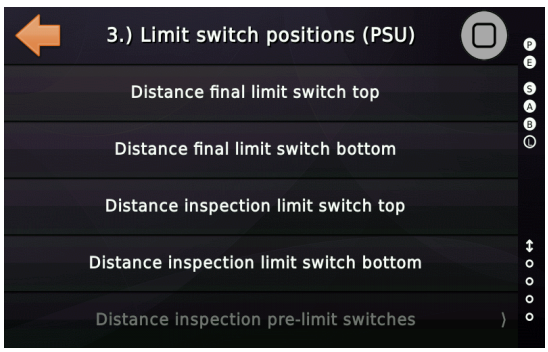




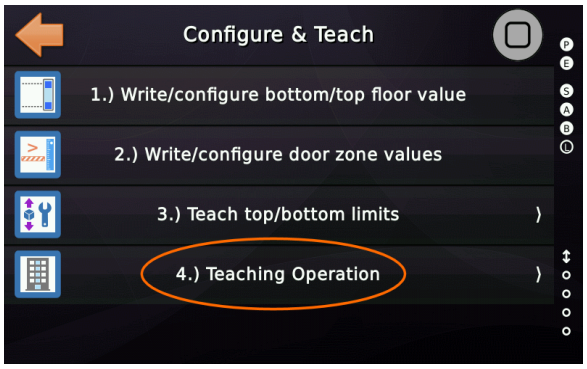
After defining the reference points, the final and inspection limit switches will be defined. These are defined as offsets to the reference points, set before.

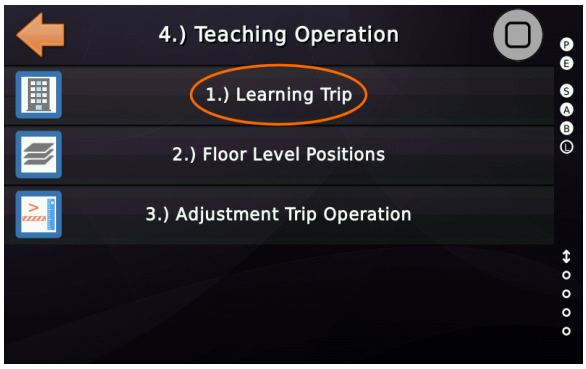
The procedure for determining the offset values can be found in the Limax33CP product manual.



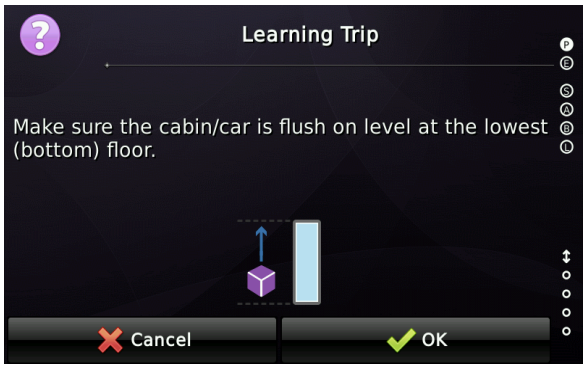


After the reference points have been taught, the teaching trip operation can be started by using the corresponding menu and selecting '*Learning Trip*'. The current floor level positions are erased. Before starting the learning trip, the car must be moved flush to the lowest floor level, using the inspection/emergency electrical operation.





Using the inspection/emergency electrical operation control panel, all floors can now be approached and taught-in, using the 'OK' button at the display or the corresponding car call buttons in the car/cabin, starting with the lowest floor.



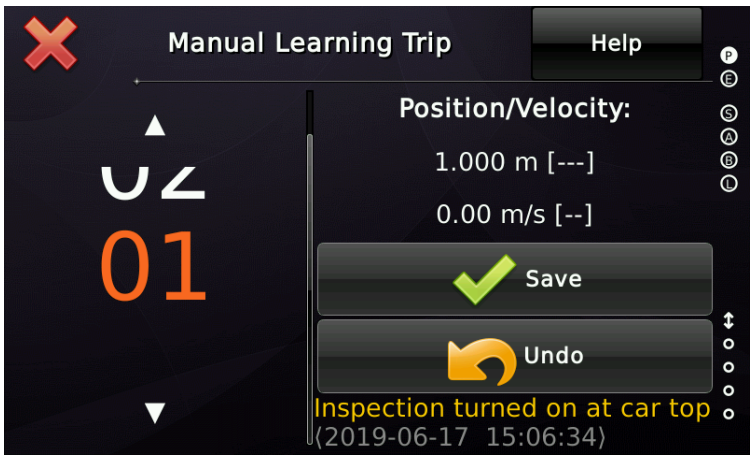


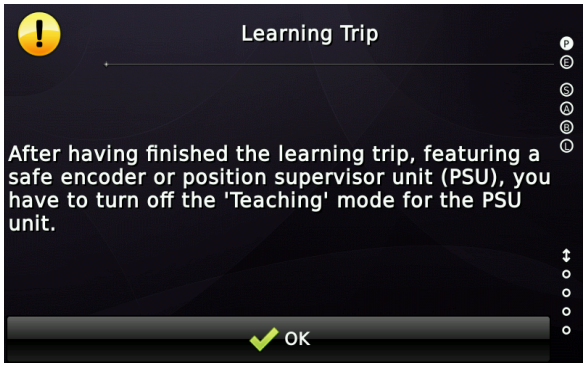
Figure 50: Manual Learning Trip Assistant

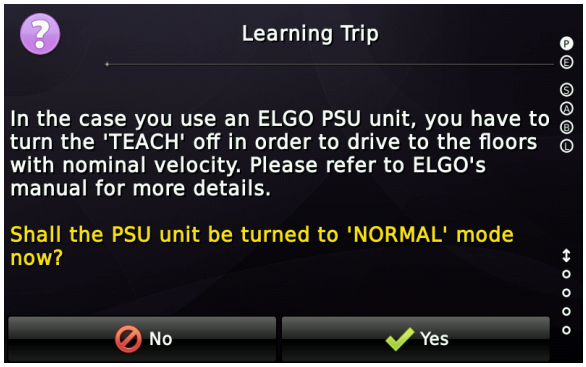
Since the controller presets the PSU to the lowest floor in the first step, the learning trip must start at the lowest floor.

Figure 51: Adjusting the floor level positions

As soon as all floors have been taught, the assistant is closed and the floor level position menu is opened. If not all floor level positions could be reached exactly, they can now be adjusted within a range that is **limited by the ELGO 33CP to ±50 mm**.

After the adjustment of the floor level positions, two messages will be shown to support the manual status change from learning mode to normal operation.





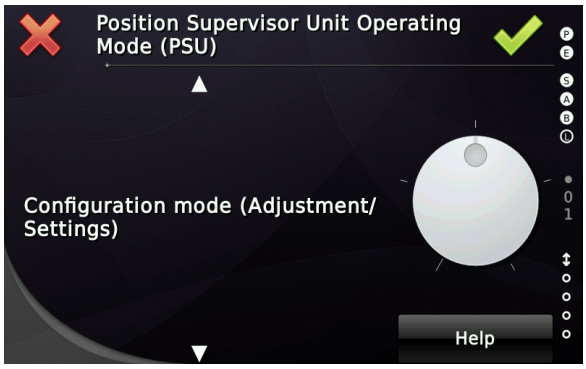
The PSU (Safe SLI3 encoder) shall now enter normal operation.

Before continuing with the adjustment trip, the floor level positions, braking distances and drive parameters should be optimized until the lift stops flush at every landing. The Limax33CP offers a value range of ±50 mm for the correction of the previously taught-in floor positions. This value cannot be exceeded. If the learning trip was carried out with too large tolerances, the whole learning procedure has to be repeated all over again.

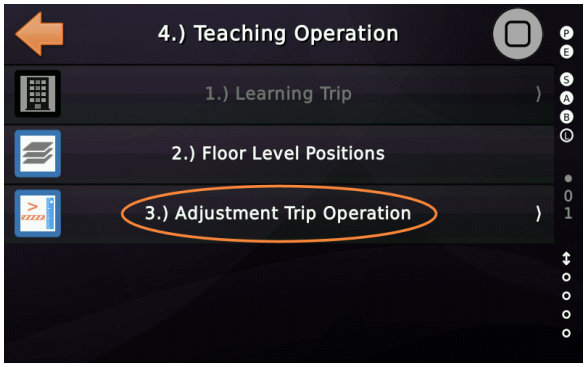
The floor level tune assistant (see chapter 27.1) can also be used to adjust the floor level positions from within the car.

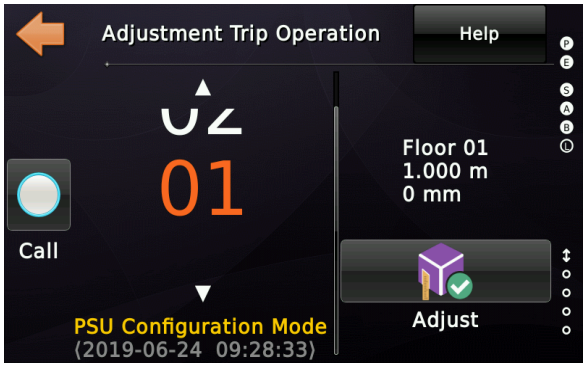
Once the lift system has been finally adjusted, the adjustment trip can be carried out. This may be repeated with the Limax33CP as often as desired.

To be able to perform an adjustment trip, you must switch the safe encoder (PSU) to the '*Configuration mode (Adjustment)*' manually via the user interface.



Having entered the configuration mode, the adjustment trip can now be started.





Using the call button on the left, the lift will start to drive to the selected floor. As soon as the lift arrives at the floor, the position can be transmitted to the PSU via the '*Adjust*' button.

If you leave the adjustment trip assistant, a dialog is opened which can be used to switch back to normal operation.

After the adjustment trip has been successfully completed, the PSU and controller are taught-in and the system is in normal operation.

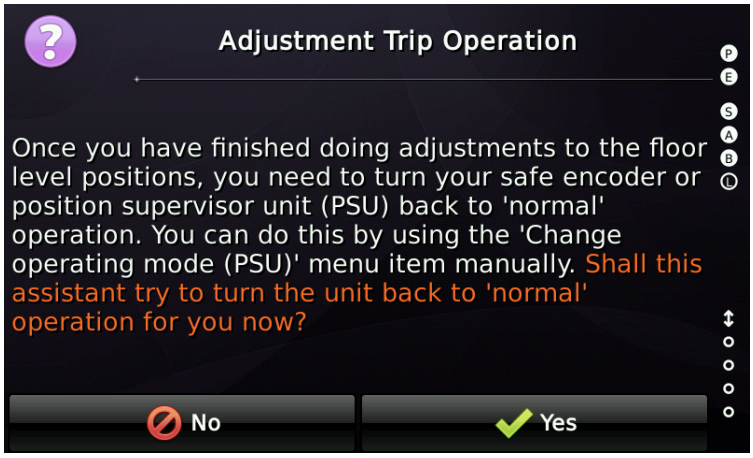


Figure 52: Turning the PSU to normal operation mode

25.5 Automatic Teaching operation using an ELGO LIMAX33CP (SIL3/PSU)

As a safe encoder does not feature a door zone magnet, it is not possible to do an automatic learning trip operation. But if the lift has already taught floor levels or was delivered with such, it is possible to teach those floor positions to the safe encoder.

The commands required for setting up the Limax33CP can be found in the following menu branch.

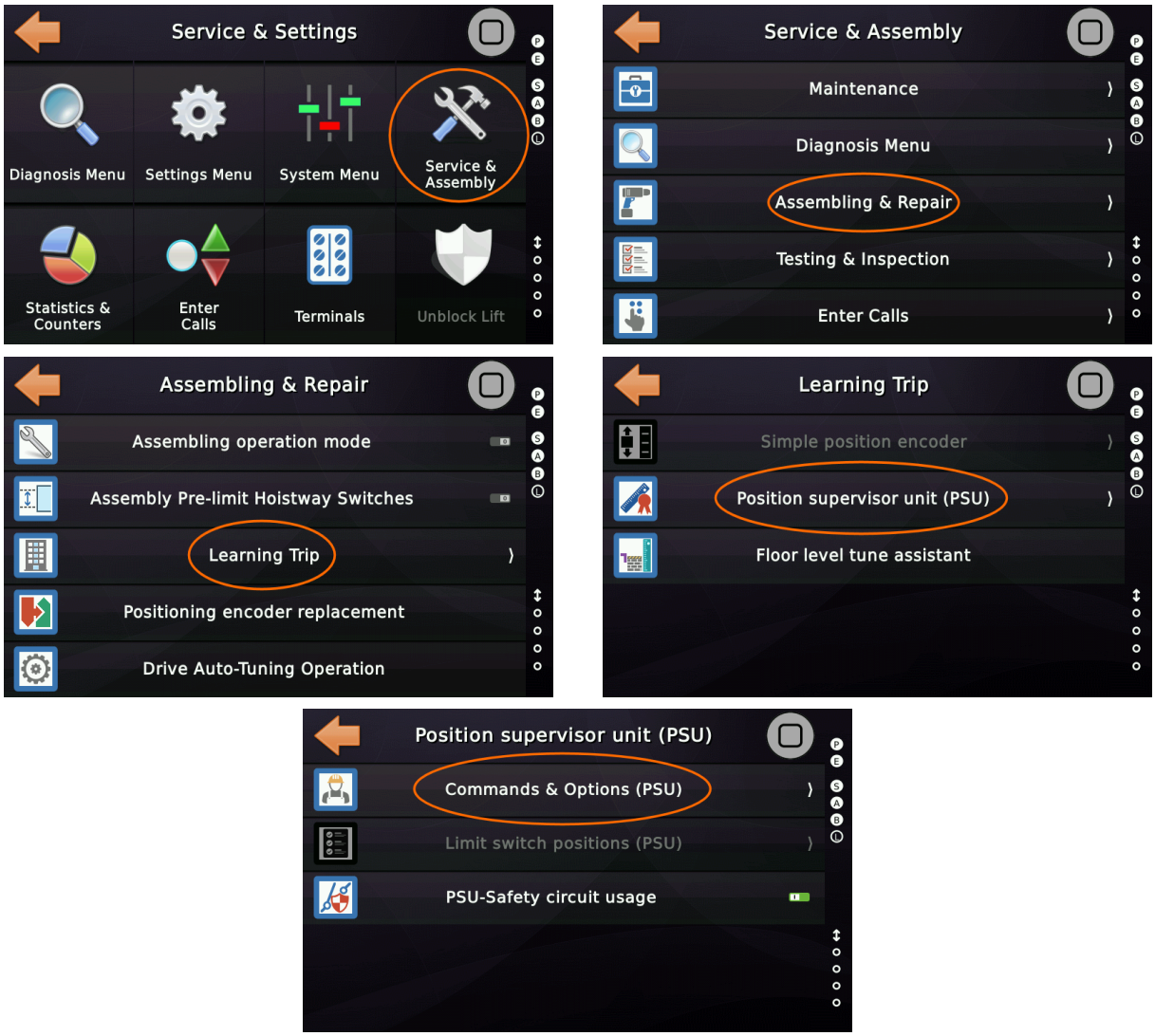
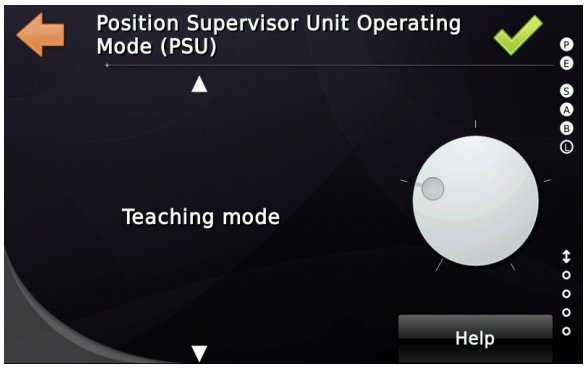


Figure 53: PSU Commands and Options

To start the Learning Trip operation using the Limax33CP, the PSU has to be switched into the '*Teaching Mode*' via the user interface first.

If you want to reset all position data already stored in the Limax33CP, e. g. if the device was already in use, set the device to '*Pre-Commissioning Mode*' instead. All stored data will be erased. In order to start the teach-in run then, you have to switch manually to the '*Teaching Mode*' again.



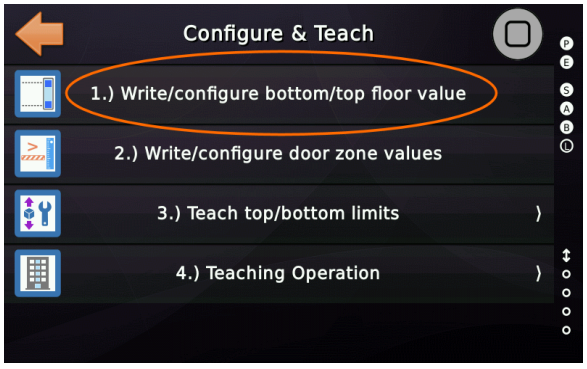
If the unit has entered '*Teaching Mode*', the PSU can be setup by entering the '*Configure & Teach*' menu.

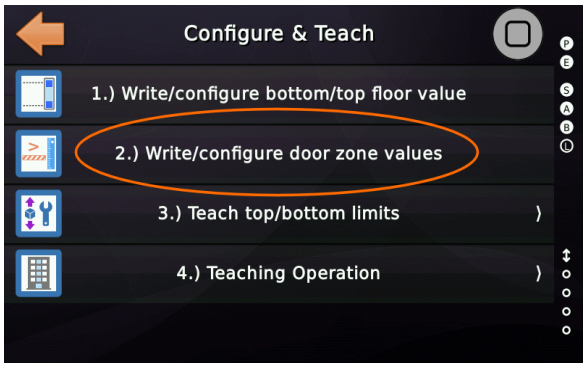
The Limax33CP configuration procedure starts with writing the top/bottom floor values and the door zone value to the PSU.

The parameters for the top/bottom floor can be found following 'Settings' → 'More...'. → 'Basics' → 'Floors' → 'Top floor' / 'Bottom floor'.

The door zone values can be found following 'Settings' → 'More...' → 'Positioning Unit' → 'Distances & Parameter' → 'More...' → 'Door zone below' / 'Door zone above'.

Figure 54: PSU Configure and Teach





If turning the PSU unit to '*Teaching*' operation has been failed, a corresponding message will be shown, indicating that the PSU is not in teaching mode.

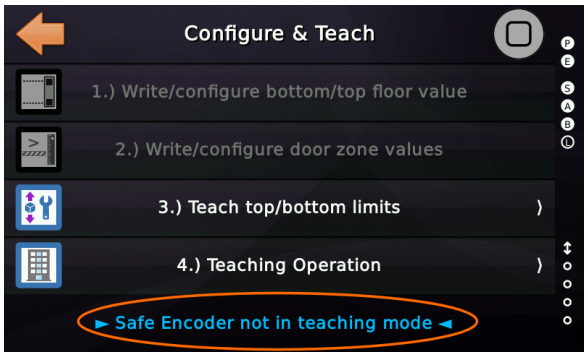
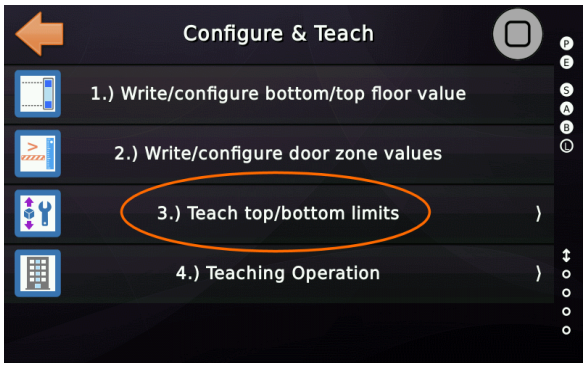
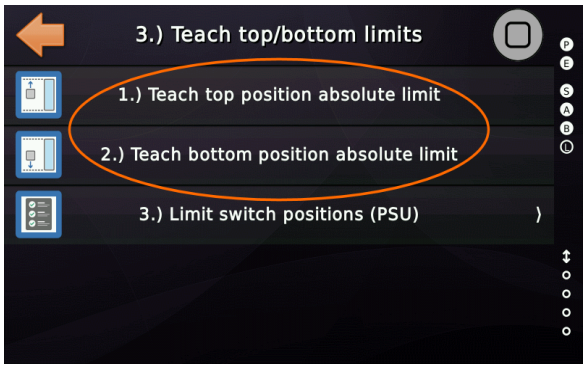


Figure 55: Hint PSU not being in Teaching Mode

In step 3.) the positions for the various limit switches will be set. To do this, the reference positions will be defined first. The reference positions indicate the point where the car/counterweight touches the buffers.

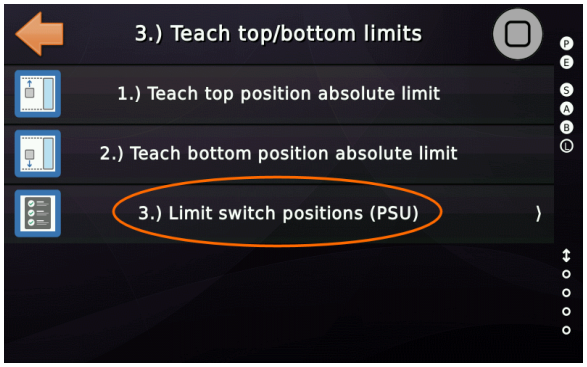
Please note, that if you ordered the Limax 33CP without the functionality of handling the limit switches, you will not need and will not be able to set the reference points! In that case simply proceed with the next step.

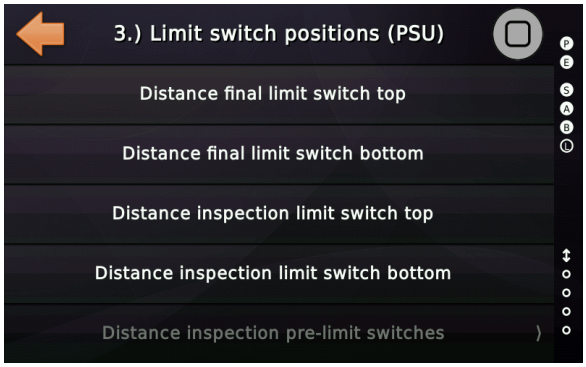




After defining the reference points, the final and inspection limit switches will be defined. These are defined as offsets to the reference points, set before.

The procedure for determining the offset values can be found in the Limax33CP product manual.





After the reference points have been taught, the teaching operation can be started by using the corresponding menu and selecting '*Learning Trip*'. The current floor level positions are erased. Before starting the learning trip, the car must be moved flush to the lowest floor level, using the inspection/emergency electrical operation.

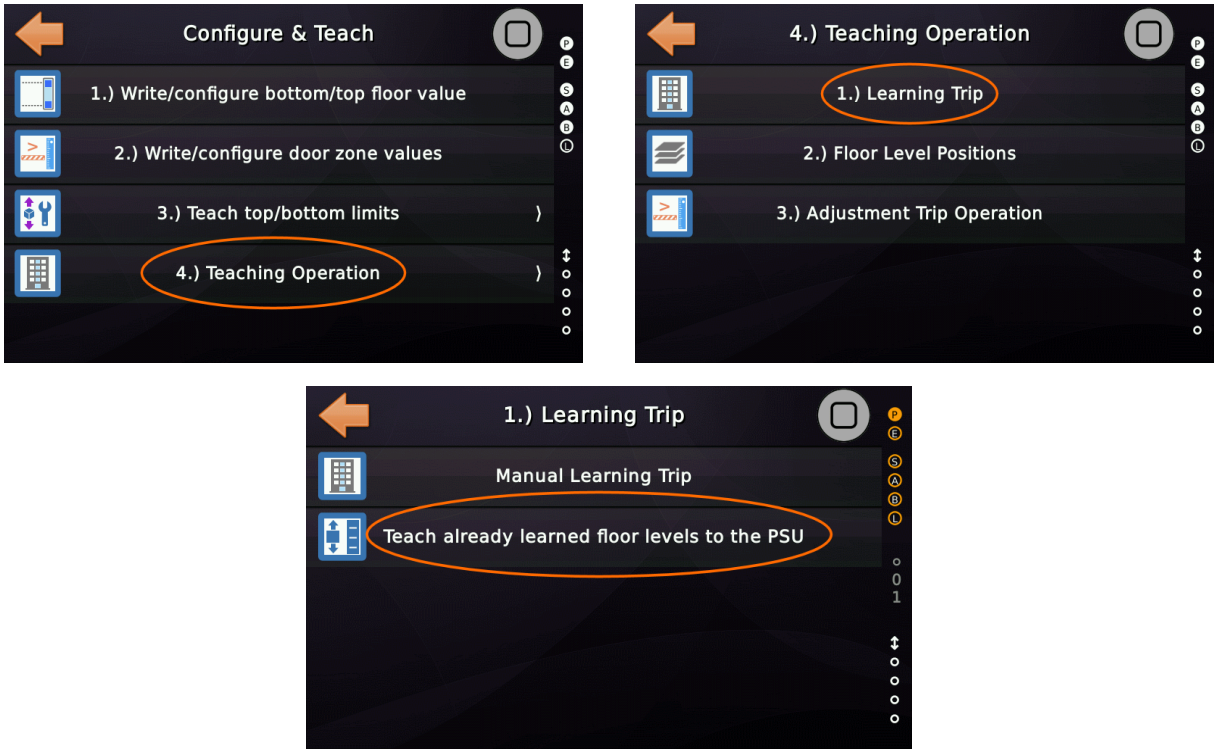


Figure 56: Automatic Learning Trip

The following assistant will then show up to guide through the teaching process.

Figure 57: Automatic Learning Trip Setup

Pressing the 'Start' button will initiate the automatic learning trip. The car automatically moves from the lowest floor to each floor and stores the position in the PSU.

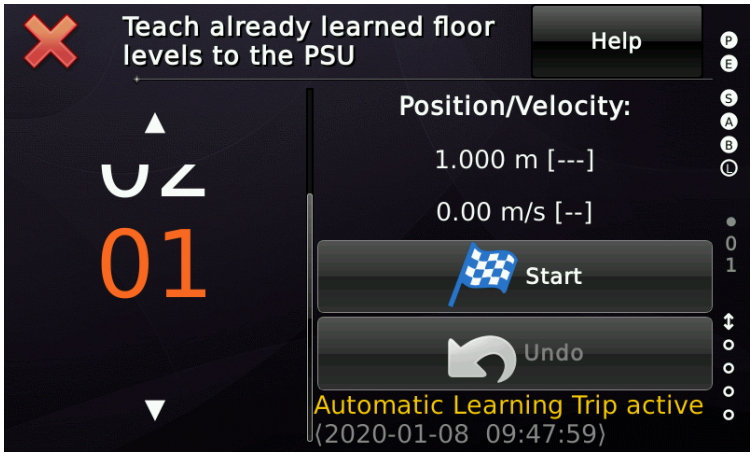


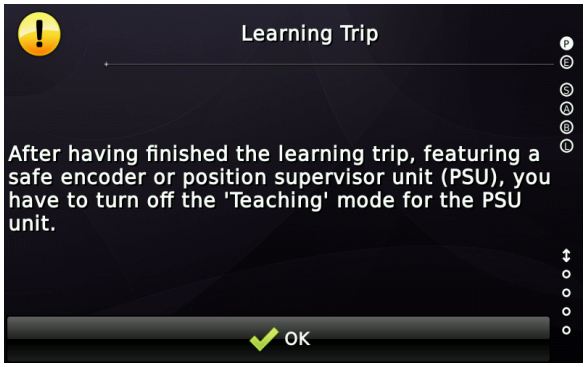
Figure 58: Automatic Learning Trip Assistant

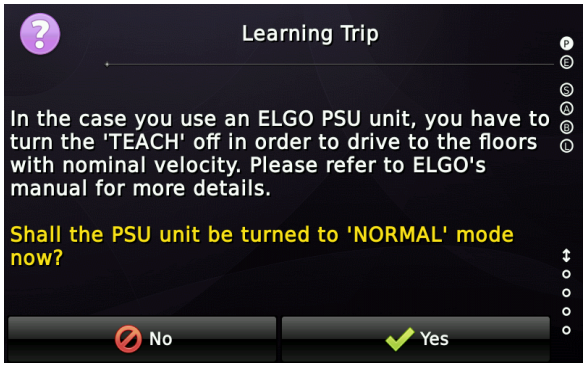
Since the controller presets the PSU to the lowest floor in the first step, the learning trip must start at the lowest floor.

Figure 59: Adjusting the floor level positions

As soon as all floors have been taught, the assistant is closed and the floor level position menu is opened. If not all floor level positions could be reached exactly, they can now be adjusted within a range that is **limited by the ELGO 33CP to ±50 mm**.

After the adjustment of the floor level positions, two messages will be shown to support the manual status change from learning mode to normal operation.





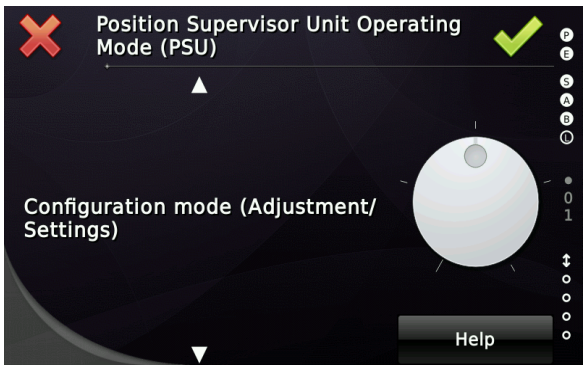
The PSU (Safe SLI3 encoder) shall now enter normal operation.

Before continuing with the adjustment trip, the floor level positions, braking distances and drive parameters should be optimized until the lift stops flush at every landing. The Limax33CP offers a value range of ±50 mm for the correction of the previously taught-in floor positions. This value cannot be exceeded. If the learning trip was carried out with too large tolerances, the whole learning procedure has to be repeated all over again.

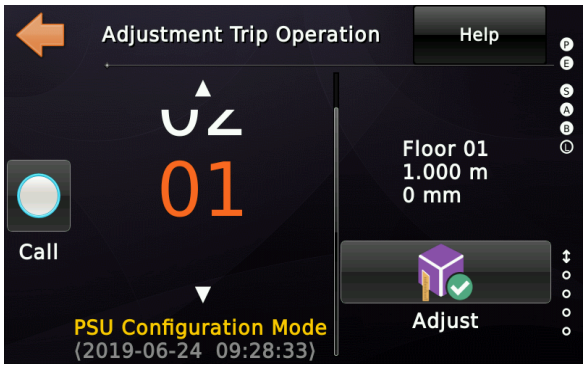
The floor level tune assistant (see chapter 27.1) can also be used to adjust the floor level positions from within the car.

Once the lift system has been finally adjusted, the adjustment trip can be carried out. This may be repeated with the Limax33CP as often as desired.

To be able to perform an adjustment trip, you must switch the safe encoder (PSU) to the '*Configuration mode (Adjustment)*' manually via the user interface.



Having entered the configuration mode, the adjustment trip can now be started.



Using the call button on the left, the lift will start to drive to the selected floor. As soon as the lift arrives at the floor, the position can be transmitted to the PSU via the '*Adjust*' button.

If you leave the adjustment trip assistant, a dialog is opened which can be used to switch back to normal operation.

After the adjustment trip has been successfully completed, the PSU and controller are taught-in and the system is in normal operation.

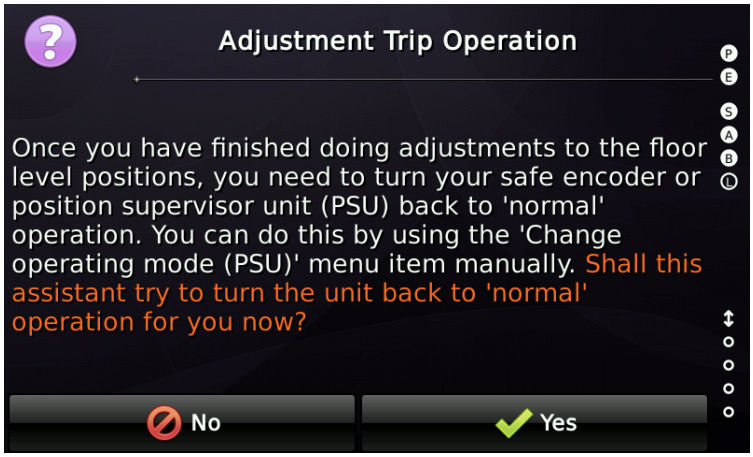


Figure 60: Turning the PSU to normal operation mode

26 Teaching the deceleration distances automatically

This assistant can be used for automatically teach-in the deceleration distances, if using a **classical drive unit**, that operates in **velocity profile**, like **hydraulic lifts** do.

The braking distance assistant is only required if the controller must calculate/specify the deceleration points.

If the drive is featuring 'position' profile, the travel curve is calculated by the drive itself internally, like the modern Ziehl Abegg ZetaDyn inverter units.

The assistant for teaching-in the deceleration distances can be found under '*Assembly & Service*' → '*Assembly & Repair*' → '*Learning Trip*' → '*Brake distance assistant*'.

26.1 Theory of Operation

The braking distance assistant will first drive the lift to its start position and then start driving with every velocity in every direction and recording the distance it takes to decelerate the car back to creeping velocity 'Vx → V0' again and finally to stop it 'V0 → Standstill'.

Once the teach-in of the deceleration distances has been finished, check the deceleration distances by driving the lift in between the floors. If necessary, you may have to adjust and/or optimize the stopping distance, which is the deceleration distance of the creeping velocity (V0) manually.

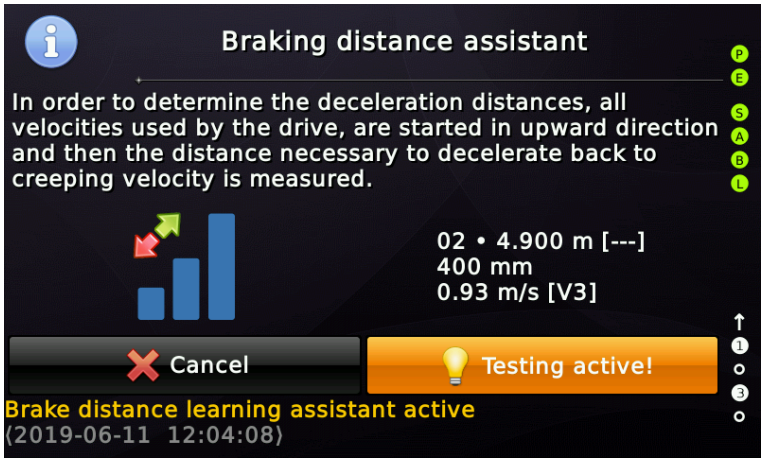


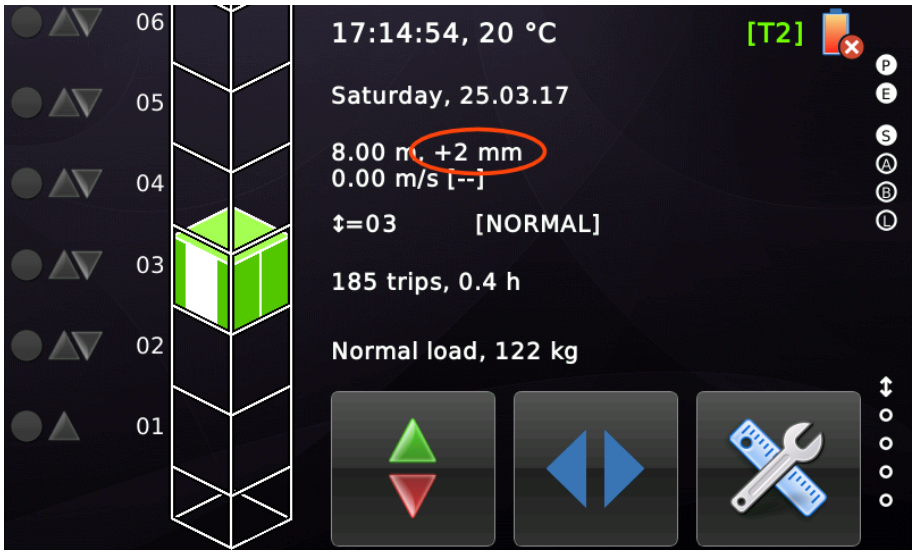
Figure 61: Brake distance assistant

For hydraulic drives, the fine adjustment of the stopping distance can be done floor-by-floor if necessary. In addition, a stopping distance offset can be set up for hydraulic drives that only stop at nominal speed with the help of an inverter but not if they were traveling at an intermediate speed before stopping.

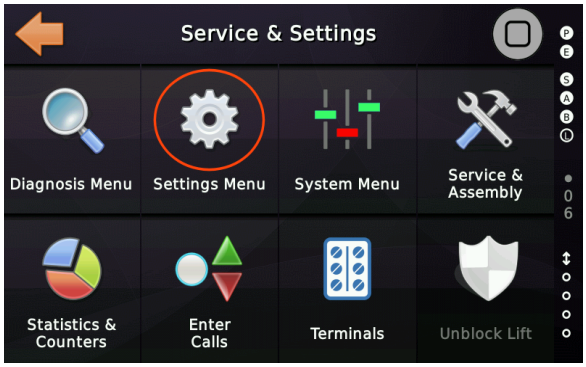
27 Adjusting/Tuning the Level Positions

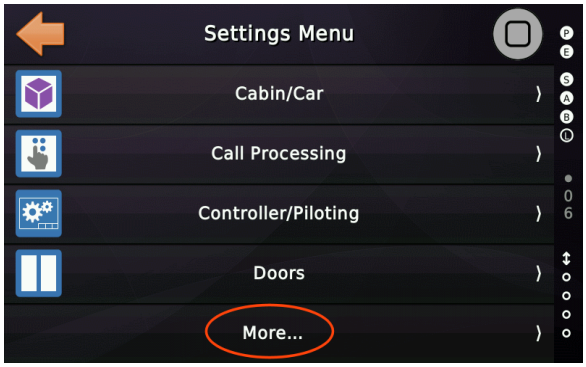
After the floor levels have been taught, a test drive and a simple ruler to measure the level distance, is all you need to make the cabin going flush to level.

Before altering any of the taught floor level positions, ensure that the lift is really stopping without a distance of more than ±3 mm at the taught positions, even if the taught positions may be not 100% correct - the lift has to stop at them mint.
If it does not do this, first find the issue before changing the floor levels. Have a look at the Trouble Shoot chapter of this document.



To open the 'Floor Level Table' go to 'Settings' → 'More...' → 'Positioning Unit' → 'Floor Level Positions' menu path.





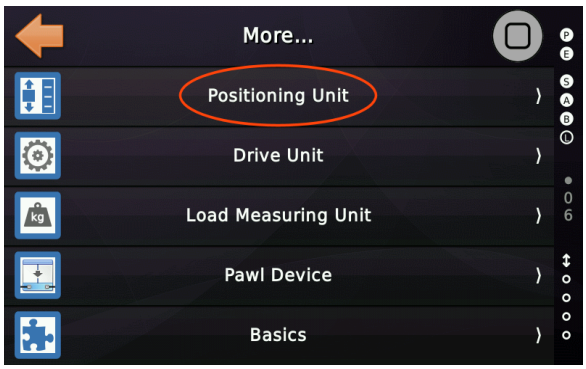


Figure 62: Floor Level Table

▶ In order to alter a floor level position value Tap'n'Hold a table row. A new dialog used to alter the numerical value will be opened then.

▶ Swipe the digits up and down to change the floor level position.

To store the changed value, tap on the green check mark button. If you have finished altering the floor level values in the 'Floor Level Position Table' tap the same button in the table too. Only then the values will be stored to non-volatile memory all in once.

27.1 Floor level tune assistant

In order to simplify fine tuning of the floor level positions, an assistant has been implemented, that allows to level the car and confirming the adjusted level position, using nothing more than the existing car call buttons.

You find the assistant by pressing first 'Home' and then the hardware button 'Service & Assembly' and then go to 'Assembly & Repair' → 'Learning Trip' → 'Floor Level Tune Assistant'.

In order to drive to a floor, press the designated car call normally. When having reached that floor, press & keep pressed a car call above to level upwards. At the top floor use the current floor's car call button instead.

To level downwards press & keep pressed a car call below. At the lowest floor use the current floor's car call button instead.

If having leveled the cabin, press the car call on the current floor normally, to store the new position. The lift controller will respond by letting the car call lamp flashing three times.

Alternately you can control the process via the controller's display.

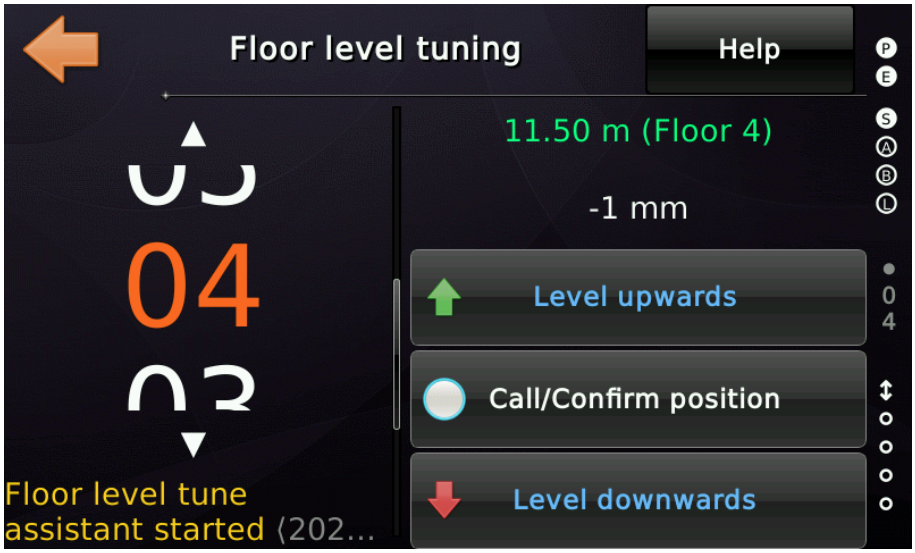


Figure 63: Floor level tune assistant

27.2 Trouble Shooting

27.2.1 Floor level positions are not plausible or in the wrong direction

Check if the pulley orientation (*clock wise/counter clock wise*) and the pulley circumference do match the settings in the lift controller under 'Settings' → 'More...' → 'Positioning Unit'.

Wrong pulley orientation and circumference are a common reason, if the position values are not plausible.

Check also the conversion factors found under 'Settings' → 'More...' → 'Positioning Unit'. It is vital for positioning profile mode, that the drive and the lift controller have the 'same *idea of what a millimeter is*', because driving and stopping is done by exchanging position data between drive & controller to avoid any creeping on stopping.

27.2.2 The lift does not stop flush on level.

27.2.2.1 If the lift is featuring velocity profile mode, like classic hydraulic lifts or older traction lifts...

Check if the lift actually changes from nominal velocity V1..4 to creeping velocity V0 and that it has enough creeping distance. If it does not creep at all, make the braking distance of the nominal and intermediate velocity longer. Just look at the desktop which velocity the lift is using [for example V4] and increase the braking distance in 20 mm steps. If the lift is now creeping and still overruns the floor level, increase the braking distance of the creeping velocity V0 in 5 mm steps. If the lift now stops to early, simple decrease the braking distance of the creeping velocity V0 in 5 mm steps.

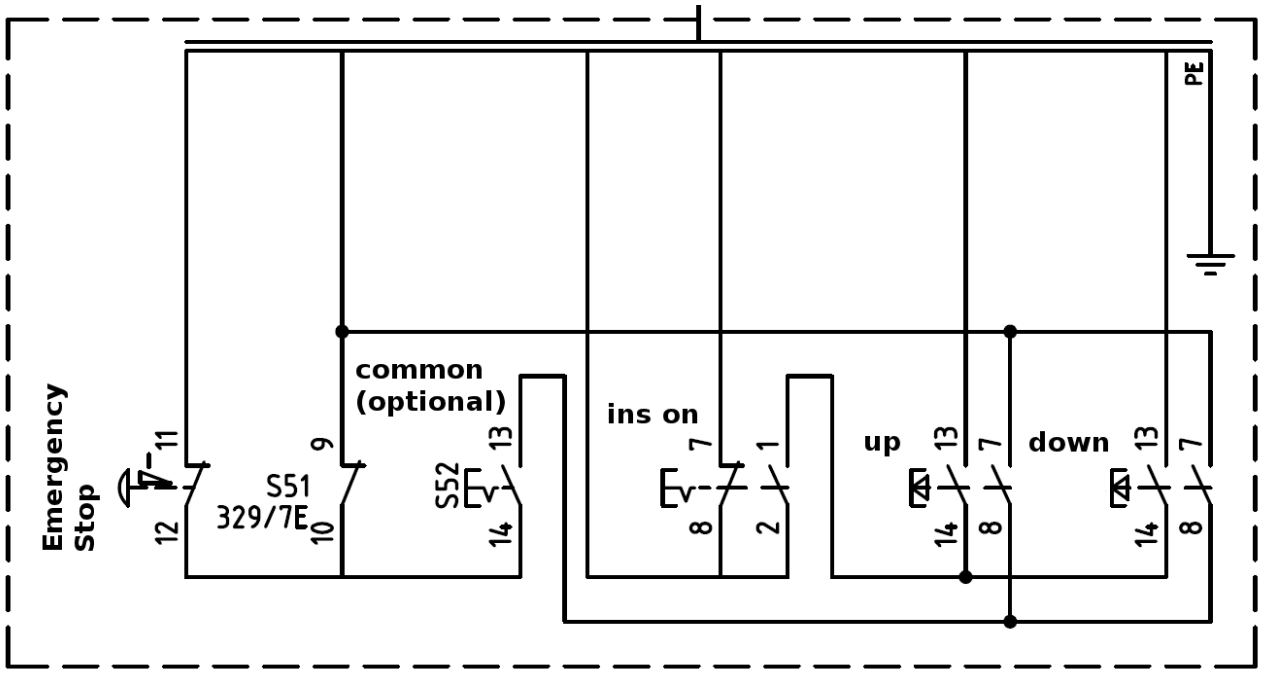
27.2.2.2 If the lift is featuring modern position profile mode, like traction lifts with motor encoder and an absolute positioning system for the car...

A drive running in position profile mode, does normally only need manual adjustment of the braking and minimum driving distances for the inspection velocity.

If stopping flush on level in normal operation fails, check if the velocity shown at the desktop of the lift controller is the very same as the velocity shown in the display of the inverter. If they are quite different, proceed with the solution '*The floor level positions stored are not plausible or in the wrong direction*' and check the encoder pulley circumference and position conversion factors, that can be found at 'Settings' → 'More...' → 'Positioning Unit'. In that case it is likely that the inverter and the lift controller use different conversions to calculate millimeters from the encoder data.

28 Inspection-/Emergency electrical operation

The inspection/emergency electrical operation switches shall have the emergency stop (E) chain wire in-line, so that the activation switch will open the safety chain and the direction buttons re-close the chain again. The switches shall be forcibly guided.



28.1 Input signals

For operating the lift in inspection mode, three groups of input signals are available.

Car top inspection

- Car top inspection enable [NC]
- Car top inspection upward
- Car top inspection downward
- Car top inspection fast button

► The Car top inspection inputs can only be used on-board or on an I/O-unit at CAN1.

Shaft pit inspection

- Shaft pit inspection enable [NC]
- Shaft pit inspection upward
- Shaft pit inspection downward
- Shaft pit inspection fast button

Emergency electrical operation

- Emergency electrical operation enable [NC]
- Emergency electrical operation upward
- Emergency electrical operation downward
- Emergency electrical operation fast button

► The Emergency electrical operation (ERO) inputs can only be used on-board or on an I/O-unit at CAN1.

Additionally the reset signal for shaft pit inspection operation:

- Inspection in the pit reset signal

28.2 Parameter & Options

Press the hardware button 'Favorites' and then go to 'Settings Menu' → 'More...' → 'Basics' → 'More...' → 'Inspection & Emergency Electrical Operation' to open the parameters and options, related to the inspection operation.

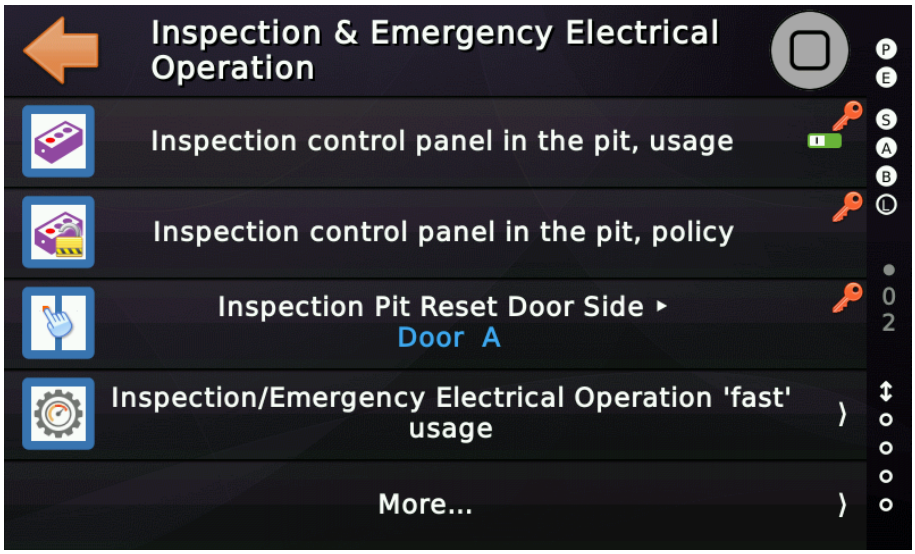


Figure 64: Inspection operation options

28.2.1 Inspection control panel in the pit, usage

This parameter defines if an inspection control panel in the hoistway pit (EN81-20) is used or if the lift is installed without such an inspection control panel. If such a panel is used and has been turned on once, keep in mind that after having it turned off again, the operation has to be reset via a separate input or the user interface as well.

28.2.2 Inspection control panel in the pit, policy

This parameter defines if unlocking the inspection pit operation shall be possible via the user interface (display) after the inspection pit switch has been turned off again. Otherwise it will only be possible via the electrical input function '*Inspection in the pit reset signal*'.

28.2.3 Inspection 'fast' button usage

This parameter defines if for inspection operation a 'fast' button is featured to drive with inspection velocity. If a 'fast' is used but not pressed, creeping velocity would be used instead.

28.2.4 Emergency electrical operation 'fast' button usage

This object defines if for emergency electrical operation a '*fast*' button is featured to drive with emergency electrical operation velocity (VR). If a 'fast' is used but not pressed, creeping velocity (V0) would be used instead.

28.2.5 Emergency electrical operation ignores passive safety chain

This parameter defines if the emergency electrical operation shall ignore the state of the safety board input for the passive safety chain. This can be useful for retrieving the lift back after some testing operations, if the emergency electrical operation supplies power again to the emergency stop input in the safety chain, but the input of the passive safety chain on the SB board remains dropped, due to two open contacts in the chain.

28.3 Maintenance options related to inspection operation

28.3.1 Drive beyond top/bottom floor

Press the hardware button 'Service & Assembly' and then go to 'Maintenance' to use the parameter '*Drive beyond top/bottom floor*'.

This parameter defines if the car is allowed to drive beyond the top or bottom floor level position, being on emergency electrical operation. If being activated, this option will automatically be turned off, after the lift being in normal operation for a while.

This option can be useful to return the cabin/car after having done a '*Limit Switch Test Operation*'.

28.3.2 Manual door operation

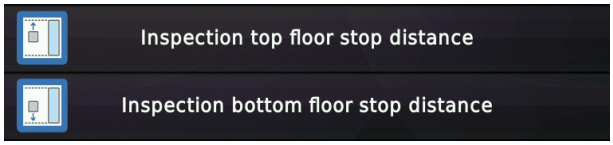
Press the hardware button 'Service & Assembly' and then go to 'Maintenance → More' to use the parameter '*Manual door operation*'. When having activated that parameter, the technician on the car top can activate the '*Inspection switch*' and hold the direction buttons up/down together pressed for 10 s in order to turn those buttons into '*door open*' and '*door close*'. If an *'Inspection in the pit driving buzzer'* has been installed, it will buzz for one second to indicate, that the buttons have changed their role.

To turn them back to normal operation, redo the process or just toggle the inspection switch.

28.4 Inspection top/bottom floor stop distance

These parameter define the distance to stop before the top or bottom floor level position, if driving using inspection operation.

Press the hardware button 'Settings Menu' and then go to 'More...' → 'Positioning Unit' → 'More...' to alter the parameters for stopping before top/bottom floor level.



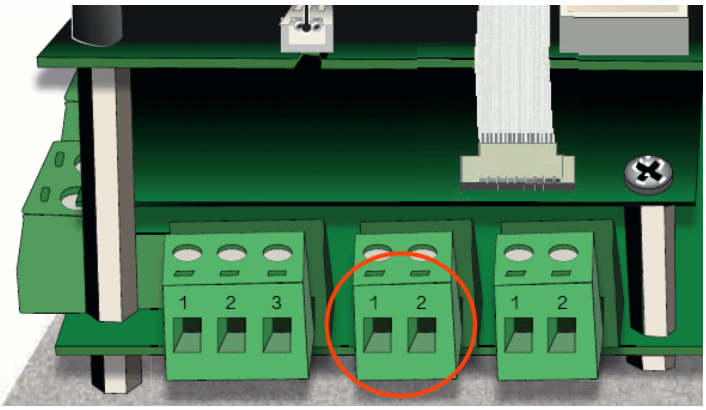
29 Power Failure Supervision

The power failure supervision is implemented by connecting the 230VAC line, which powers the 24VDC power supply for the lift controller, directly to the corresponding input on the THOR-SB-board.

This prevents writing to the EEPROM or FLASH or any other non-volatile memory, when the power will shut down.

29.1 Theory of Operation

The supervision function will only detect a peak-down of the 230 V AC monitoring input. So it will stop operating the lift controller when the net-power has peaked down, but before the 24 V DC actually shuts down.



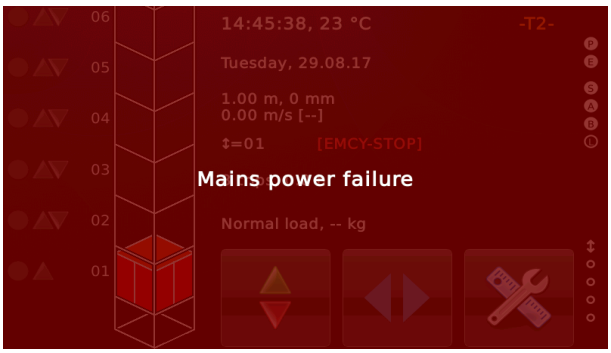


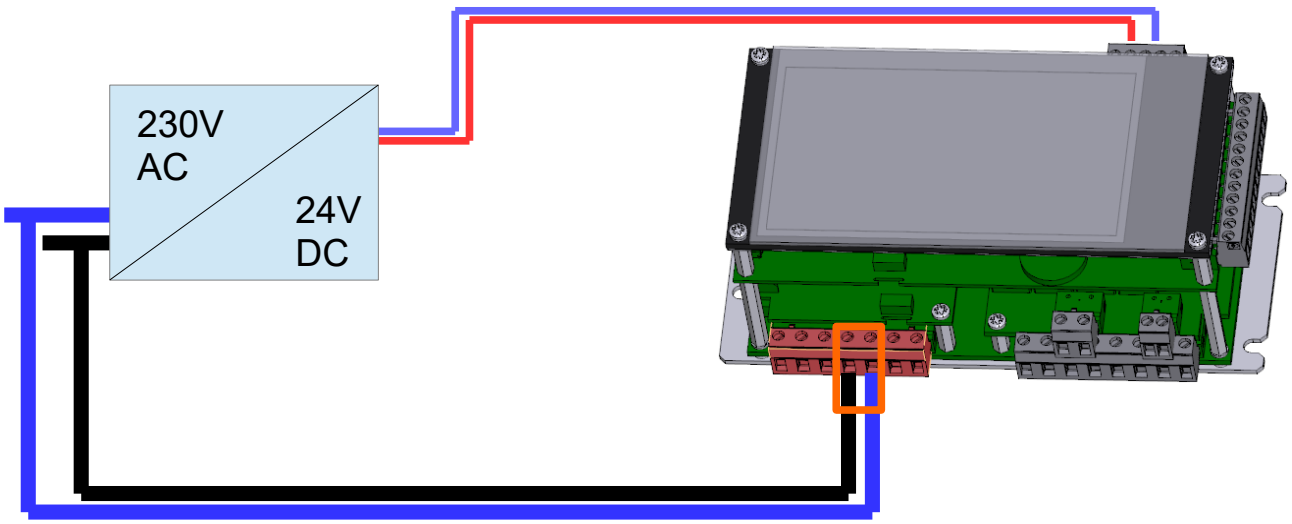
Figure 65: Power Failure Supervision at the SB-Board (Reference Hardware)

29.2 Warning

Connecting the power failure supervision is vital for the correct operation of the lift controller. Ensure that it monitors the right 230V AC net power line, that powers the 24V DC supply feeding the lift controller.

29.3 Schema

Connect the 230V/N lines that feed your 24V power supply, used to power up the THOR unit, back to the dedicated supervision input.



30 Phase Failure Supervision

This parameter defines if an external unit is used to implement the phase failure detection, featuring the corresponding lift controller input '*Phase Failure Supervision*'. Generally spoken the supervision function will detect a 'fallen peak' and then set the lift 'Out Of Order'.

You will find the parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and go to 'Controller/Piloting' → 'More' → 'Phase Failure Supervision'.

30.1 Input

This input function shall be used to implement the 'Phase Failure Supervision'.

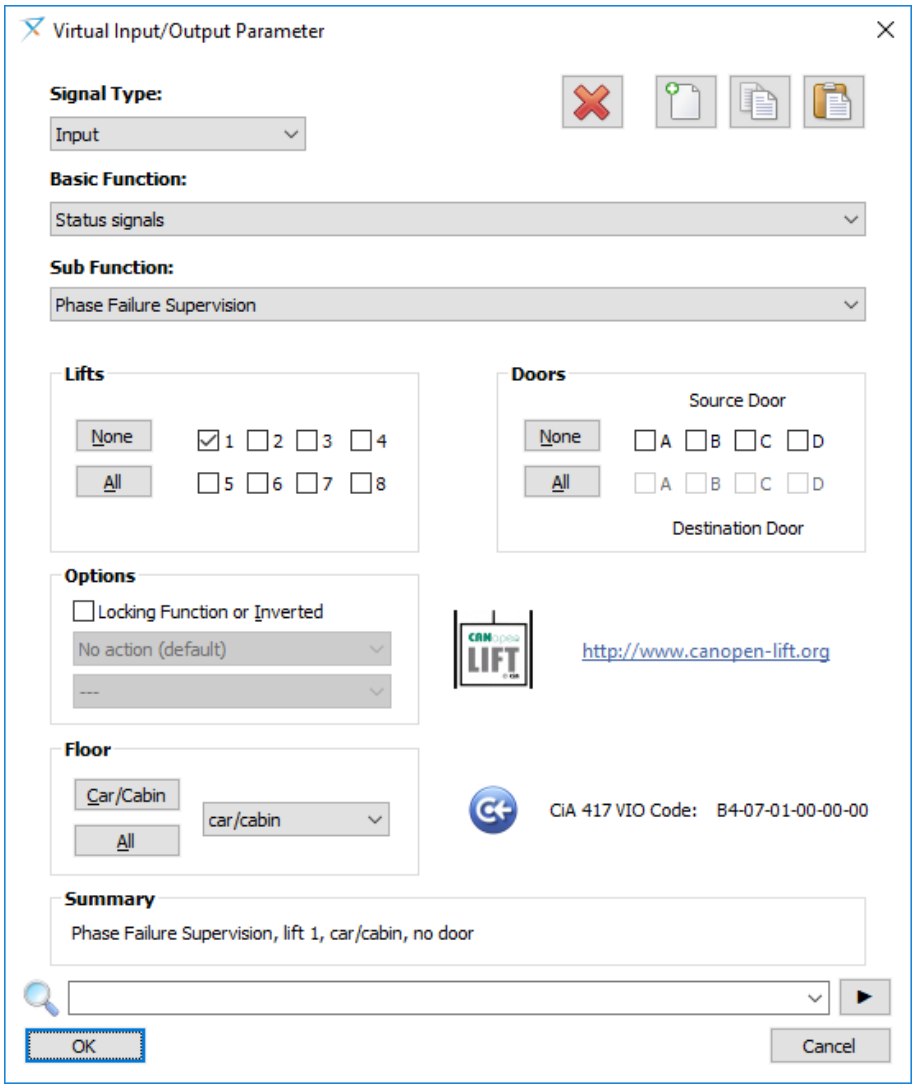


Figure 66: Phase Failure Supervision Input [Toolbox View]

31 Cabin light voltage monitoring

The car/cabin light voltage monitoring is using a 230VAC input on the safety board (THOR-SB) to detect a failure of the power, feeding the cabin light. The input is extra debounced for stability reasons.

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Cabin/Car' → 'Cabin light voltage monitoring'.

This supervision function will put the lift out of order, if the power for the car light has peaked down. If the lift is running, it will stop at the next possible floor and let the passenger deboard.

If having turned off the cabin light with purpose, by using the 'Car light off timer', the state of the supervision input 'Cabin light voltage monitoring' is ignored so long.

This function is always ignored, if running the lift controller in 'Training Board' mode .

31.1 Output

This output can be used as an acknowledge signal for the cabin light voltage monitoring.

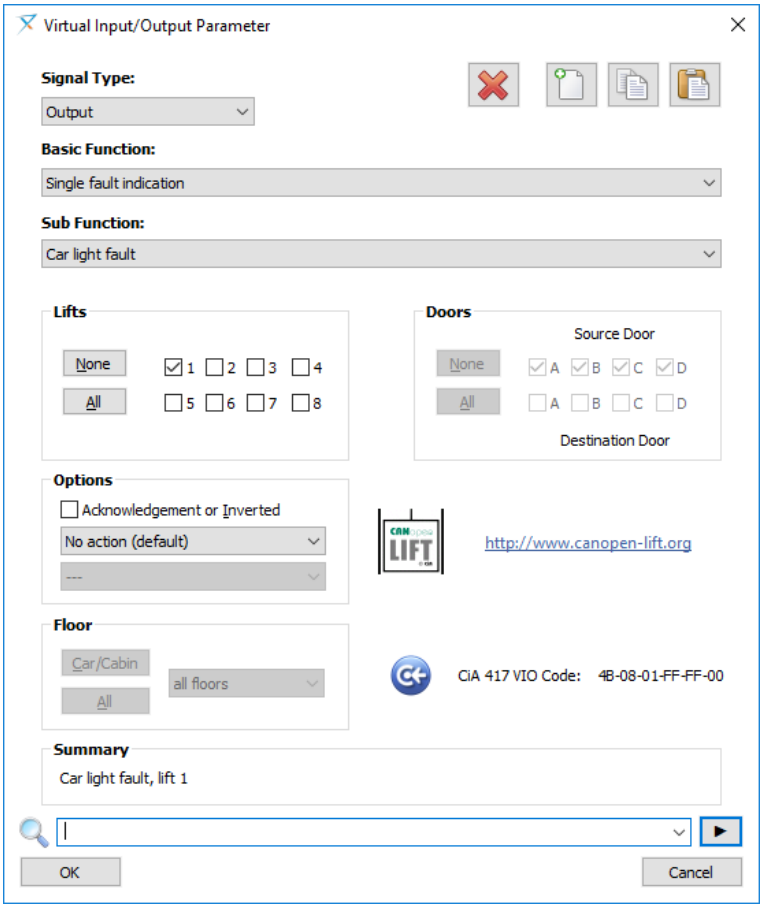


Figure 67: Car light voltage supervision acknowledge [Toolbox View]

32 Type of Call Processing

This parameter defines the type/mode of the lift controller's call processing, like PB, APB or Collective.

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Call Processing' → 'Type of Call Processing'.

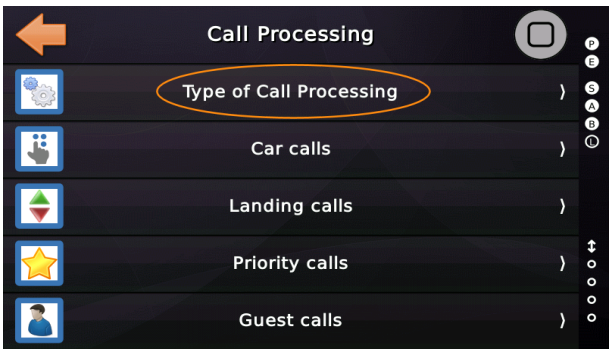


Figure 68: Parameter for Type of Call Processing

32.1 Collective Call Operation

This is the most common way of processing calls. The calls are collected in the call memory and will be processed by keeping the driving direction.

While 'car calls' are direction independent and will be processed in both directions, landing calls might be declared as '*upward-calls*' or as '*downward-calls*'. But the THOR lift application also supports direction independent landing calls, even if being operated as a 'collective' call controller. They are used rarely but would make the lift stop in both direction.

	Car call - Use low priority car calls for wheel chair car call panels and high priority car calls to make the lift travel pass lower prioritized car calls.
	Direction independent landing call (PB/APB)
	Upward landing call / Extra Upward landing call
	Downward landing call / Extra Downward landing call
	Low priority landing call (direction independent)
	High priority landing call (direction independent)

The CANopen CiA 417 defines a 'second layer' of landing calls called '*Extra Calls*'. Imagine having a team of four lifts and just one or two reach the parking slots. Using those extra calls, enables you to create a landing call just served by those two lifts, without interfering the 'normal' landing calls.

32.1.1 Car call related options

32.1.1.1 Car call cancelling

Enable car call cancelling by pressing the already acknowledge car call again. This needs 4-wire technology or a I/O component that supports pulsing the output to be able to read the input (button) even if the lamp has been lit up.

32.1.1.2 Maximum car calls on 'no-load' indication

This parameter defines how many car calls can be registered, if the load measuring unit of the car/cabin indicates, that the car is empty.

32.1.1.3 Cancel car calls on no-load indication policy

This parameter defines if pending car calls shall be cancelled, when the doors are closing, if more car calls had been registered as stated by the '*Max. car calls on no-load*' car call policy and the load measuring unit of the car/cabin indicates, that the car is actually empty.

32.1.1.4 Car call disabling

This parameter holds a table containing car calls being disabled. These locked car calls may be enabled via an input terminal or a time planner function.

32.1.1.5 Car call code table

This object holds the table containing the floors and their doors, together with the numerical code required to enable the call. The code has to be entered via the car call panel, using the car call buttons as a number pad. You may use the output 'Status/controller signals ► Enter code indicator' to signal that a code has to be entered, featuring an indicator in the car call panel.

32.1.1.6 Car call code time

This option defines the time span granted to the user in order to enter the numerical code.

32.1.2 Landing call related options

32.1.2.1 Landing call disabling table

This parameter holds a table containing landing calls being disabled. These locked landing calls may be enabled via an input terminal or a time planner function.

32.1.2.2 Landing call 'enabling' afterrun time

This parameter defines an 'after-run' time that has to expire after the landing call enabling signal peaks down again, before the landing call is actually disabled again.

32.1.2.3 Landing call acknowledge policy

This parameter defines when the landing call acknowledge (lamp) shall be cancelled. Usually the landing call acknowledge is turned off, when the lift has arrived to the designated floor. For swing doors, that are mechanically unlocked via the car door being fully opened, it might be useful, that the landing call lamp is not turned off, before the car door has been fully opened.

32.1.2.4 Latched landing call lamps blink while driving

This is an option that can't be used in team operation mode. This option makes all the pending (latched) landing call acknowledges (lamps) do blink/flash, when the lift is driving. If the lift is standstill the acknowledges (lamps) will be constantly turned on.

32.1.2.5 Inhibit time between up & down call

This parameter defines if an inhibit time shall prevent the passenger from pressing both landing call buttons at about the same time. This shall prevent the bad habit of some passengers pressing both landing call buttons (up/down), thinking that the lift would arrive faster and then later on moan about the lift, driving in the wrong direction.

32.2 PB and APB Operation

On PB operation the next landing call can not be entered before the lift is idle again, having no pending calls anymore. Optionally the car load measuring unit can be used to ensure that the car is really empty. If the lift is not idle, the output signal 'Occupied' is turned on.

The difference between PB and APB operation is, that on APB operation, landing calls will be collected as long as the lift is still 'occupied'. These landing calls will be processed in the order they have been given rather than the direction. Depending on the region ABP operation might also be called 'Taxi' operation mode.

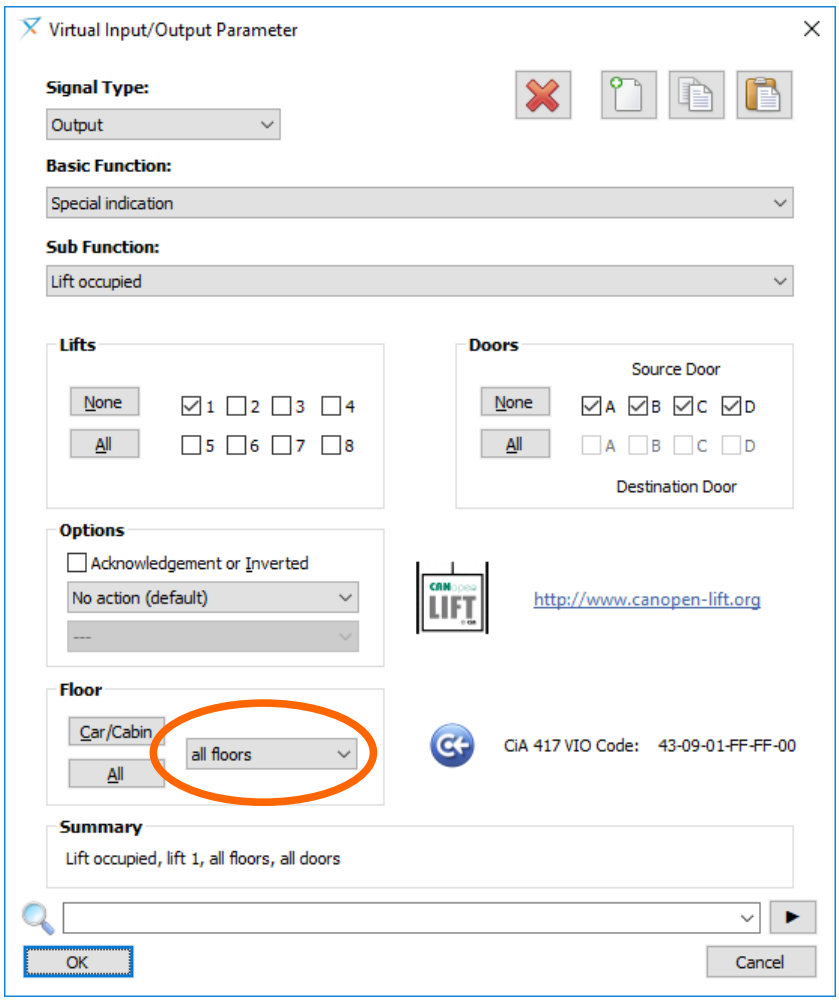


Figure 69: Special Indication 'Lift Occupied' used by PB/APB operation [Toolbox View]

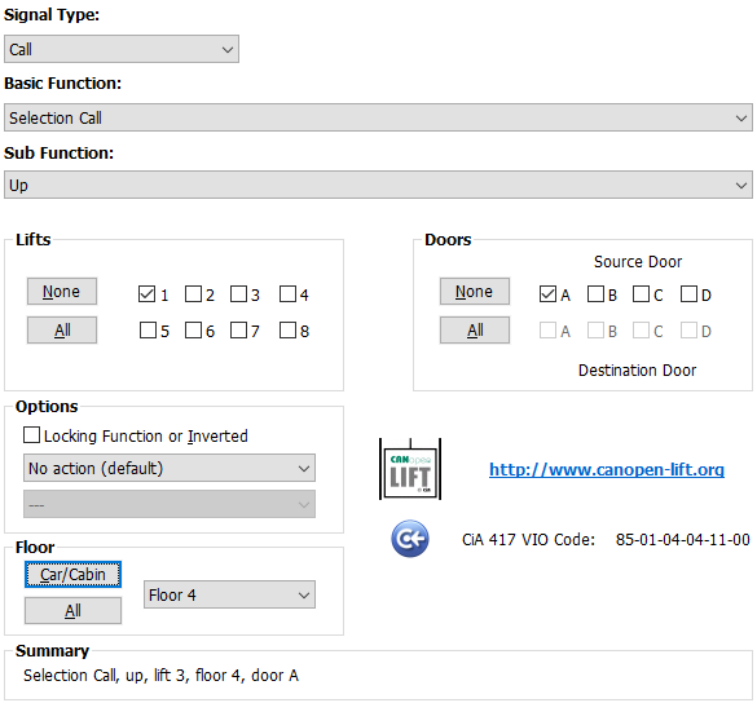
Because the 'Occupied' signal is usually used at the landings, do not forget to set 'floors' to '**all floors**' instead of 'cabin'.

32.3 Special 'Selection Landing Calls'

In some installations, it might be required that there is an easy way for the passengers to enter a landing call and addressing only one or some of the lifts in the group/team, for example the lifts with a larger cabin/car. To archive this without the need of extra buttons or key switches, the 'Selection Landing Calls' can be used.

Basically this is a manufacturer specific feature implemented in the I/O unit/panel itself. So it is not part of the CiA-417 yet and therefore can not be implied to be available, when purchasing any standard CANopen CiA-417 unit.

Normally when the waiting passenger enters a landing call, the IO unit/panel will transmit the 'press' and the 'release' event immediately. If having parameterized a 'Selection Call' the input unit will determine how long the button has been pressed and send either a 'Standard Landing Call' to all lifts in the team/group or if having detected a '*long press event*', an 'Extra Landing Call' with the lifts, that have been parameterized for that call. The time-span can be parameterized in the I/O-unit itself.



If monitoring the bus traffic, we can see that the unit transmits a 'Standard Landing Call' to all lifts on a regularly button press event and a 'Extra Landing Call' on a long-button-press event having just the lift 1 selected as parameterized.

```
27.03.2018/11:46:45.947[RX56717], Node    2, Lift 1-8, Hall call, up, floor 4, door A, on <02-01-FF-04-11-01>
27.03.2018/11:46:45.947[RX56718], Node    2, Lift 1-8, Hall call, up, floor 4, door A, off <02-01-FF-04-11-00>
```

```
27.03.2018/11:47:55.537[RX26306], Node    2, Lift   1, Hall call, Up [extra], floor 4, door A, on <02-04-01-04-11-01>
27.03.2018/11:47:55.537[RX26306], Node    2, Lift   1, Hall call, Up [extra], floor 4, door A, off <02-04-01-04-11-00>
```

32.4 Priority Call Operation

Priority calls are always used if a group of passengers shall be transported in a 'preferred' way. Bed transportation in hospitals is an example for this.

The THOR lift application has two levels of priority calls, low and high priority calls. Priority calls are usually landing calls that are not assigned to a direction. That means the lift will stop in both directions, let the priority passenger in and allow him/her to enter now a car call that will be processed immediately.

Because there are literally dozen of applications that might be implemented using priority calls, there are quite a few options for priority call operation. All options exists twice. Once for low and once for high priority calls.

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Call Processing'.

32.5 Options

All the following options exists twice, for low and high priority calls separately.

32.5.1 Collect priority landing calls

Use this parameter to allow collecting priority call calls. The calls will be executed in the order they have been given. So image our example from the introduction - the first bed would be served first then.

32.5.2 Unlock car calls on priority via car preference

Use this parameter to define if the car calls on a priority call operation, shall only be enabled, if the car preference switch has been activated. This option might prevent passenger still being in the cabin to use the car calls, when the lift has arrived by use of a priority call.

32.5.3 Rule for pending car calls

This parameter defines what happens to pending car calls, if a priority landing call is received. Usually pending car calls will be canceled.

32.5.4 Pickup passenger with no-load

This parameter defines whether passengers are to be picked up on a priority call operation, when the cabin is emptied. This requires a reliable load measuring device.

32.5.5 Enter/collect car calls on priority operation

This parameter defines if the passenger on a priority call operation is allowed to enter several car calls or just one, which is alterable. Alterable means that if having pressed the wrong car call, pressing another car call will cancel the already pending call.

32.5.6 Cancel/disable landing calls

This parameter defines if pending landing calls shall be canceled, if a priority call has been entered or if they shall be collected.

32.5.7 Re-enable disabled car calls

Using this option, it is possible to re-enable car calls, that had been disabled via the dedicated '*Car call disabling*' table before, when the lift has arrived at the priority call landing and is waiting for the passenger to step in and enter a destination.

32.5.8 Cancellation of a running load time

If a '*Load Time*' operation had been started, usually via a key-switch in the car, this option defines if this operation shall be aborted or canceled immediately, if a priority call has been registered.

As all the other options, this can be defined independently for low and high priority landing calls.

32.6 Misboarder Detection

If being turned on, the detection of misboarders - passengers that had pressed the wrong landing call direction and then step into the car giving a car call in the opposite direction. The lift controller will check which door had been opened and on which door, using the light curtain, passengers had stepped in. If the given car call is then entered in the wrong direction, the remaining landing call in the other direction will then be cancelled on that door side.

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Call Processing → Landing Calls → Misboarder detection'.

32.7 Transition from Low Priority Call to High Priority Call

If a low priority call is currently processed - *for example for bed transportation* - and a high priority call will be entered - *for example used by the medical emergency team* - it will cancel the pending low priority call to process the high priority call instead.

If the option for collection low priority calls has been activated the call is not lost, but put back to call memory instead.

So, if we stick to the hospital example, a typically option setup would look like this:

Low Priority Calls:

Collect priority landing calls	On (Yes)
Unlock car calls on priority via car preference	On (Yes)
Rule for pending car calls	Cancel pending car calls
Pickup passenger with no-load	No, ignore car load
Collect car calls on priority operation	One alterable call
Cancel/disable landing calls	Collect landing calls

High Priority Calls:

Collect priority landing calls	On (Yes)
Unlock car calls on priority via car preference	Off (No)
Rule for pending car calls	Cancel pending car calls
Pickup passenger with no-load	No, ignore car load
Collect car calls on priority operation	One alterable call
Cancel/disable landing calls	Collect landing calls

32.8 Guest Calls

Typical applications for guest calls are medical practices, law firms or apartments into which a lift enters directly. Guest calls are used when a passenger wishes to travel from a freely accessible pick-up floor to a blocked destination floor and the trip is to be initiated by the host, e. g. the tenant, not by the passenger himself. It is not uncommon for guest call operations to be combined with a voice or video link, as in the case of trips directly into an apartment.

The process is triggered by pressing the guest call button on the host's destination floor.

You will find the corresponding parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Call Processing' → 'Guest calls'.

Car calls to the destination floor can be locked using the car call disabling table (see chapter 38.11). The wiring of the car calls to the destination floor is carried out either in:

- 3-wire technology, if the CANopen device is able to detect a peak-up of the input signal, having the output activated (e. g. the IO8 or LXC)
- 4-wire technology, if the CANopen device does not meet the above criteria. In that case the input and output have to be wired separately.

32.8.1 Theory of Operation

The guest call operation is divided into 4 phases:

- Phase 1 – Waiting
- Phase 2 – Picking Up
- Phase 3 – Allocation
- Phase 4 – Delivering

Phase 1 is activated when the guest call operation has been triggered by a guest call but picking up the passenger has to be delayed. Possible reasons for a delay are:

- Special operations are pending, such as car preference being active.
- Pending car calls or priority calls that have to be processed first.
- The current operation/trip has to be finished first.

As soon as the lift is idle, the guest operation will turn to phase 2, driving to the source (pickup) floor. Once the lift has arrived at the source floor, the lift opens its doors and lets the guest enter the car/cabin. The lift then remains in phase 3 for a definable dwell time, until one of the following events occurs:

- The defined dwell time has been expired.
- The doors of the lift have been closed.
- An enable signal has been activated by the passenger in the car (see chapter 32.8.4).

The transition to phase 4 can either be initiated by the first two conditions (*dwell time or doors closed*) or by some of the options, discussed later. During phase 4, the guest is delivered to the destination floor.

No new car calls can be given during phases 2 to 4. Landing calls are usually collected (see chapter 32.8.4).

The dwell time used in phase 3 can be changed by navigating to the 'Settings Menu' → 'Doors' → 'Door Options & Times' → 'Door Timers' → 'Dwell time values' → 'Priority & guest call dwell times' → 'Guest call dwell times'.

32.8.2 Guest call signal

You find the CiA 417 standard call signals for this operation in the '*guest call*' group.

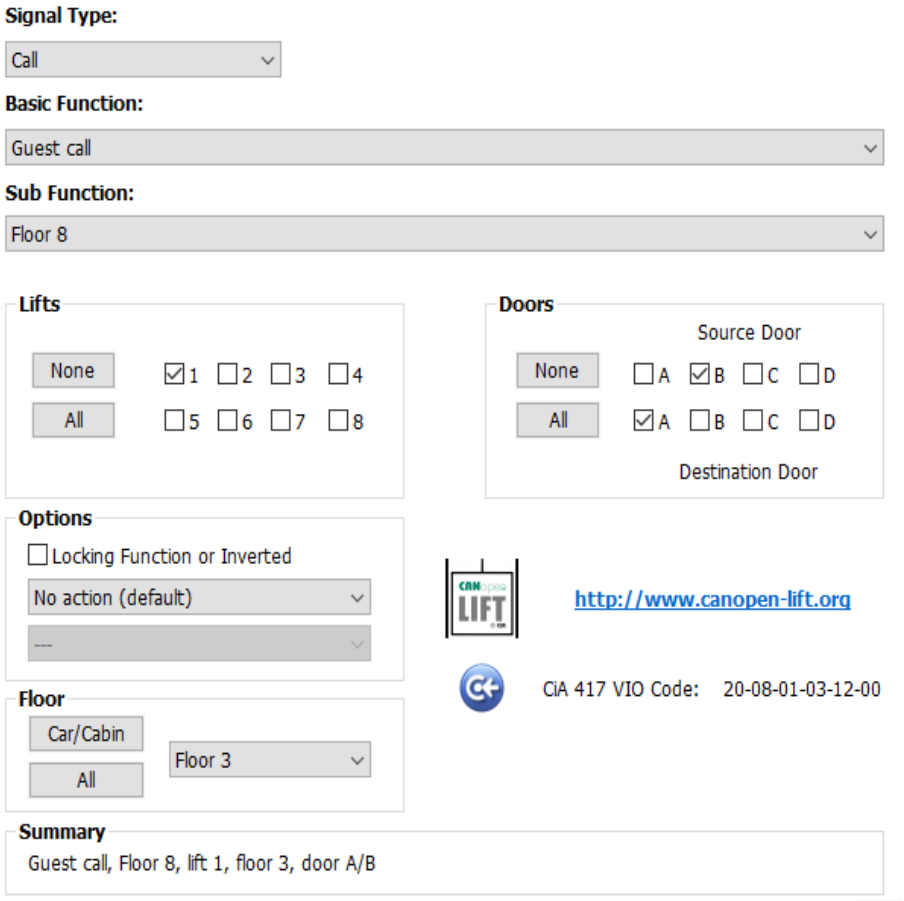


Figure 70: Call Signal 'Guest Call' [Toolbox View]

This example shows the parameter of the guest call from source (pickup) floor 3, door B, to the destination floor 8, door A.

32.8.3 Guest call output signals

- Special function acknowledgment → Special service acknowledge, lift 1, all floors, all doors

  This output signal is turned on when the guest call operation is in phase 1 for more than 5 seconds. The signal is turned off when leaving phase 1.

- Special indication → Guest call indication, lift 1, all floors, all doors

  This signal is turned on for the duration of phases 2 to 4.

The output of the active guest call button is flashing/blinking during phase 1 (delay). It is permanently switched on in phases 2 to 4. If there are other 'waiting' guest calls, while a guest call is already being processed, these calls are flashing/blinking as well.

32.8.4 Guest call parameters & options

A spot-on working CANopen load measuring unit is required for the option *'Guest pick-up with empty car* and *guest delivery by weight change'* to work reliable.

32.8.4.1 Allow car call reentering

After enabling this option newly entered car calls will be processed while the guest transfer is delayed in phase 1. This can be useful if new passengers cannot be prevented from boarding when the lift does stop on some floor.
default value: Off

32.8.4.2 Collect landing calls

This option enables the collection of landing calls during an ongoing guest call operation in the phases 2 to 4, default value: On

32.8.4.3 Guest pick-up with empty car

Activating this option allows the transition from phase 1 to 2 only if the load measuring device detects the car as empty, default value: Off

32.8.4.4 Guest delivery by car call

This option enables the start of the guest delivery by pressing the car call button, Default Value: On

32.8.4.5 Guest delivery by weight change

This option enables the start of the guest delivery by noticing a weight change, default value: Off

32.8.5 Guest call notification (Logbook)

The logbook gives a record of a guest call operation procedure.

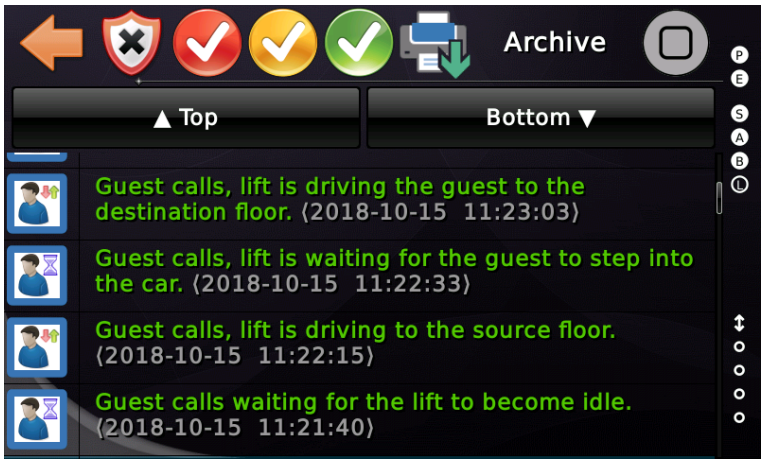


Figure 71: Logbook items created by the guest call operation

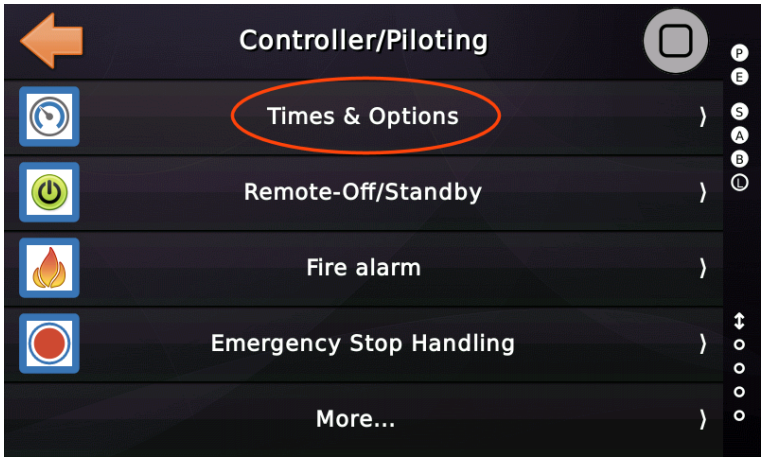
33 Parking

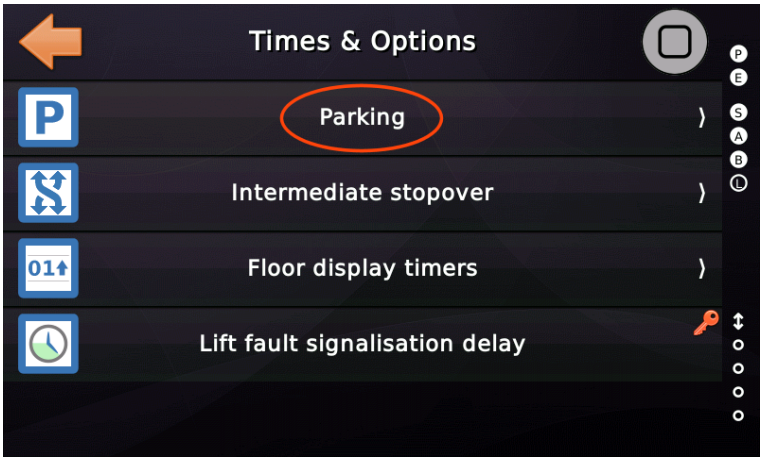
Parking operation will usually home the lift to either a specific floor or within a range of floors, known as a 'zone'.

You will find the parameter related to Parking Operation by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Controller/Piloting' → 'Times & Options' → 'Parking'.

If the lift is already parked, you can also tap on the 'Park'-symbol above the car to quickly reach the parameters.

In the simplest way a timer and a floor can be setup to make the lift park after being idle for the given time-span.





The lift is defined to be 'idle', if no calls or functions like 'Car Preference' are pending and the doors have been closed. For lifts having manual/swing doors that usually means that the landing doors are closed but the car doors are kept open.

If you setup only a timer and the floor to 'off', the lift will still park after being idle for the given time, but on any floor then.

33.1 Parking Parameters & Options

33.1.1 Parking strategy

This parameter defines if the lift shall feature a simple parking floor or a more enhanced mode, like 'zone parking' in a group/team environment. If running in 'zone parking' mode, the program would split the hoistway into parts and ensures that every part is covered by a team lift. You may also consider the self learning feature.

33.1.2 Simple parking mode

The lift is simply driven to the given parking floor, if being idle and the parking timer has expired.

33.1.3 Zone parking mode (team only)

The lift team will break down the hoistway into zones and ensure that every zone is covered by one team lift, standing 'in the middle' of each zone. Be aware that the option 'Cars at lobby' floor is in charge and may reduce the count of cars that actually can cover the zones.

33.1.4 Self learning parking mode

The lift controller will record statistical data to detect, on which floor the lift is required to be at which time in the week.
You can have a peak at the recorded values by entering *Diagnosis Menu → More... → Even more... → Further more... ->Parking statistics / Self learning parking*.

33.1.5 Parking timer

This parameter defines the time to park the lift when no calls are present. The parking floor is determined by the parking strategy/mode and other options.

33.1.6 Parking floor

This parameter defines the parking floor, used for parking the lift, if being idle and using the 'simple' parking mode.

33.1.7 Cars at lobby floor

This parameter defines how many cars shall be kept at the lobby floor, if featuring the 'zone parking' strategy.

33.1.8 Parking in-between floors

This parameter defines the distance used to park in-between floors, relative to the floor level position of the parking floor used. This option is only available if the parking strategy has been set to '*simple parking mode*'.

33.2 State & Signals preventing parking operation

The lift might not enter parking operation, if...

- Car Preference has been turned on.
- Maintenance has been activated.
- Guest calls are pending.
- Priority calls are pending.
- Any kind of loading/allocation time holds the lift in place.

33.3 Outputs

The acknowledge signal is sent twice via the bus system. Once for the car and once for the hoistway, containing the current parking floor.

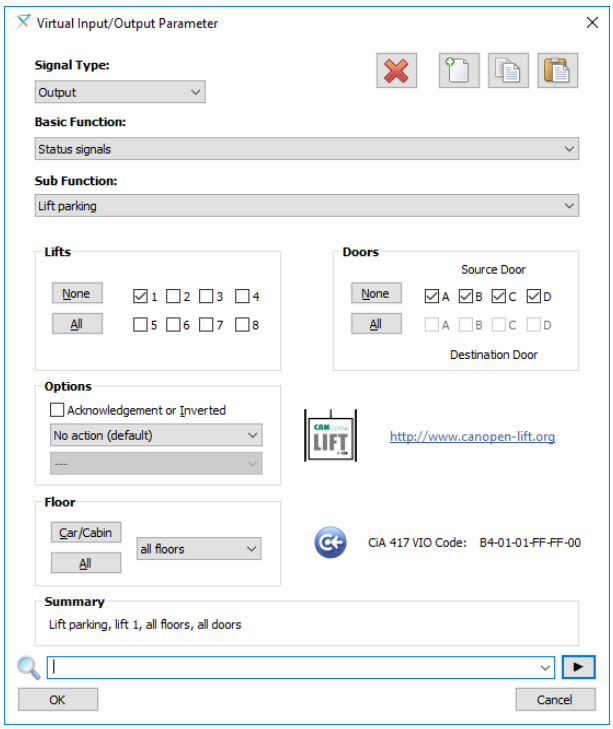


Figure 72: Parking Acknowledge signal [Toolbox View]

34 Cabin/Car Illumination (light) off timer

In order to turn off the light in the car, after the lift has closed the doors and is idle for the given time-span, you can setup a timer.

Figure 73: Car Light Off Timer

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Cabin/Car' → 'Cabin light timer''. If the lift has already turned off the light, you can also tap on the 'Light' symbol above the car on the main screen to quickly reach the parameters.

If you operate automatic power driven doors, they have to be closed in order to turn the light off. If featuring manual/swing doors, the landing doors need to be closed. The car doors will stay usually open. In that case it is recommended not to turn off the light completely but reduce it by just turning some of the lights off.

There is a dedicated table, that let you define floors, were the car light can be turned off, even that the landing doors are still open. That might be useful, if the lift shall park with the doors being completely open.

If turning the lift to 'Standby' operation, the cabin/car lights will always be turned off immediately within 3 seconds.

The input "*Status/controller signals → Turn the car light back on*" can be used, if there is need that an external component keeps the car light on.

34.1 State & Signals that prevent turning off the cabin light

The lift might not turn off the cabin/car lights, if...

- Car Preference has been turned on.
- Guest calls are pending.
- Priority calls are pending.
- The lift is on any special operation, like 'Fire Alarm'.

34.2 Output for turning the car lights off

There are two signals broadcast via the bus system that might be used to turn off the cabin illumination. One is vendor specific and one is standardized.

- Status signals → Car illumination off, lift 1, car/cabin
- Lift lights → Main light off acknowledge, lift 1, car/cabin

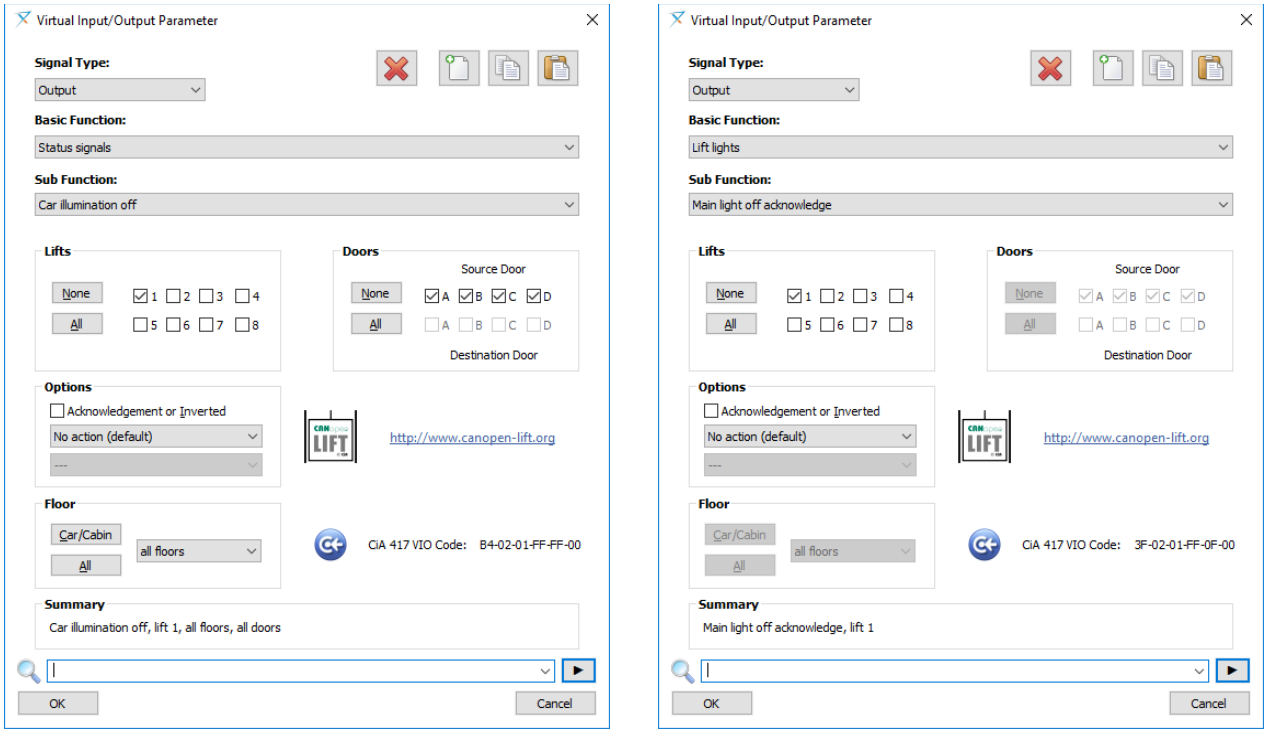


Figure 74: Output for turning the cabin lights off [Toolbox View]

We recommend always to use a signal that actively turns off the light, if being activated. If using a signal the other way around, so that it has to be activated in order to turn the lights on, you risk to turn off the car light by mistake, if the bus communication between the control cabinet and the car has been interrupted. So you risk to catch the passengers first and then leave them in darkness.

35 Floor Displays/Indicators off timer

In order to reduce the brightness and/or turn off the displays and indicators, after the lift has closed the doors and is idle for the given time-span, you can setup timers.

You will find the corresponding parameter (timers) by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Controller/Piloting' → 'Times & Options' → 'Floor Display Timers'.

Figure 75: Timers for reducing and turning off the floor displays

If both timers have been setup, the 'Display Reducing' timer will expire first and then the 'Display Off' timer will start to expire.

If turning the lift to 'Standby' operation, the displays will always be turned off immediately within 3 seconds.

35.1 State & Signals preventing reducing/turning off the displays

The display will be kept on, if...

- Car Preference has been turned on.
- Guest calls are pending.
- Priority calls are pending.
- The lift is on any special operation, like 'Fire Alarm'.

35.2 Signals effected when reducing/turning off the floor displays

35.2.1 Hall Lanterns

The hall lanterns are simply turned off by using the regularly signals for the arrows and turn them to off state.

35.2.2 Direction Indicators

The direction indicators are simply turned off by using the regularly signals used for the arrows anyhow.

35.2.3 Floor Indicators

The floor indicator are reduced in brightness or turned off in two different ways. First off all the current floor value is set to 'zero', which might lead some of the existing displays on the market to show 'Out of Order', which often can be parametrized in the display unit.

The second way of reducing the brightness and/or turning off the floor displays is to use the more modern and sophisticated '*Energy consumption (power saving)*' messages as defined by CiA 417. So if you have installed one or more modern CANopen displays that process those messages, like the LEO-displays made by SafeLine, they will reduce the background light and finally turn off themselves without any need of extra cabling.

35.3 Arrival Indication

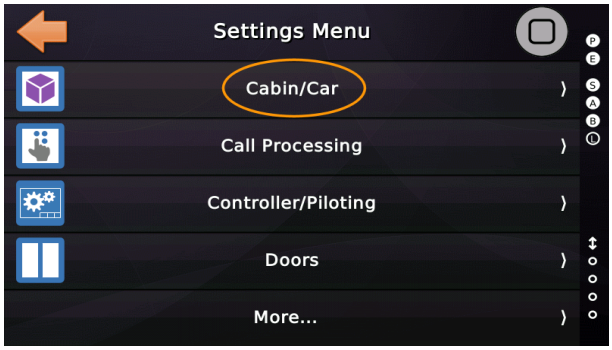
In principle, the arrival signal (gong) can be parameterized on any CANopen CiA 417 compatible I/O module, like an LXC on the cabin or an IO2, IO4 or IO8 in the landing panels.

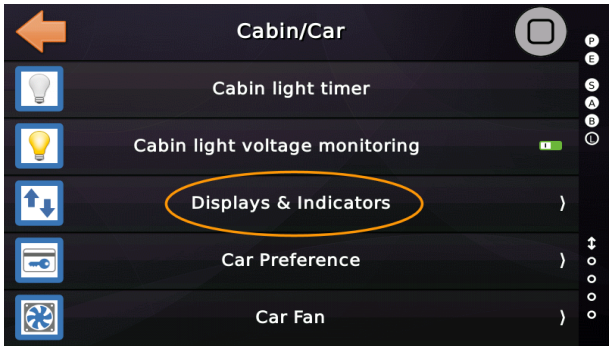
For a car/cabin arrival Indication set up correctly, the output signals typically used for up and down, look like this:

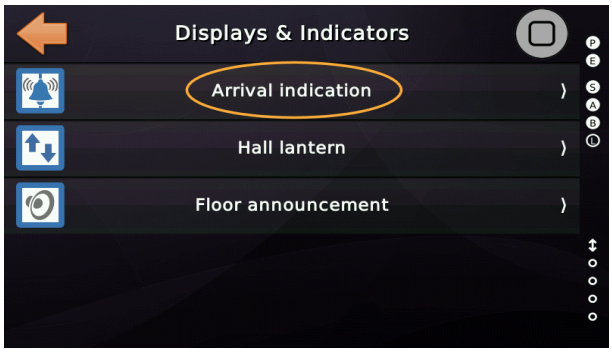
- Arrival indication, up, lift 1, all floors, all doors
- Arrival indication, down, lift 1, all floors, all doors

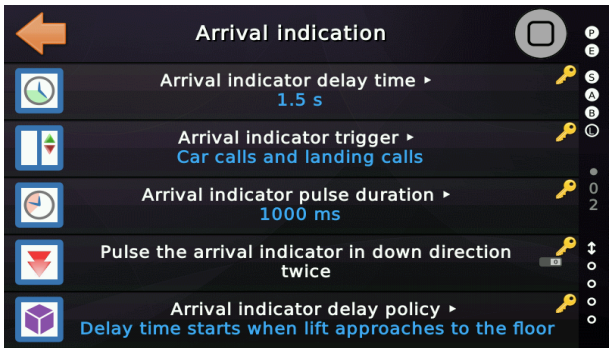
If the arrival Indication is used in a landing door panel, then instead of the setting 'all floors' the correct floor (1..n) must be setup.

The user interface (menu) allows you to specify the type of calls that trigger the arrival indicator when arriving in the floor (typically landing calls), the delay used for triggering the indicator as well as the duration of the pulse. The duration time is nowadays uninteresting for modern digital arrival indicator units.









35.3.1 Arrival Indicator options

35.3.1.1 Arrival indicator delay time

This parameter defines the arrival indicator delay time, starting after having passed the counting pulse.

35.3.1.2 Arrival indicator trigger

This parameter defines which call types will trigger the arrival indicator - typically landing calls do.

35.3.1.3 Arrival indicator pulse duration

This parameter defines how long the pulse is that triggers the arrival (gong) module. The gong pulse length was originally made for mechanical bells with a magnet to push a rod to the bell house.

35.3.1.4 Pulse the arrival indicator in down direction twice

This parameter defines, if the arrival indicator for the downward direction, shall be pulsed twice via the bus system. Be aware that a lot of voice announcers or displays already pulsing it twice, so activating this option may make them pulse four times then.

35.3.1.5 Arrival indicator delay policy

This parameter defines when the arrival indicator delay time shall start. By default it will start, when the lift is approaching. But you may want to start the delay time with the doors opening.

36 Energy Saving Timers

In order to reduce the energy consumption of the lift installation, when the lift is being idle, two timers have been implemented.

You will find them under 'Settings Menu' → Controller/Piloting' → More' → 'Even more...' → 'Even more...' → 'Energy Saving Operation'.

36.1 Energy Saving Timer

If the lift is idle for the given time span, the lift will activate the dedicated output and transmits 'Energy Saving Level S4' via the CANopen bus. Usually the CANopen displays and drive units will react on this automatically, entering an energy saving operation mode. Be aware that this actually means, that processing the first landing call might take a bit longer as the systems have to enter normal operation first.

36.2 Standby Timer

If the lift is idle for the given time span, the lift will activate the dedicated output and transmits 'Energy Saving Level S6' via the CANopen bus. Usually the CANopen displays, doors and drive units will react on this automatically, entering standby operation mode. Be aware that this actually means, that processing the first landing call might take quite a bit longer as the systems have to enter normal operation first and the drive unit needs to power up its DC-bus again.

36.3 Wake up-Timers

36.3.1 Energy Saving Wake-up Time

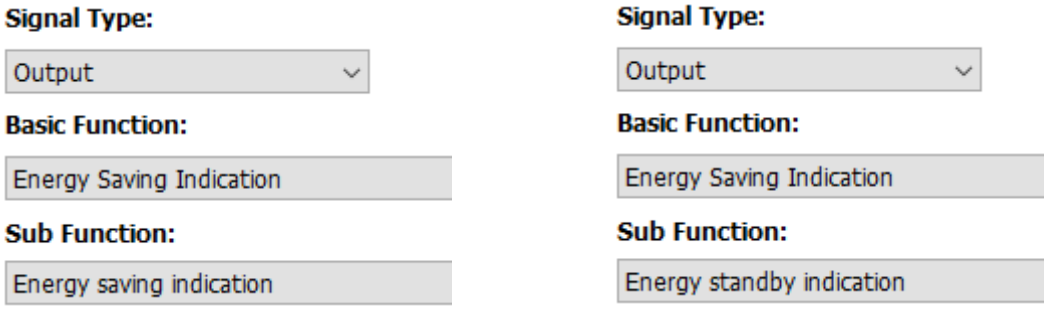
This time defines how long it takes to wake up all components from energy saving operation (S4). Usually the units will indicate some kind of status for being back to normal operation. Anyhow, if using just a dedicated output for turning them to energy saving mode, you may need to have a 'wake up' timer setup.

36.3.2 Energy Standby Wake-up Time

This time defines how long it takes to wake up all components from energy standby operation (S6). Usually the units will indicate some kind of status for being back to normal operation. Anyhow, if using just a dedicated output for turning them to energy standby mode, you may need to have a 'wake up' timer setup.

36.3.3 Outputs

There are two dedicated output functions available for indicating 'Energy Saving' or 'Energy Standby' operation mode.



These output functions can be used on any kind of CANopen I/O module as often as required.

36.4 Visualization

The corresponding icons are used to indicate at the desktop, if the lift is in any kind of energy saving operation. If a wake-up time is still pending/running, the dedicated warning is shown at the screen as well.

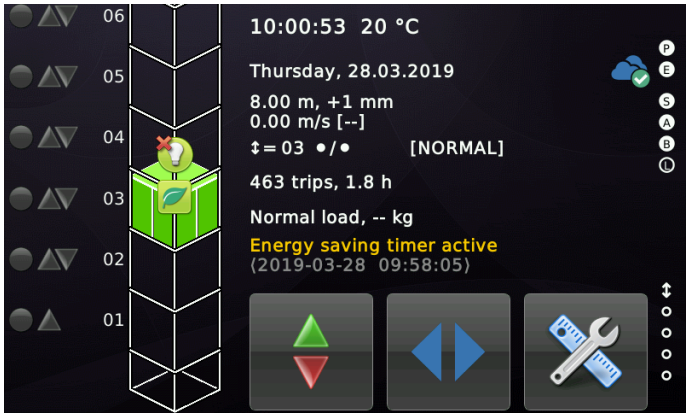
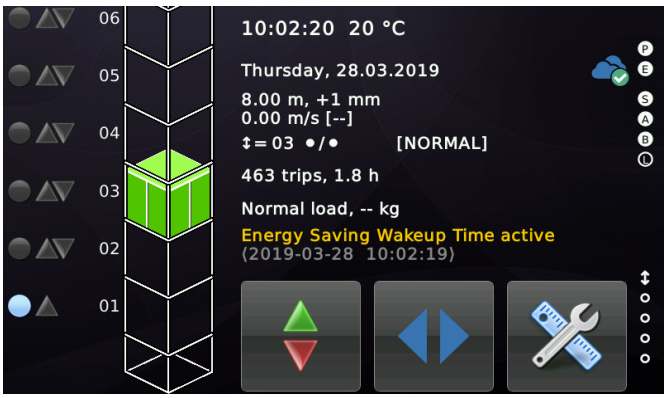


Figure 76: Energy saving timer



37 Circulating operation

This operating mode can be used, if the lift shall drive automatically to a set of floors, stopover on each defined floor, do a door cycle and then drive to the next given floor again from the table. Once the table has been completed, the lift will start over again.

You can define how many complete cycles the lift shall do, before automatically pausing this operation mode for an adjustable time span.

You will find the feature under 'Settings Menu' → Controller/Piloting' → More' → 'Even more...' → 'Even more...' → 'Circulating operation'.

37.1 Options

37.1.1 Circulating operation usage

This parameter defines if the lift can be turned to circulating mode, typically via an input function – see page 139.

37.1.2 Floor table/plan for circulating operation

This object defines the floor table/plan used, if running on circulating operation, to define to which floors the lift shall drive in which order.

The floor plan has to be filled starting from the bottom of the table. The main floor were the cycle will start and finally end, is the lowest entry, highlighted in color.

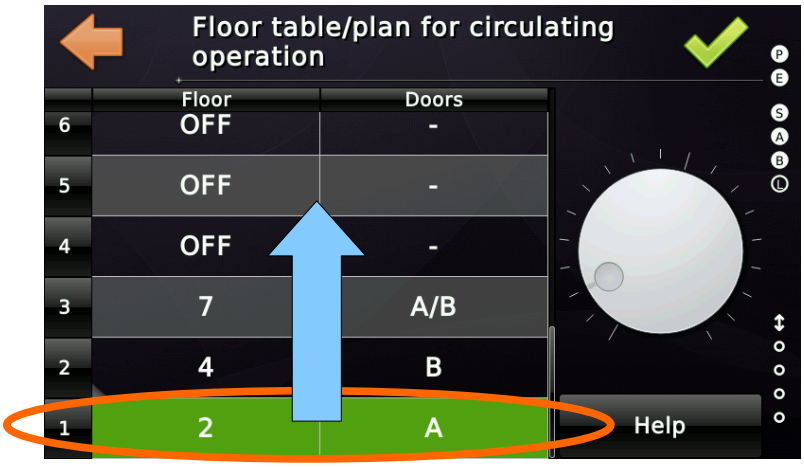


Figure 77: Floor plan used for the circulating operation

37.1.3 Cycle counts on circulating operation

This object defines how many cycles the lift controller shall perform, before doing a pause and operating normally.

37.1.4 Pausing time in-between cycles on circulating operation

This object defines the pause time in-between cycles, if having performed the given count of cycles.

37.1.5 Inhibit time for regularly passenger calls

This object defines the inhibit time used, if a regularly passenger call has been processed, before the next could interrupt the circulating operation again.

37.1.6 Circulating operation, light barrier power off function & time

This object defines the time the light barrier will be powered off after arrival, if the lift is running on circulating operation mode.

To make this feature work, you will need to power the light barrier units using a specific output function – see page 139.

Another specific output can be used to indicate in the car/cabin, that the light barrier had been powered down. For automatic doors the indication output will start blinking, when the last ten seconds do expire.

37.2 Inputs/Outputs

Usually the function is activated using a key switch, often in the lowest landing. Use this input function to activate the circulating operation mode.

37.2.1 Input for activation

Status/controller signals → Circulating operation, lift 1, all floors, all doors

37.2.2 Output as an acknowledge signal

Status/controller signals → Circulating operation acknowledge, lift 1, all floors, all doors

37.2.3 Output to power off the door light curtains

Door controlling signals → Light curtain power supply off, lift 1, car/cabin, all door

37.2.4 Output indicating, that the light curtains have been powered off

Door controlling signals → Light curtain power supply off car indication, lift 1, car/cabin, all doors

37.3 Log Book Items

Activating the circulating operation mode and finally turning it off again is logged in the log book.

Figure 78: Circulating mode turned on and off again

37.4 Additionally information shown at the desktop

At the desktop, you can spot the calls generated by the circulating operation easily. They are red tinted while the normal passenger calls are light-blue tinted. If a passenger call has interrupted the circulating operation, then usually an inhibit time is started which is indicated via a message. While this time is running, passenger calls will be collected but not executed.

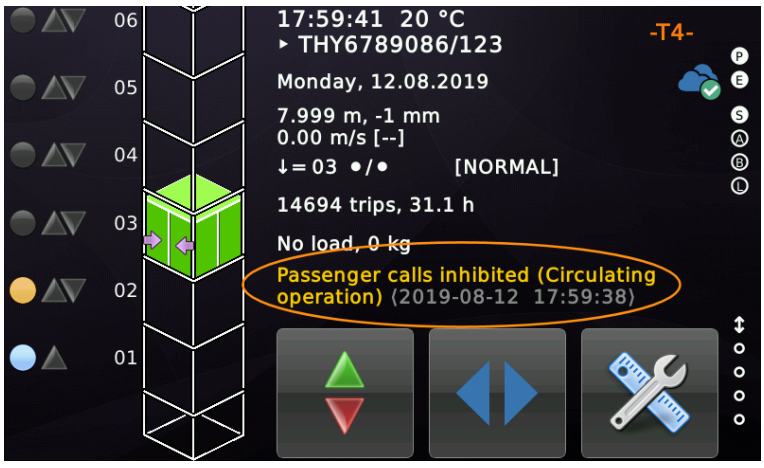


Figure 79: Passenger calls inhibit time

38 Car Preference

Usually every lift controller has the option to run the lift temporarily on car calls only while collecting pending landing calls meanwhile. There are a lot of different applications for such a function and so a bunch of options have been added over time.

You will find the corresponding parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Cabin/Car' → 'Car Preference'.

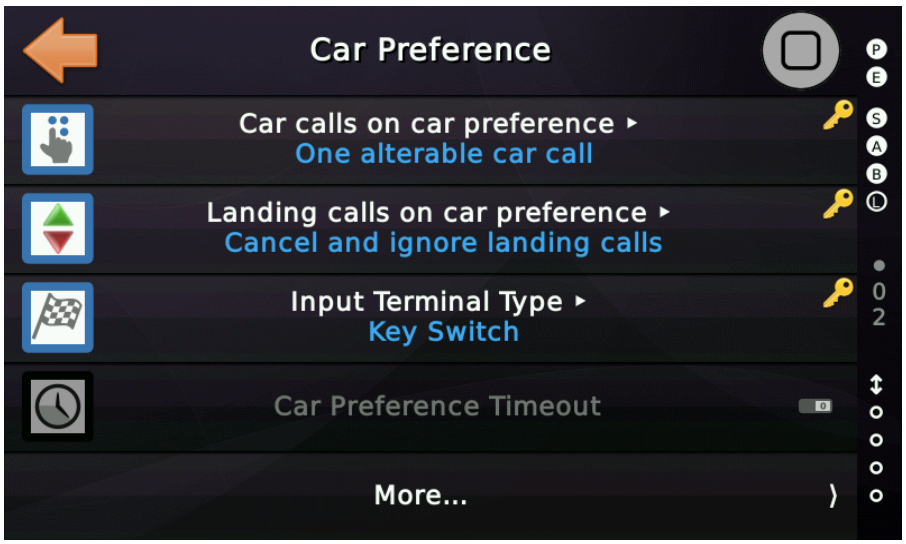


Figure 80: The Car Preference Options

38.1 Car calls on Car Preference

Defines if one or more car calls can be entered on car preference operation. By default you can only enter one car call that is alterable. That simply means if you pressed the wrong car call, just press another one.

Alternatively you can set this option to '*Collect car calls*'. In that case the car calls are collected as on normal lift operation.

38.2 Landing calls on Car Preference

By default landing calls are collected while the lift operates Car Preference. But if the Car Preference feature is used for long-term operations, it might be useful to cancel pending landing calls and prevent the passengers from entering new ones.

38.3 Open doors on activation (Car Preference)

If the doors have already been closed and a passenger operates the car preference switch (often by using a key), the doors usually should stay closed, not inviting someone else to enter the cabin. But in some cases, depending for what the Car Preference feature actually might be used for, the doors shall re-open. This option allows to change the door behavior.

38.4 Re-enable car calls on car preference operation

This option defines if car calls, being disabled via the internal table, shall be re-enabled, if the lift enters car preference operation.

38.5 Input Terminal Type (Car Preference)

In most cases the Car Preference (Independent Mode) is operated by means of a key switch. So, it is usually a switch with two positions, simply '*On*' and '*Off*'. In some cases the signal is generated by a card reader, that just generates an 'impulse'. If the signal is driven by a card reader via a simple impulse, there are two possible operating modes:

1. The Car Preference function will be activated via an impulse from the card reader and automatically turned off again, after the lift has reached the destination floor and all pending car calls have been finished or after 10 minutes without any car call pending and the lift not being driven.
2. The Car Preference function is turned on with the rising edge from the first impulse of the card reader and is turned off again with the fallen edge of another following up impulse from the card reader, later on.

This option is used to define the way the input signal for the Car Preference is actually indicated to the lift controller.

38.6 Car Preference Timeout

This parameter defines the timeout for the car preference function, if featuring a card reader/button instead of a key switch having two permanent positions. This option is only available, if you have set the input type to one of the following variants:

- *Activation via impulse and finish after last car call*
- *Input toggles function (on/off) with every impulse*

The value is given in minutes.

38.7 Lift Team Operation (Car Preference)

If the Car Preference function has been turned on, the lift will temporarily leave the lift team, leaving the pending landing calls for the remaining lifts.

38.8 Manual door operation on car preference

This parameter defines if the doors shall be operated in manual operation mode, using constant pressure on the door open/close buttons, if car preference (VIP or independent mode) has been activated. This is the default for US-ASME-A17.1 mode.

38.9 Acknowledge Output (Car Preference)

If implementing some kind of display showing 'CAR PREFERENCE', you may use this display signal. You find it under 'Special Indication' → 'VIP transport'.

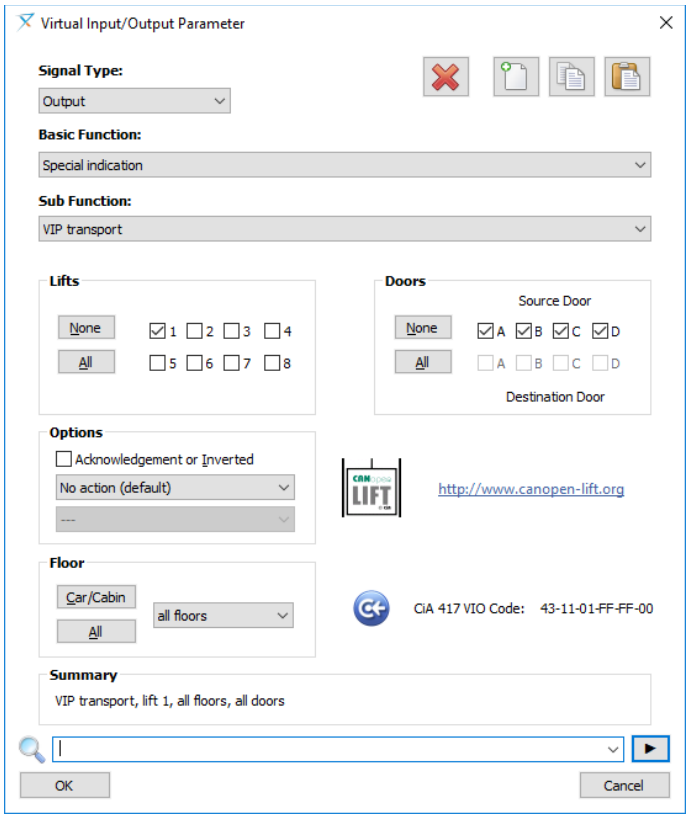


Figure 81: Acknowledge signal used by Car Preference [Toolbox View]

38.10 Door Nudging

Car preference takes priority over the door nudging and holds the doors open. This does not apply to any form of Fire Alarm or Fire Service operation. This applies exclusively to nudging in normal operation mode.

38.11 Call Disabling/Enabling

In order to allow only specific passengers to use landing (or more likely) car calls, several '*Call Disabling Tables*' do exists.

38.11.1 Disabling Calls via Tables

You will find the corresponding parameters for disabling calls by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Call Processing' → 'Car Calls' or 'Landing Calls', depending of what kind of calls you want to disable.

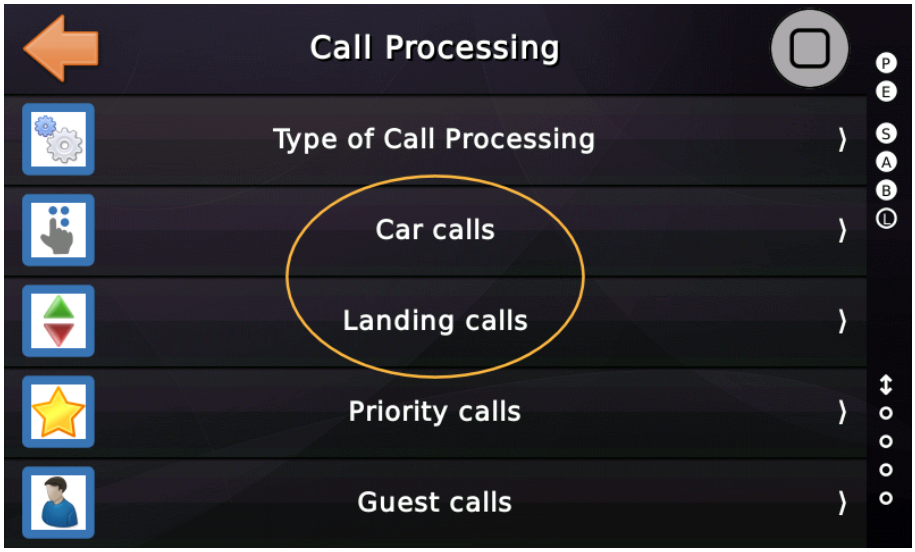


Figure 82: Car Call & Landing Call Options

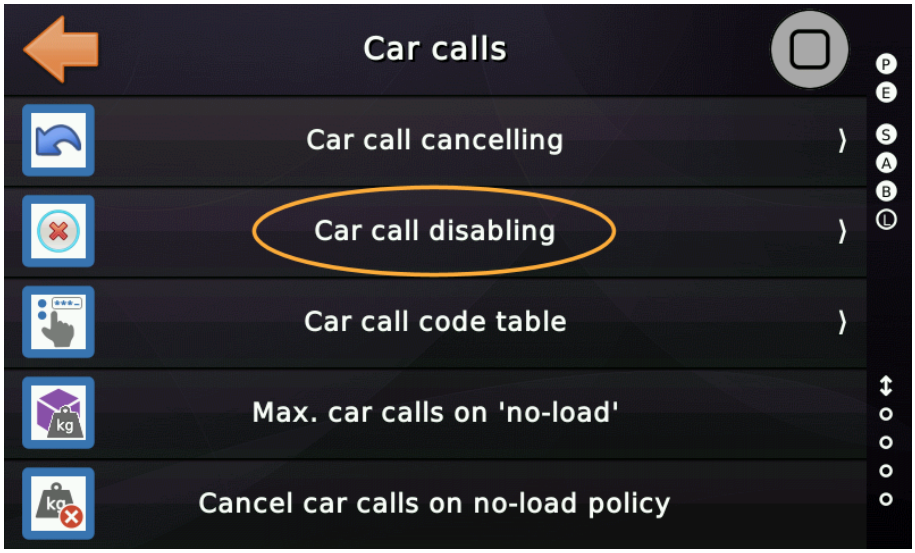


Figure 83: Car Call Disabling Parameter

The tables for disabling calls work inverse to the door tables. Select the floors or doors that shall be disabled, depending in which table you are, for the car or the landings.

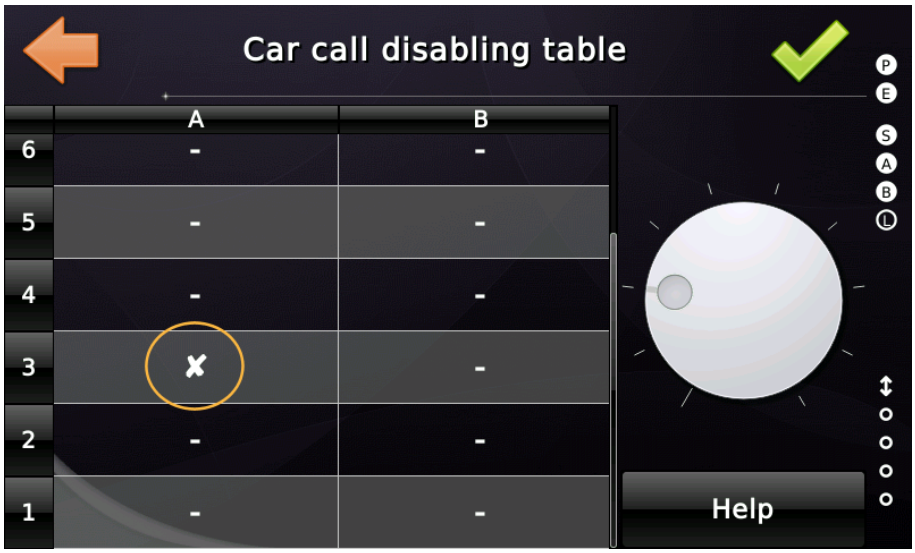
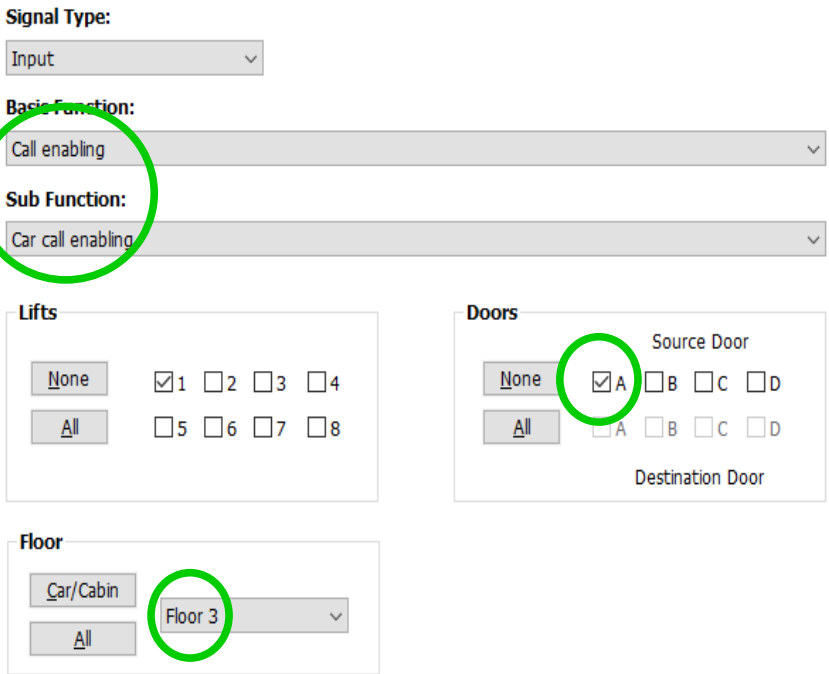


Figure 84: Car call disabling table

38.11.2 Re-Enabling Calls via Inputs or Codes

To select an entry in the table, simply do a Tap'n'Hold on the requested table cell. Disabled calls will have a '*red cross*' overlay icon in the desktop of the lift application.

In order to enable a call for input again, that has been disabled via the corresponding table, an electrical input can be used.



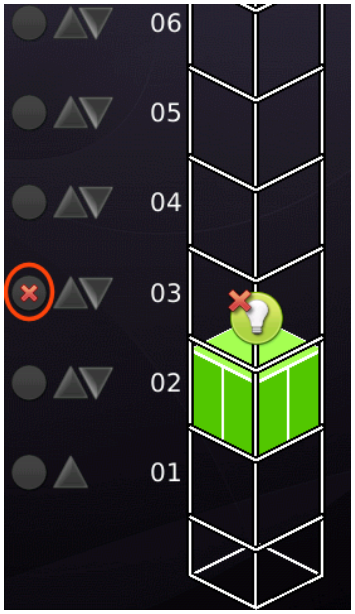


Figure 85: Disabled car call

If all disabled car or landing calls shall be enabled with just one input, use the input as shown in the figure before, but set floors to '*all floors*' and select all doors (A/B/C/D).

Depending on the system that controls the inputs for enabling calls, it might be useful to define an '*after run time*', especially if the input is just '*impulsed*' by a card reader.

The corresponding parameter for defining a '*call enabling afterrun time*' exists twice, for car calls and landing calls separately.

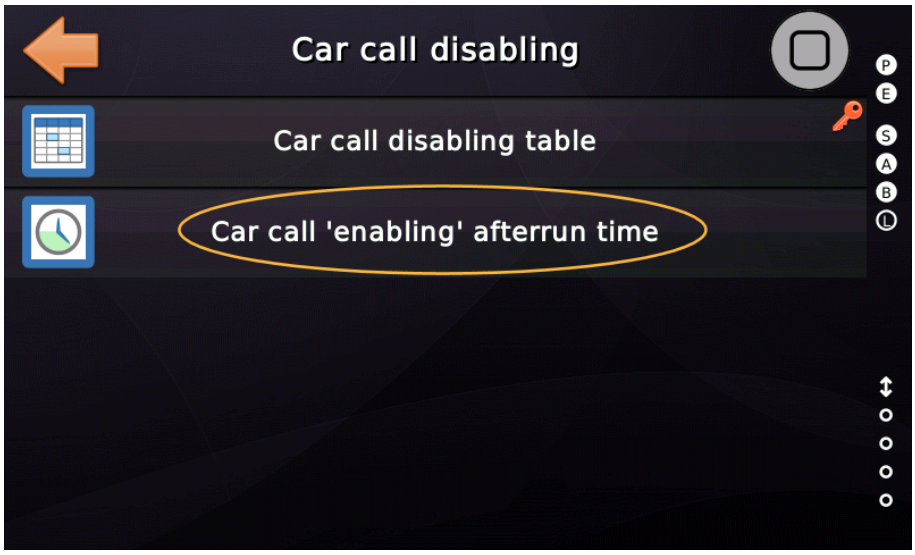


Figure 86: Car call enabling after run time

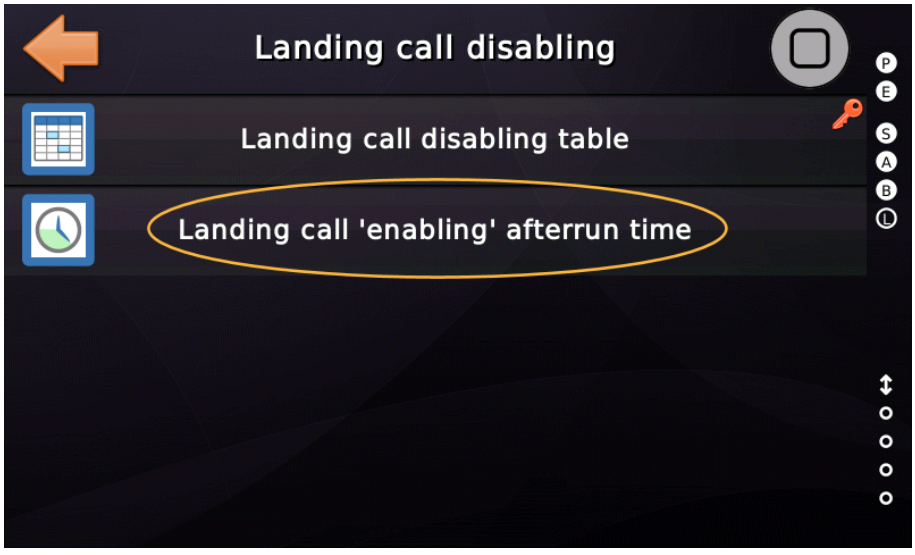
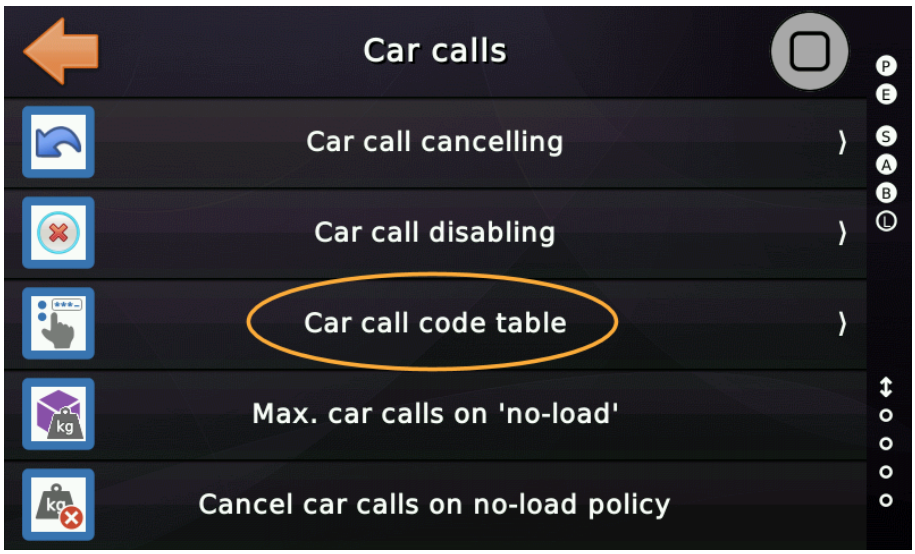
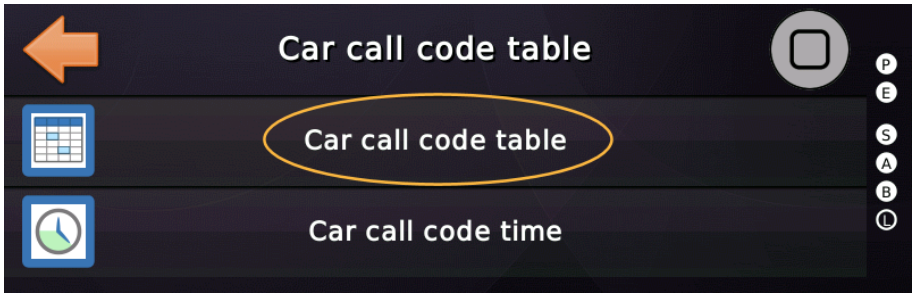


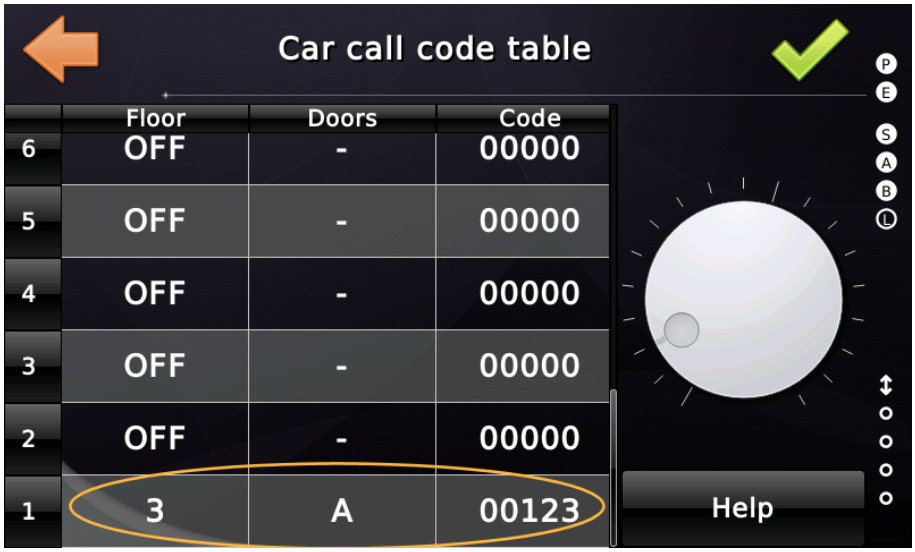
Figure 87: Landing call enabling after run time

Another way of enabling disabled car calls – and car calls only – is to feature the car call input panel (car call buttons) in the cabin/car, for entering a numerical code.

For that special feature a separate menu path does exist, right where the car calls disabling options had been found before.

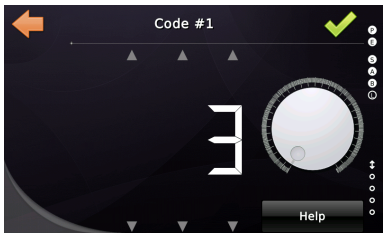


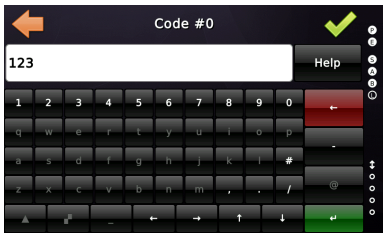




In order to change a property of the car call enabling code, Tap'n'Hold on the requested table cell.

A car call enabling code consists of the floor, the requested door(s) and the numerical code to enter. Keep in mind only to feature numbers that the car call input panel actually has. All car call buttons can be featured for entering the code, even if they refer to disabled car calls – that does not matter, if they are used for entering a numerical code. Zeros are ignored, if the code is entered.





The numerical code can be up to five digits long. Zeros are ignored and only used to align the code in the table.

If a '*Code Entering Operation*' is pending, a little icon on the car view at the desktop, notifies the technician.

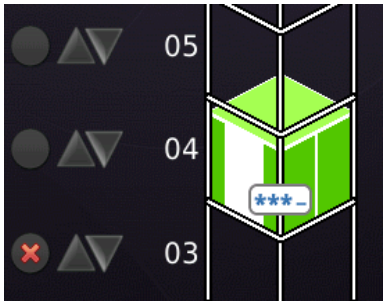


Figure 88: Code input icon

In order to notify the passenger, that a code input is required, a separate output does exist.
This output might be used for a signal lamp, a buzzer or to trigger a smart CANopen display, like SafeLine's FD4 or LEO4/5 TFT display solutions for example.

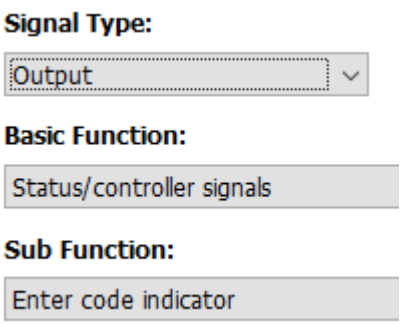


Figure 89: Cabin signal for code entering

38.11.3 Re-enable calls via the Time Planner

The build-in Time Planner provides a time based way, of enabling calls, being disabled via the dedicated call disabling table. In this example the car calls at floor 2 door A and floor 3 door B will be re-enabled between 8AM and 5PM in the evening, for working weekdays only.

Figure 90: Week Planner used to re-enable locked car calls

38.11.4 Exceptions for Priority Calls

To exclude low or high priority landing calls when locking landing calls via the dedicated table, two more options are available.

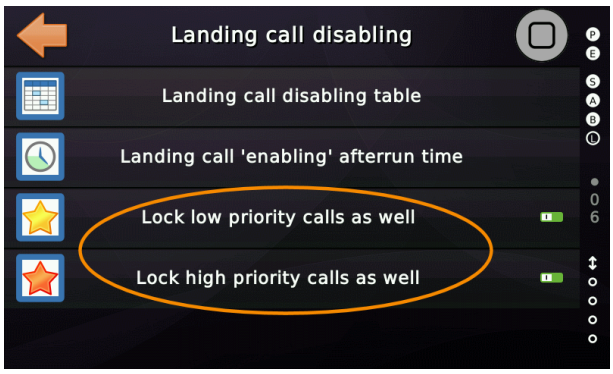


Figure 91: Locking priority calls together with landing calls

38.12 Direct Travel

With direct travel, landing and car calls are frozen, and only high-priority car calls are being processed. If a normal car call button is pressed, it is treated as a high-priority car call once. The principle: By pressing the corresponding car call button, a car call can be made, and the elevator travels directly to that floor, bypassing the other calls. The other regular calls are processed afterwards.

To be used, this function must first be enabled. Since activation is done via a switching pulse (card reader), setting a control time (timeout) is mandatory.

You will find the feature under 'Settings Menu' → Cabin/Car' → More...' → 'Timeout Direct Travel Mode activation'

38.12.1 Input Functions

Status/controller signals → Direct Travel, cabin/car, lift 1, all doors.

38.12.2 Output Functions

Status/controller signals → Direct Travel Mode acknowledge, cabin/car, lift 1, all doors.

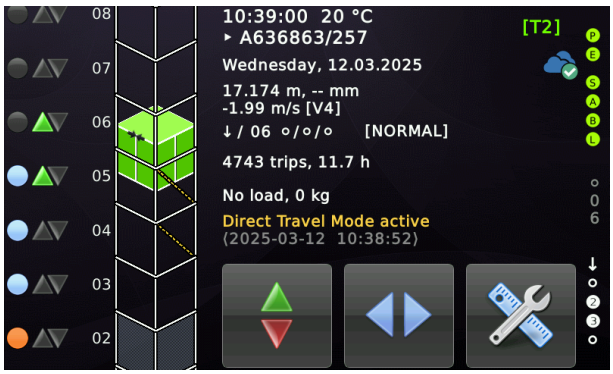


Figure 92: Direct Travel

▸ The output function can also be used on CANopen displays to trigger voice prompts or icons.

38.13 Passenger Groups

This feature is based on door tables containing a door mask entry per floor, defining a first, secondary or third passenger user group.

You can find this function under 'Settings Menu' → 'Call Processing' → Car calls' → 'Car call disabling' → 'Passenger user groups.

The idea is that those passengers will only be able to enter car calls on the given floors/doors, when they have entered the lift from one of those landings, typically via a landing call.

In order to make this work, those car calls have to be disabled for normal passengers, via the car call disabling table, in the first place.

If the passengers enter the car from some public floor, they need to authenticate themselves by means of using a '*Car Call Enabling*' input, usually triggered by a key switch or card reader.

If using '*Car Call Enabling*' inputs via a key switch or card reader and that input may enable one car call within a user group, then automatically all the other car calls of the same selected user group will become enabled as well. So basically you just need one input per group.

This comes handy when several user groups share one common floor, like the car park floor or the main entry or lobby floor. When the passenger has entered the car and used the card reader, the lift is aware to which group the person belongs.

38.13.1 Output Signals

These output signals indicate, which passenger group is currently active.

- Passenger user group acknowledges → Passenger user group 1 active, all floors
- Passenger user group acknowledges → Passenger user group 2 active, all floors
- Passenger user group acknowledges → Passenger user group 3 active, all floors

39 Simple Building Zones

In order to be able to use this function, it must first be switched on.

You can find this function under 'Settings Menu' → 'Controller/Piloting' → More...' → 'Even more...' → 'Much more...' → 'Further...' → 'Special functions...' → 'Building Zones'.

With this feature, the shaft can be divided into different building zones or sections. Other functions such as Fire Alarm, can feature that information and apply rules and policies, depending on which zone the car is currently in or where it is going.

Lifts that use the building zone feature are normally operated in APB operation mode, having the option to include the no-load signal in the generation of the occupy signal activated, so that the lift only serves landing calls, if being empty and does not collect passengers.

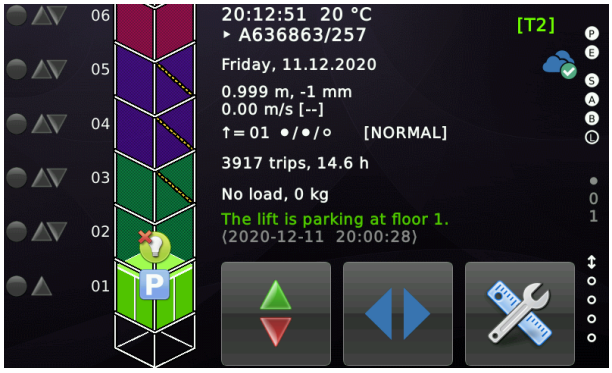


Figure 93: Hoistway divided into zones

39.1 Zone Table

These tables basically work like floor tables, in which a bit (dot) is set for each floor, that belongs to the given zone.

39.2 Building zones car call rule

This parameter defines how car calls (car) are to be handled within a building zone. Usually only car calls within the same zone are allowed to prevent passengers from driving from one zone to another. This rule excludes high-priority car calls that are normally protected with a key switch anyway.

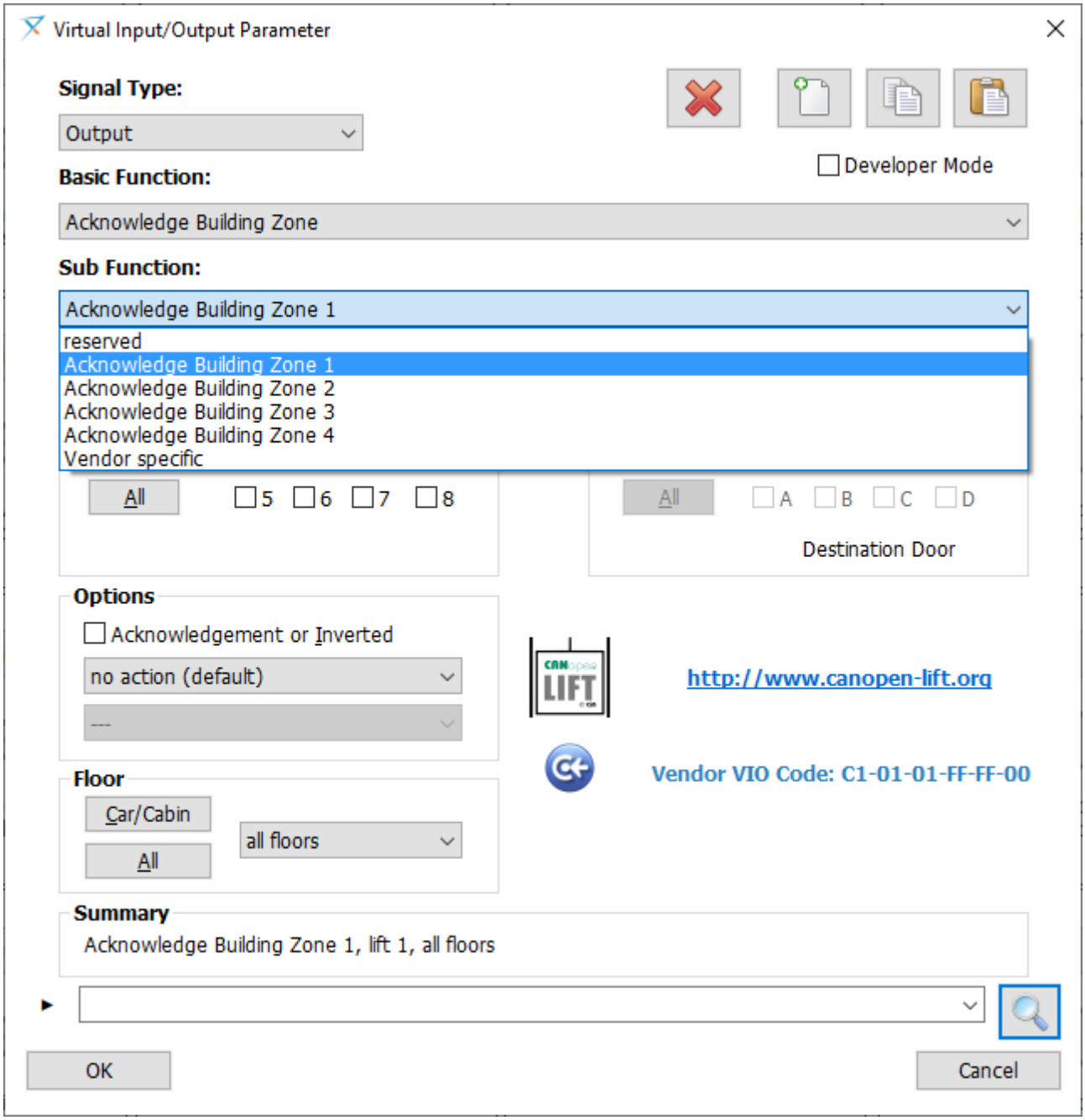
39.3 Building Zones Fire Alarm Policy

This parameter defines if the index of the current building zone (1...n) shall be used to pick the fire alarm floor from the fire alarm level table. To use that feature you have to set the fire alarm strategy to '*Simple*' in the first place. If the Fire Alarm and the Fire Detector 1 input is activated at the very same time, then the system will pick the fire alarm floor with an offset of +8 out of the table. So, effectively, that gives the possibility to have a primary and a secondary fire alarm floor per building zone.

39.4 Outputs/Acknowledge signals

To indicate in which building zone the car currently is, these dedicated output functions can be used:

- Acknowledge Building Zone → Acknowledge Building Zone 1, all floors
- Acknowledge Building Zone → Acknowledge Building Zone 2, all floors
- Acknowledge Building Zone → Acknowledge Building Zone 3, all floors
- Acknowledge Building Zone → Acknowledge Building Zone 4, all floors



40 Car Fan Options

Usually every cabin/car has a fan used to circulate the air in the car and ensure that passenger, that got stuck in the cabin, have enough air to breathe.

A typical behavior is that the fan is turned on when the lifts starts driving and is turned off using a short after-run time when the lift has stopped. But you might want to adjust or change this behavior for your lift installation.

You will find the corresponding parameter by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Cabin/Car' → 'Car Fan'.

40.1 Operating Mode

40.2 Combined Mode (manual & automatic)

The default operation mode is '*Combined Mode (manual & automatic)*'. That simply means the fan is turned on automatically if the lifts starts, can be turned off manually while driving, but will automatically be turned off, after the configured after run time has been expired, when the lift has stopped. If the lift is not driving, the passenger may turn on or off the fan manually. If it has been turned on manually, it will not be turned off automatically after stop (and after the after-run time has expired) but will be turned off after the configured maximum timeout for manual fan operation has been expired. So it will not be turned on 'forever' even if being manually operated.

40.3 Automatic only

That means there is no way to control the fan manually. It will be turned on when the lifts starts and turned off (with the configured after-run time), if the lift has stopped.

40.4 Manually only

That means the passenger have to control the fan manually and turn it on, if the air in the lifts is bad. Use the maximum run time parameter to define a timeout.

40.5 Car Fan Off

If turning the fan operation off, it is vital to be sure that the cabin/car use a different ventilation system, so that there will always be enough fresh air. So always replace broken car fans! Never just turn them off, if they start to become noisy or have failed!

40.6 Fan operation and trapped Passengers

The car fan is automatically turned on or simply kept going, if the lift has stopped in-between floors outside the door zone, to support trapped passengers with fresh air. So always replace broken car fans! Never cut them off, if they start to become noisy!

If the car fan had been manually turned off by the passengers, but the lift is stuck in between the floors, the fan will be automatically reactivated within a minute.

40.7 Car Fan Engine Output

The car fan function provides two different output signals, that shall not be mixed up. One signal is for the cabin fan (engine) or the relay that actually powers the fan and the other just for the acknowledge lamp of the button.

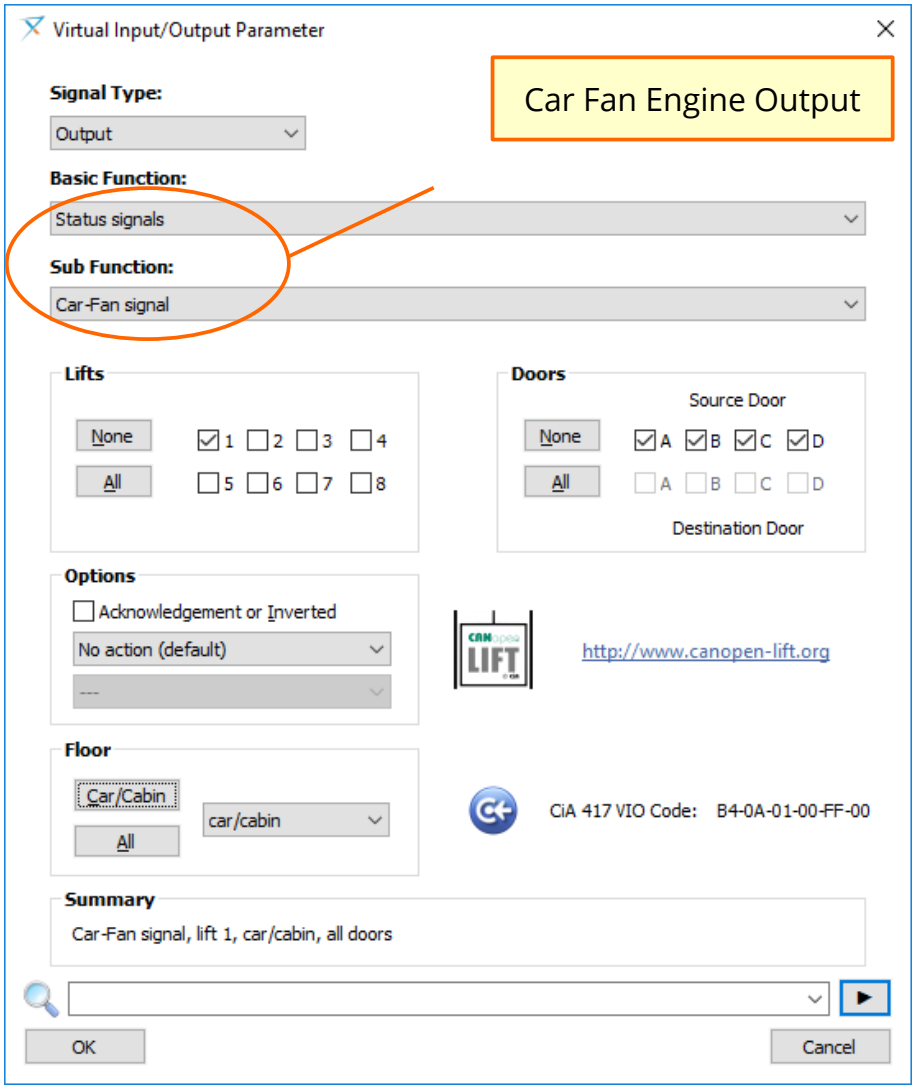


Figure 94: Car Fan (engine) signal

40.8 Acknowledge lamp for the Car Fan button

If the lift installation provides a button in the car to turn on/off the car fan, it might be useful to add an acknowledge signal to that button. Do not use the car fan engine signal for that – and not vise-versa. For the acknowledge lamp there is a special made signal, that will not be turned on, if the fan has been turned on automatically. Otherwise the acknowledge lamp would be turned on/off while the lift is starting/stopping – which would be quite confusing.

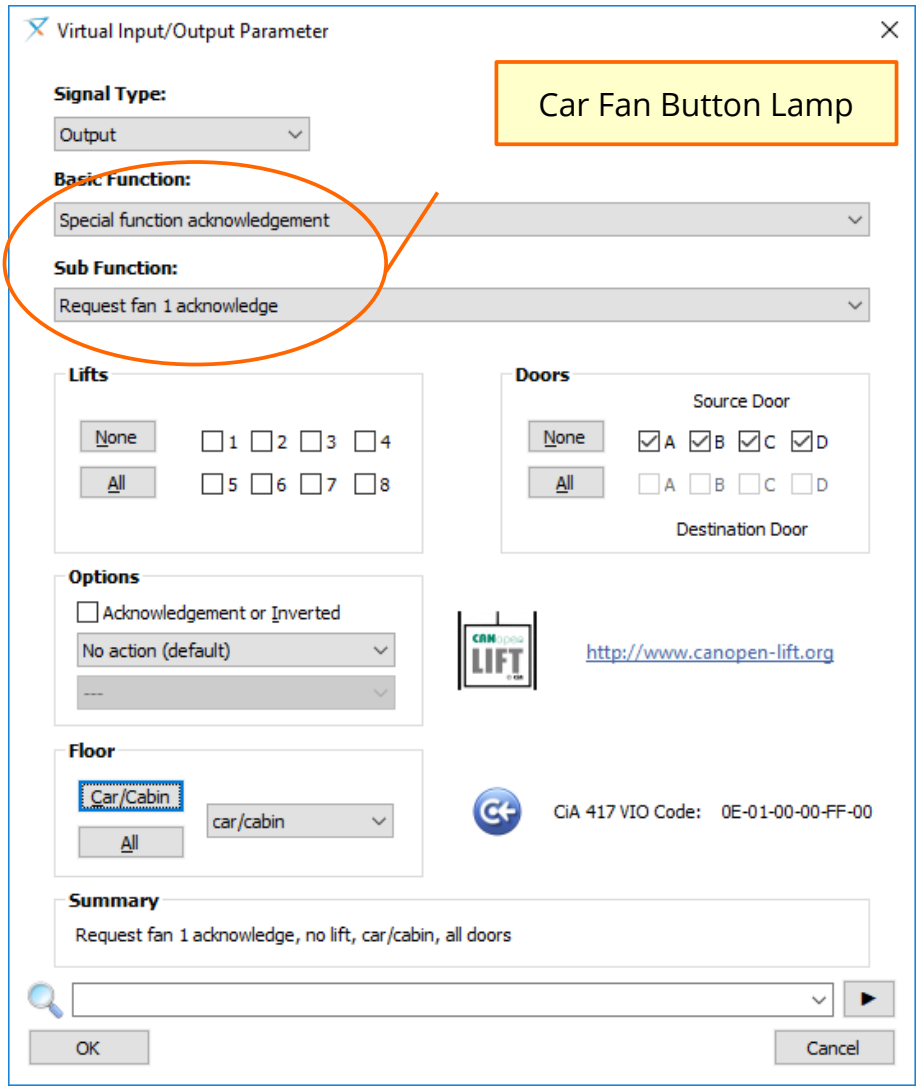


Figure 95: Car Fan Button acknowledge signal

40.9 Car Fan Button Input

For implementing a manual Car Fan on/off function, use this input function on your car top I/O panel unit.

Ensure that you use '*Request fan 1*', as CiA 417 defines two independent fan function and THOR is currently featuring '*Fan 1*' for the cabin ventilation.

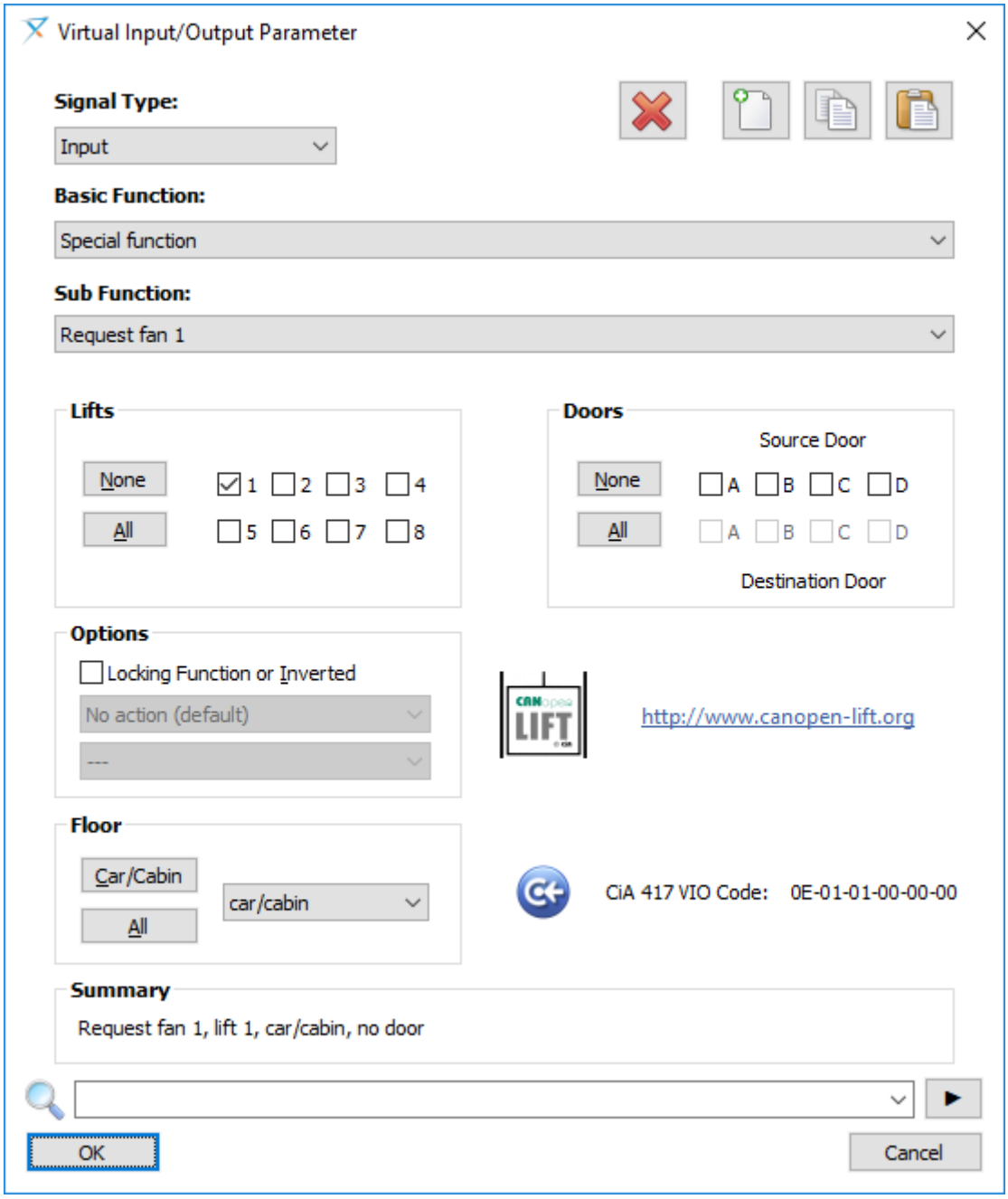
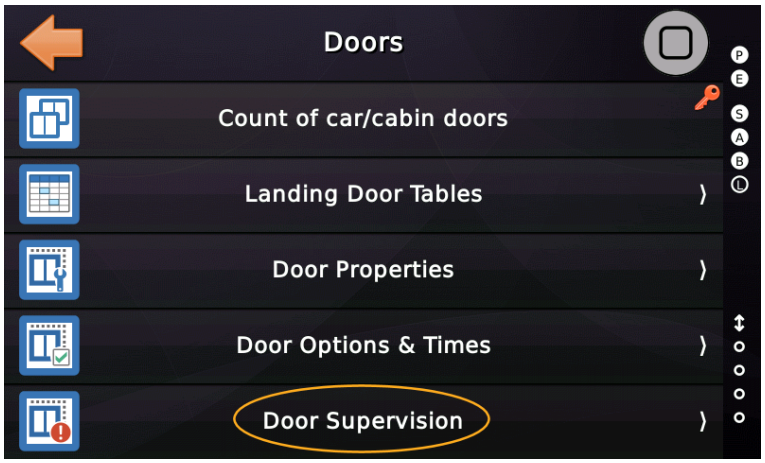
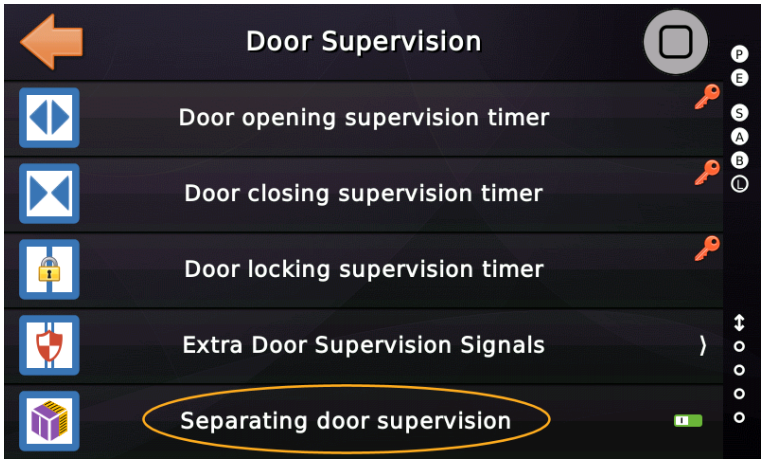


Figure 96: Car Fan Button Input [Toolbox View]

41 Separating door supervision

This function is used if the car/cabin has a separating door used for goods transportation. If yes, this door is only allowed to be open, if the '*Special Function → VIP service (Car preference)*' signal has been activated. In normal operation the separating door has to be always closed. Otherwise it would allow more passengers to step into the car as allowed.





The supervision signal shall be active as long as the separating door is closed. The input signal used for the separating door contact is '*Status/controller signals → Separating door supervision, lift 1, cabin/car, all doors*'.

If the supervision has been triggered, at first only a warning appears. The lift continues to accept calls but does not start. After one minute, the warning changes to a fault and the lift signals '*Out of order*'.

42 Body Detector Support

The Body Detector unit is a sensor unit, that can detect obstacles like luggage or passengers left in the car, even if the load measuring unit would still indicate no-load.

A dedicated input signal '*Special function → Body detector, lift 1, cabin/car, all doors*' can be setup for the sensor. The corresponding acknowledge signal '*Special function acknowledge → Body detector acknowledge, lift 1, all floors, all doors*' will follow the sensor signal state, featuring a short debounce time.

To make use of the signal, the feature has to be activated. You will find the corresponding parameter by pressing first '*Home*' and then the hardware button '*Settings Menu' and then go to 'Cabin/Car' → 'More...' → 'Body Detector'*.

Currently the signal is only used to generate the *Occupied* signal, that for lifts operating in PB or APB mode, were every waiting passenger at the landings is handled exclusively one by one, will prevent the lift from fetching the next passenger.

Additionally to that the signal will also be used for handling Priority Calls, if the dedicated option for '*Pickup passenger with no-load*' has been set to feature it.

If the sensor signal is continuously triggered 15 minutes in a row, a warning will be thrown, indicating, that this as a possible fault of the sensor.

43 Hoistway Limit Switch Testing

The 'Limit-Switch-Testing'-assistant shall provide an easy way to perform testing of the driveway limit-switches that are an essential security element. These limit-switches are used to stop the lift's drive in case it will overrun the top or bottom floor.

For the test this scenario is reproduced by driving the lift to one of the floors before the very end of the driveway and then start driving into the limit switch.

In order to let the lift 'overrun', the actual floor level positions are shifted by the assistant using the values that the user can adjust, if required. By default a deviation of 100 mm is used to let the lift hit the limit switch. This test is usually done automatically but using the inspection velocity (V_I) to ensure that the test will not harm any mechanical components.

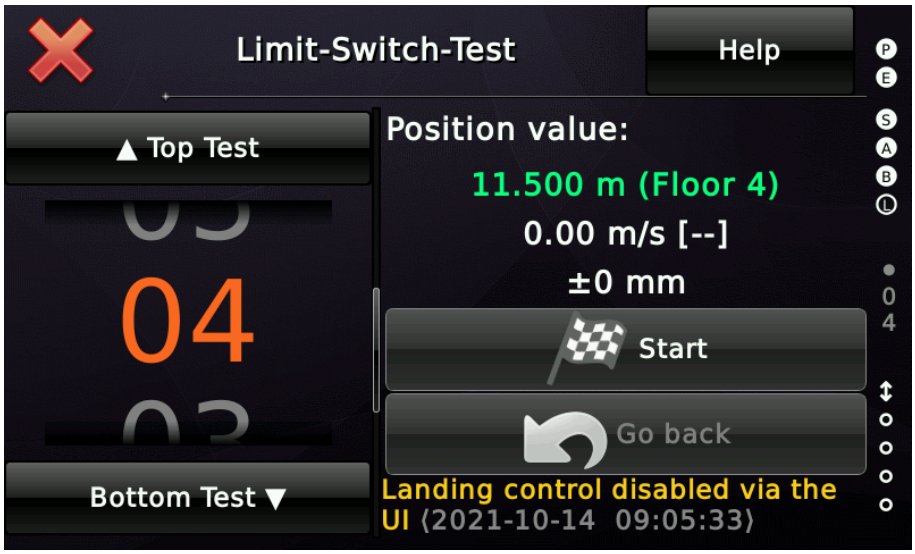
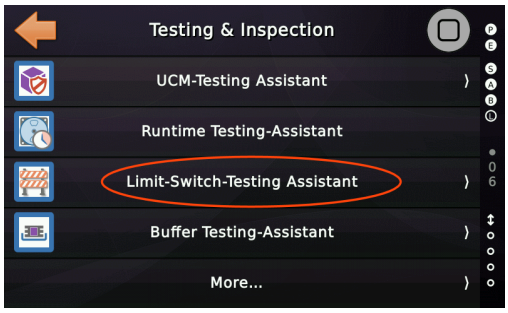


Figure 97: Limit-Switch-Assistant Main Dialogue

The test can be found under 'Service & Assembly' → 'Testing & Inspection':



43.1 Options

Before starting the assistant, the user may adjust the driveway distances used to shift the top/bottom floor in order to let the lift drive into the limit switches.

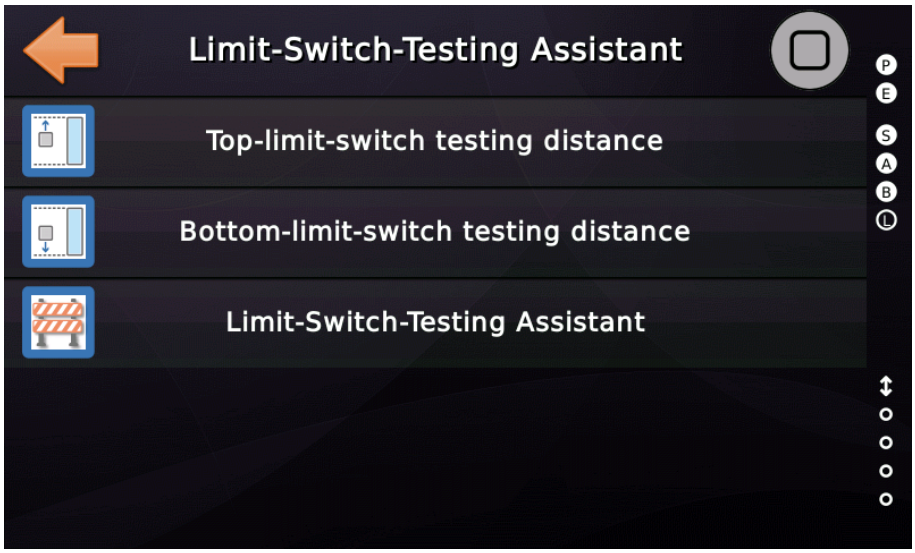


Figure 98: Options regarding the limit-switch-testing operation.

You may adjust the distance used to 'shift' the real floor position in order to make the lift running into the lift switch.

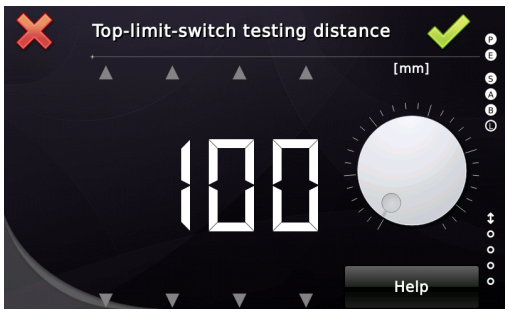


Figure 99: Top floor limit switch distance

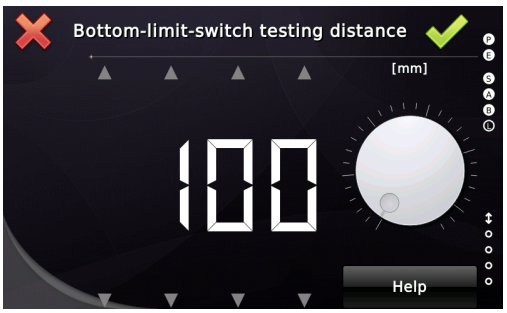


Figure 100: Bottom floor limit switch distance

43.2 Event Items (Logbook)

- Starting the testing assistant.
- Executing the test procedure.
- Finishing the testing assistant.

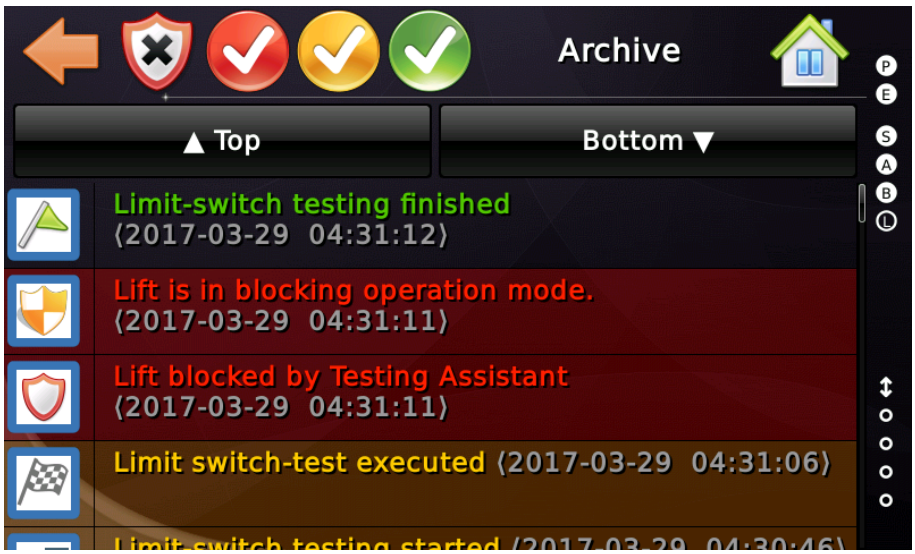


Figure 101: Events stored in the logbook.

After having left the testing assistant, the system will enter blocked operation mode. This gives the technician a 'second chance' to check that everything is spot-on, before finally let the lift enter normal operation mode again.

43.3 Test Procedure

To perform the test, first select a floor **before** a terminal-stop by sliding the wheel up and down on the left side.

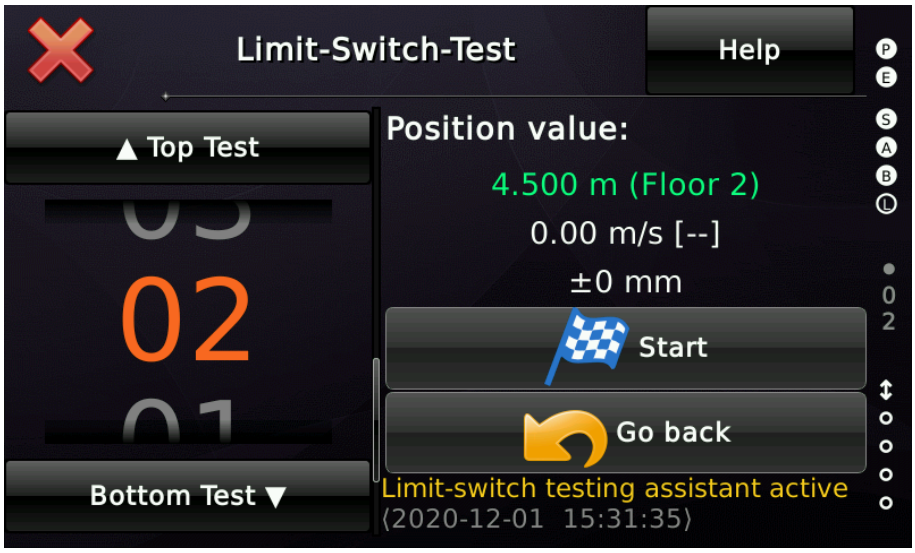


Figure 102: Driving to a floor before an end stop.

Then you can touch the 'Start' button. When the lift has arrived, select the limit switch test by selecting the 'Racing Flag' symbol. Then you can touch the 'Start' button again.

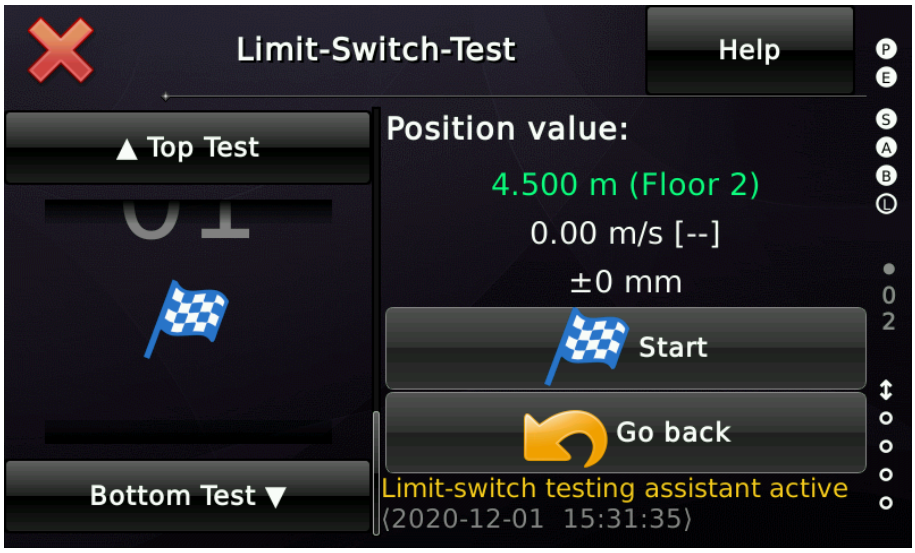


Figure 103: Starting the test to drive into the limit switch.

The result of a 'Limit-Switch-Test' operation, including the reached velocity and the distance to the end floor level.

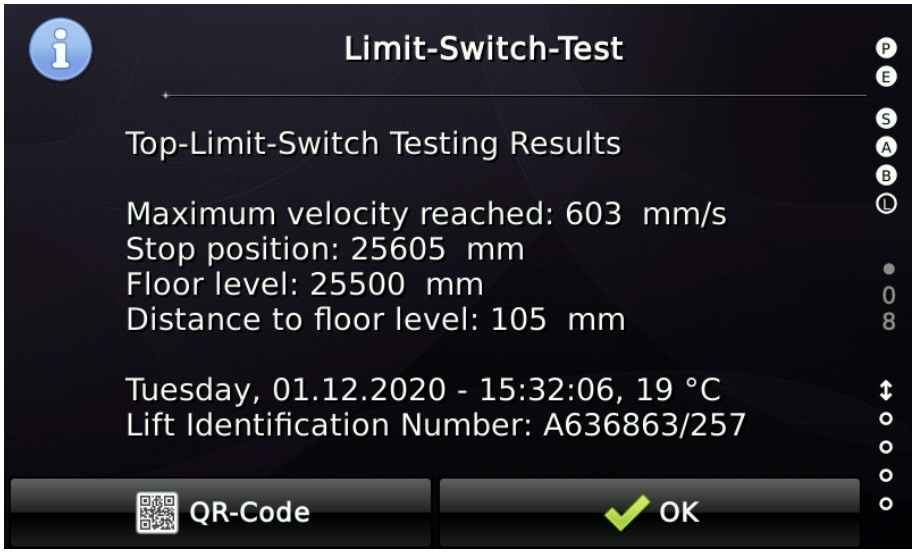


Figure 104: Test result, shown if the test was executed.

To move the lift out of the limit-switch, turn to emergency electrical operation and move the car up or down, away from the actuated limit switch.

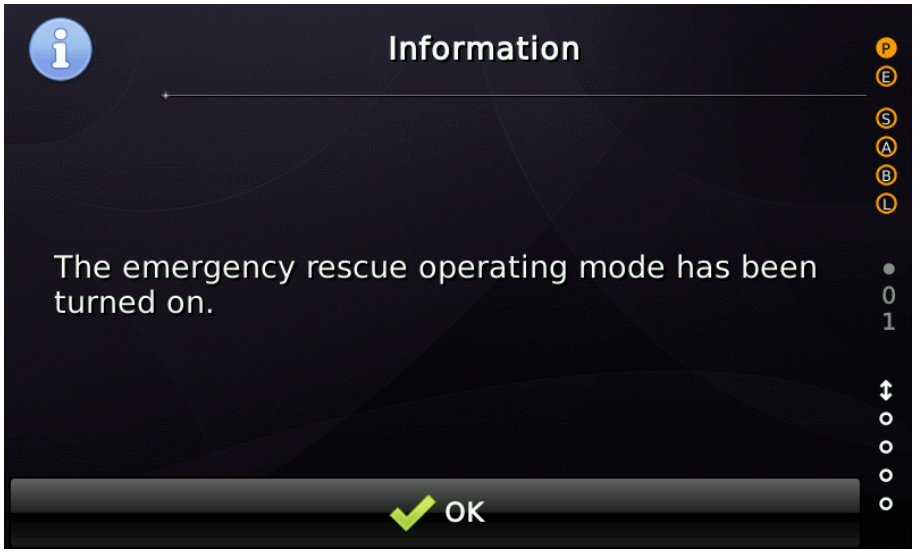


Figure : Lift turned to emergency electrical operation in order to move the car/cabin out of the limit switch

If later opening the log-book item '*Limit switch-test executed*', the velocity and position stored for the test can be recovered.

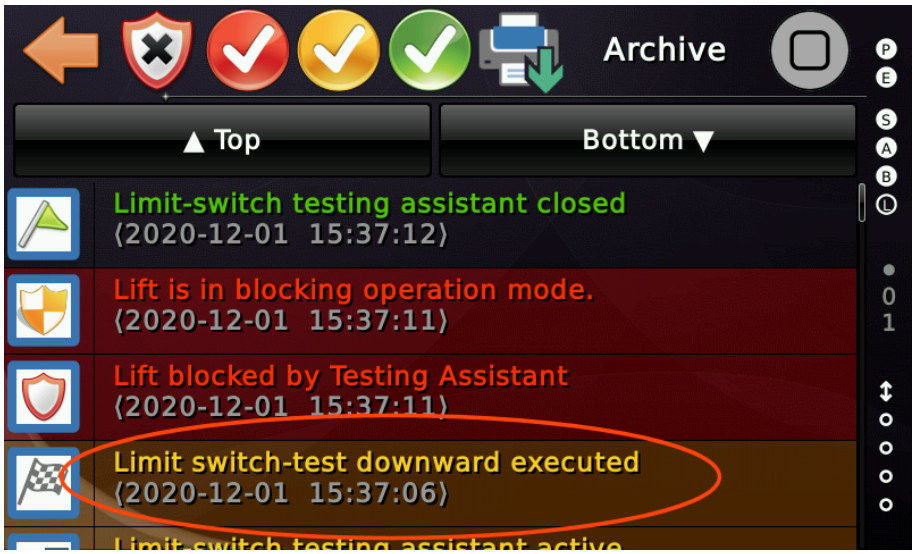


Figure 105: The log-book entry for a limit switch test

Figure 106: The entry of a limit switch test contains position and speed

43.4 Note

The feature '*Advance door opening*' will be turned off as long as the '*Limit-Switch-Testing-Assistant*' is active.

Please double-check that the car is really empty, before using this test assistant.

44 Speed Governor Testing Operation

The speed governor test can only be used, if the lift is equipped with an electrical engaged bolt, that can trip the speed governor (SG), while driving. The output function '*Status/controller signals → Speed governor tripping output*' can be used for that. If the lift is quipped with a Drop Protection system at the SG, this will be used instead.

You find the assistant by pressing first 'Home' and then the hardware button 'Service & Assembly' and then go to 'Testing & Inspection' → 'Speed Governor Test Assistant'.

First use the buttons on the left to drive the lift to the start position. This would be typically a floor above the middle of the hoistway. Then activate the test by using the button '*Activate Test*'.

Figure 107: Speed Governor (SG) Test-Assistant

The speed governor test has now been then activated. Use now a car call to drive to the desired floor, usually below the middle of the hoistway, were the controller shall engage the speed governor.

You should avoid doing this test in the top or bottom floor. Keep in mind that you need clearance in order to lift the car out of the safety brake, once the speed governor has been tripped.

The lift will now drive towards the desired floor and will engage the speed governor, before reaching the floor level of the desired floor. The controller will try to stop the lift in a way, that it will be (more or less) on floor level, in order to make it easier unloading the weights.

Figure 108: Speed Governor Test activated

Once the governor had been tripped, the lift will enter 'Blocked Operation Mode' and will show the testing results, containing the maximum velocity reached and the distance that it had taken from engaging the bolt to stopping the car.

Please double-check that the car is really empty, before using this test assistant.

After having left the testing assistant, the system will enter blocked operation mode. This gives the technician a 'second chance' to check that everything is spot-on, before finally let the lift enter normal operation mode again.

44.1 Testing Velocity

Since version V1.28.04 of the lift application, it is possibility to select the velocity used for the testing operation. By default the nominal velocity is used.

44.2 Event Items (Logbook)

While using the speed governor testing assistant, these item will be created in the log book (history).

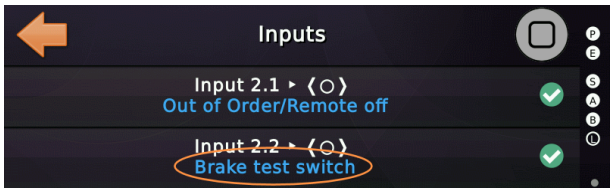
- Starting the testing assistant.
- Lift entering blocked operation mode.
- Finishing the testing assistant.

45 Brake Testing Operation

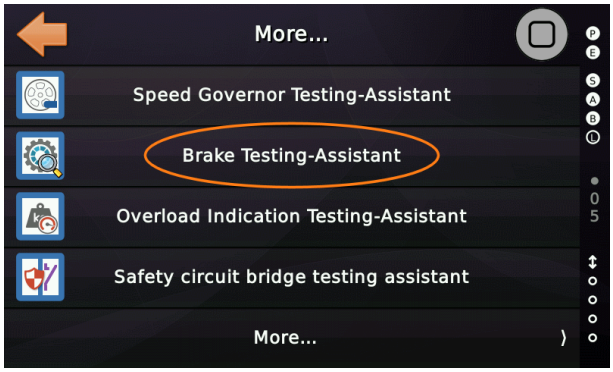
The brake test assistant can only be used, if the lift is equipped with an external electrical brake testing circuit, that can trip each brake block separately. Use the output function '*Status/controller signals → Brake test acknowledge*' for activating that external circuit, if the lift controller has started this assistant.

45.1 Theory of Operation

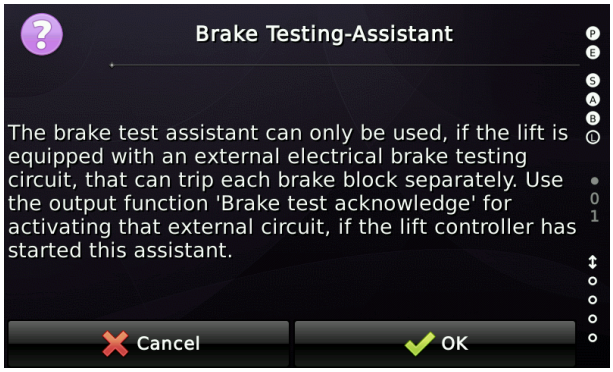
The test assistant can be activated directly via the user interface or an input function, usually connected to a key switch.



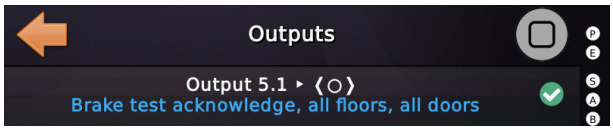
You can find the assistant by pressing the Home button and then the Service & Assembly button and finally follow *Testing & Inspection → More... → Brake Test-Assistant.*



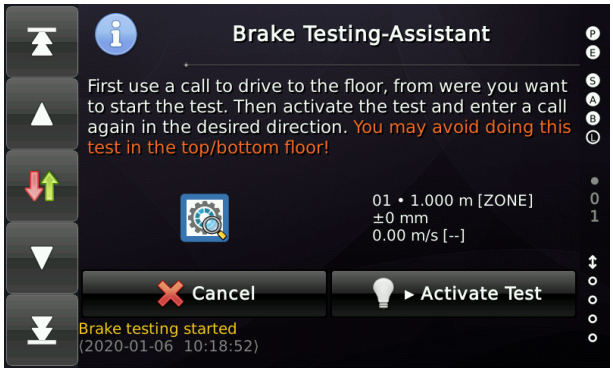
The output function '*Status/controller signals → Brake test acknowledge*' is turned on, when the assistant had been started. This output can be used as a '*second chance*' in



your external brake testing circuit, to be sure to block one brake side only, if the lift controller has actually turned into the brake test operation mode.

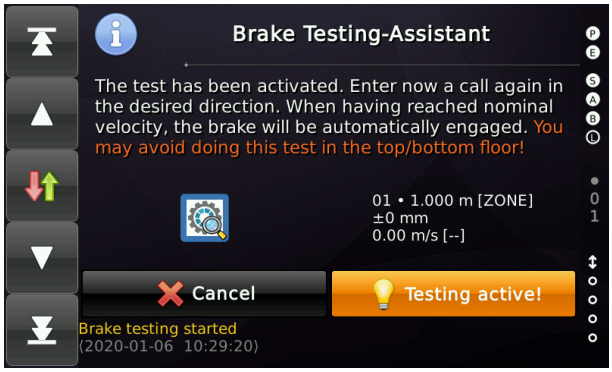


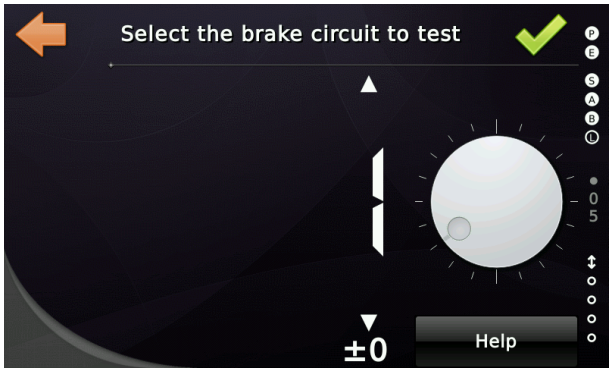
The test assistant instruct the technician to use the call buttons on the left side of the dialogue to drive the lift to the start position.



Then the technician may active the test via the the '*Activate Test*' button. If several brake circuits had been parameterized, the software will now ask for the brake circuit, that shall be tested. If just one brake circuit had been parameterized, entering the brake number is not necessary.

You find the settings for the count of in-depended brake test circuits by following *Settings → More... → Drive Unit → More... → Even more... → Further more... → Count of discrete brake test circuits*.

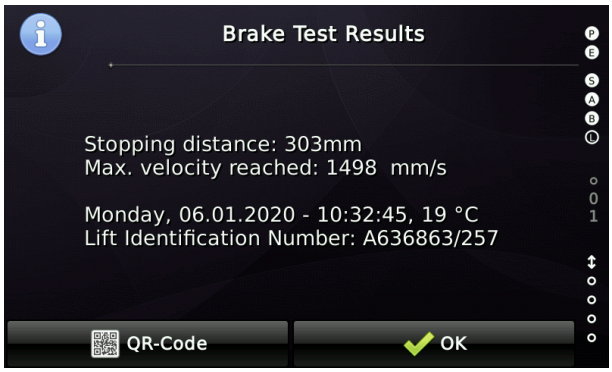




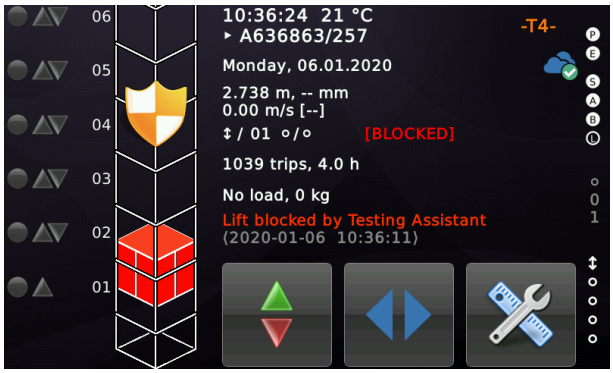
Now the technician enters a call in the requested direction, using again the call bar on the left side of the dialogue. The lift will start driving and when having reached nominal velocity, does a quick stop by engaging the brake automatically. THOR will then measure the stopping distance and show the test result, containing the reached velocity and the braking distances, that had been required to stop the lift again.

To keep the brakes open, that shall not be tested, the dedicated output functions *Drive unit signals → Test brake* x [y] can be used. Those outputs will be turned on, when the lift has reached testing velocity and shall be stopped with just one brake. When the test has been executed and the lift has finally stopped, all brakes will be engaged, with a short time delay, to make sure the lift car is secured again.

The technician can now use the call buttons on the left side to drive to the next start position. So, the technician can activate the test again in order to test the other brake. This procedure can be repeated as often as required.



When leaving the assistant via the UI or by dropping the key switch, the lift will be blocked to prevent it entering normal operation mode automatically. By doing so, the technician has a second chance to rethink, if everything is spot on, before leaving the lift to normal operation again.



45.2 Event Items (Logbook)

While using the braking testing assistant, these item will be created in the log book.

- Starting the testing assistant.
- Brake Testing results
- Finishing the testing assistant.
- Lift entering blocked operation mode.
  The assistant blocks the lift when being finished, to ensure the lift does not automatically enter normal operation mode unattended.

45.3 Brake test circuit supervision

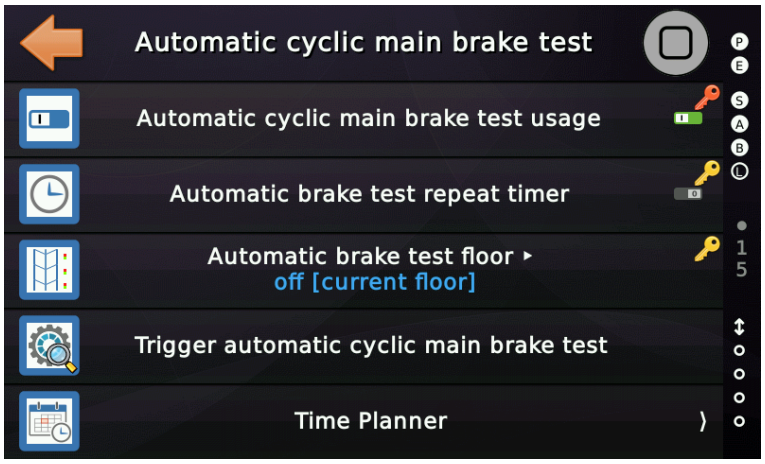
The input function '*Brake test circuit monitoring*' must be at 24V in normal operation and may only drop to 0V when the brake test is activated. This ensures that the lift cannot change to normal operation if one of the contactors, used to hold the brakes open, has got stuck.

The dedicated supervision function has to be activated for that. You find the required parameter here at *Settings Menu → More... → Drive Unit → More... → Even more... → Brake Test Circuit Supervision*.

46 Special Cyclic (24h) Brake Testing

While the purpose of the generic Brake Testing-Assistant is to check if the lift can be stopped by using just one brake pad and what distance is required to stop the lift with that very pad, the cyclic (24h) brake test is used for lifts featuring a brake system that requires an automatic cyclic (24h) test because of their certificate. This cyclic test works quite different. The test will be done with the lift being stationary. Each brake pad will be tested separately by lifting all other brake pads for a short moment. The system checks, by means of the position encoder, if the lift will stay stationary or if it starts to move unattended. The lift will perform the test, when the lift is idle, has the doors closed and no calls are pending. The lift will register landing calls but put them on hold as long as the testing operation is in progress. The test can be triggered by a cyclic timer, usually 24h or by means of the Time Planner, which gives you more control over when exactly the test is scheduled.

The parameters for the cyclic brake testing feature can be found by pressing first '*Home*' and then the hardware button '*Settings Menu' and then go to 'More...' → 'Drive Unit'→ 'More...'→ 'Even more...'→ 'Further more...'→ 'Brake Testing'→ 'Automatic cyclic main brake test'*.

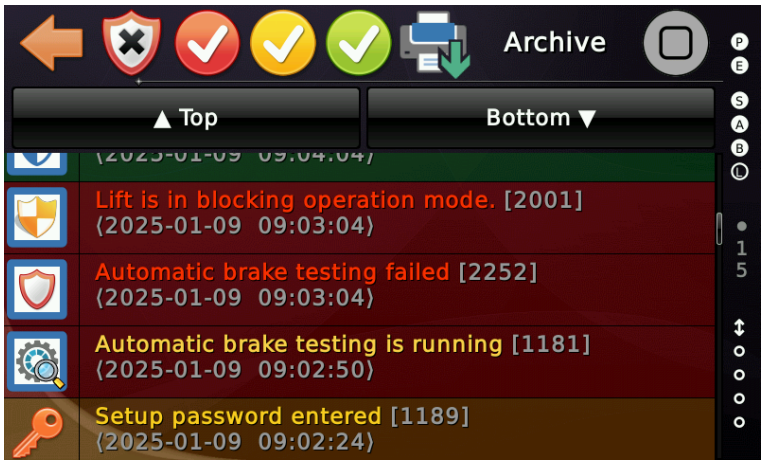


46.1 Event Items (Logbook)

An item in the logbook is always created, independently from the test being successful or having failed. If the test fails, the lift will enter blocked operation mode.

A successful test:

A failed test:



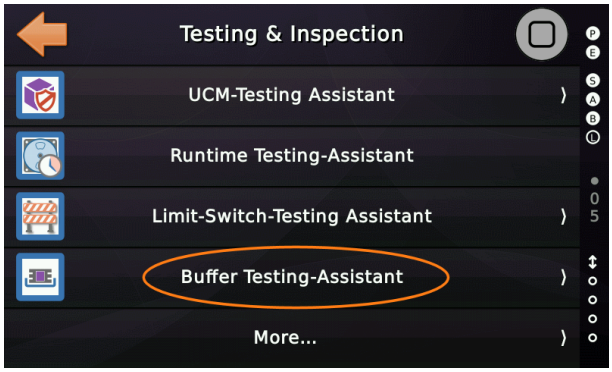
46.2 Outputs

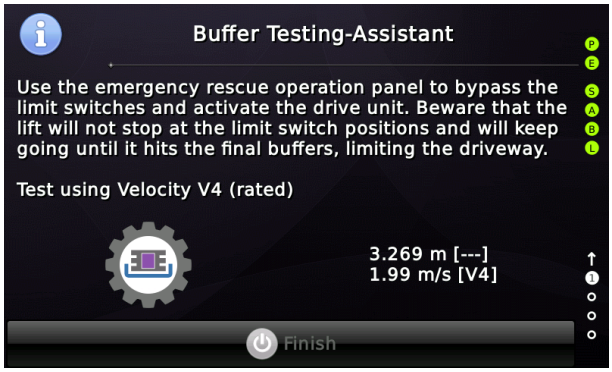
The output *Drive unit signals → Automatic brake testing indication* is turned on as soon as the test operation begins. Once the lift has reached the testing floor, if a specific floor had been parameterized, the output *Drive unit signals → Automatic brake test running* is turned on as well. If no specific floor had been parameterized, this output is turned on at the current floor. The signal *Drive unit signals → Test brake module* is turned on as soon as brake pad testing starts. To keep the brakes open, that shall not be tested, the dedicated output functions *Drive unit signals → Test brake* x [y] can be used.

47 Buffer Testing Operation

In order to drive the car/cabin with a given velocity (*typically rated/nominal velocity*) onto the safety buffers for testing purposes, this assistant can be used.

You find the assistant by pressing first 'Home' and then the hardware button 'Service & Assembly' and then go to 'Testing & Inspection' → 'Buffer Test Assistant'.



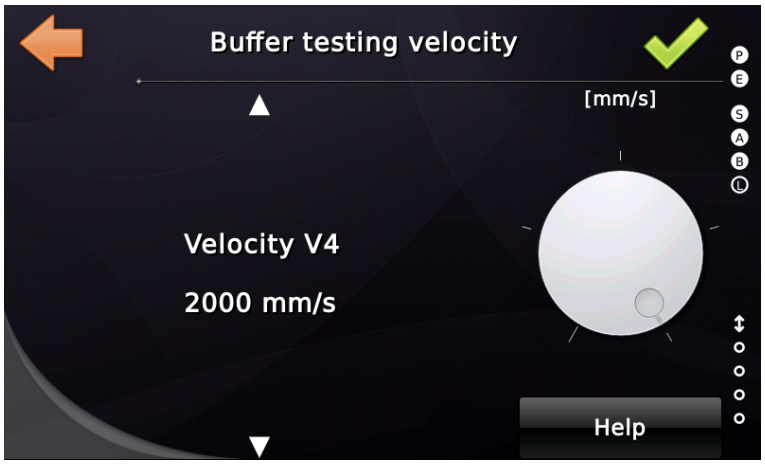


Use the emergency electrical operation to bypass the limit switches and activate the drive unit. Beware that the lift will not stop at the limit switch positions and will keep going until it hits the final buffers, limiting the driveway.

47.1 Parameter & Options

47.1.1 Buffer testing velocity

This parameter defines the velocity used for the buffer testing operation. It defines which velocity shall be featured when driving the car onto the driveway buffers.



48 UCM-Testing Operation

The UCM-behaviour of a real lift installation can be tested at side by using the 'UCM-Testing-Assistant', provided by the lift controller software.

This assistant can only be used if the lift controller features a SZ-Board able to bridge the door safety chain.

48.1 Scenario

The worst scenario is that the lift would accelerate by driving upward, while the counter weight is going downward, having the landing/car doors opened. If in that situation the THOR-SZ board has been activated, usually on an advance door opening situation, the safety relays will drop on the edge of the door zone. The zone-channel, that is driven via the absolute position encoder may be a bit faster than the channel driven by the mechanical magnetic/solenoid switch.

48.2 Testing

To test this situation, the lift controller software will start the drive in the given direction having the safety chain open for the doors but bridging the safety chain end via the safety circuit, so that the drive will start. The technician/inspector on side can decide if the lift controller shall open the doors physically for that test. In that case the car/cabin doors have to be guided to ensure no passengers may try to enter in that testing scenario. If the doors shall be kept close, the technician may for testing purposes 'open' the safety chain manually by removing the signal at J11.5 and J11.6.

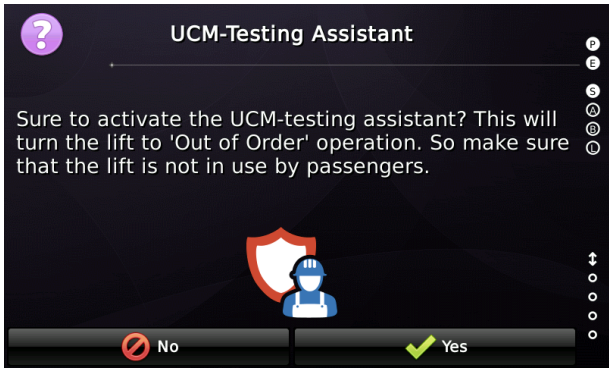


Figure 109: Security query to ensure the assistant is activated with purpose.

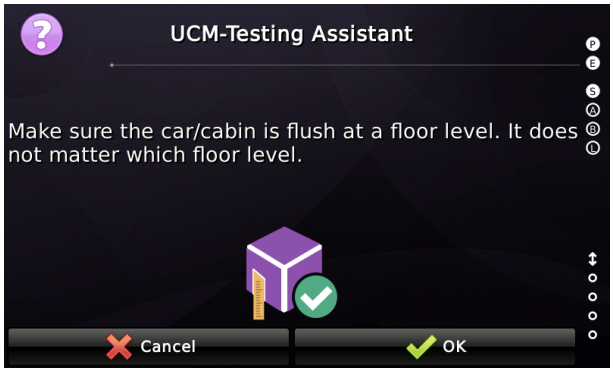


Figure 110: Note that the car shall be flush on level in the door zone.

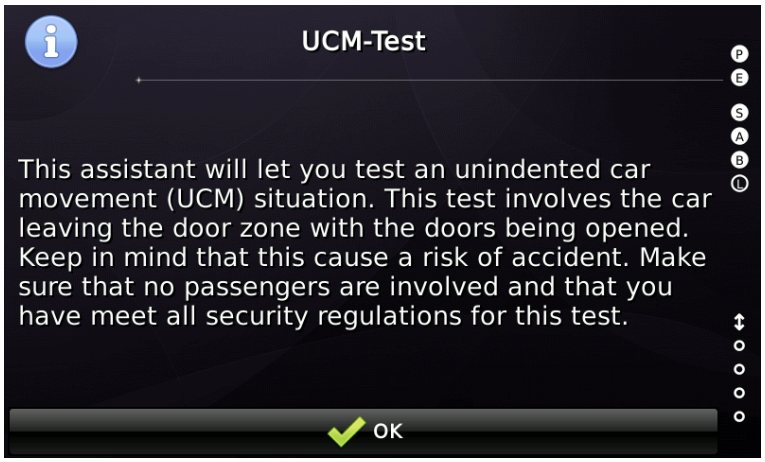


Figure 111: Short introduction to the testing assistant.

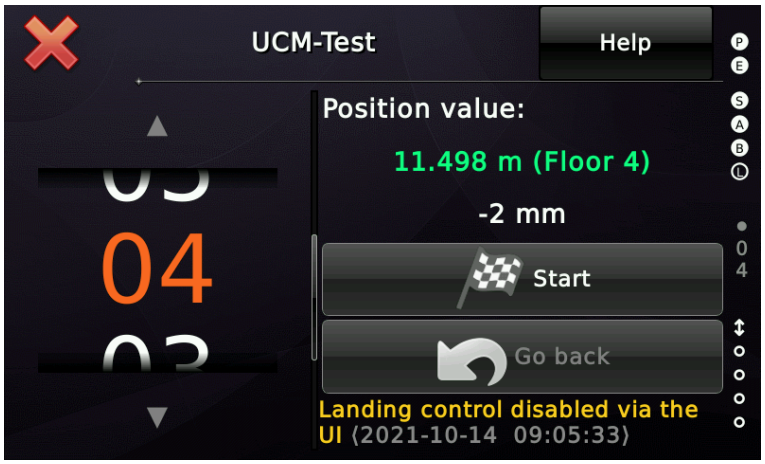


Figure 112: The main screen of the testing assistant, showing the current floor and letting the user select the direction by swiping the floor value on the left.

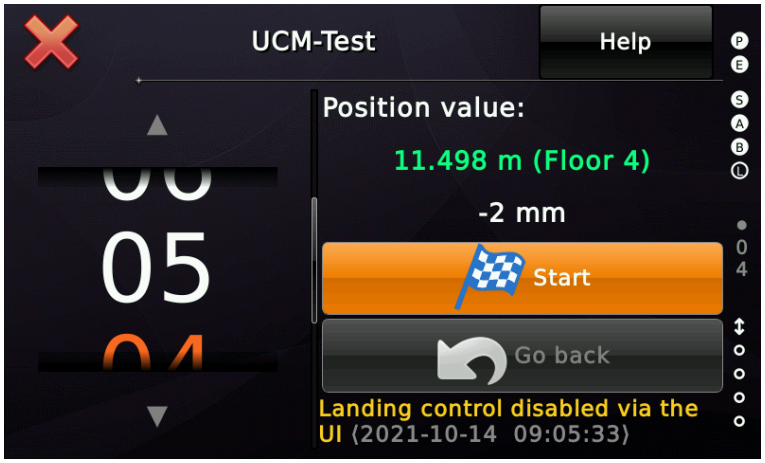


Figure 113: After having selected the next floor up by swiping the digits, select "Start" to start the testing-sequence.

Figure 114: The test has been started going upward with the safety chain bridged by the THOR-SZ board. The stop-button may be used to cancel the process.

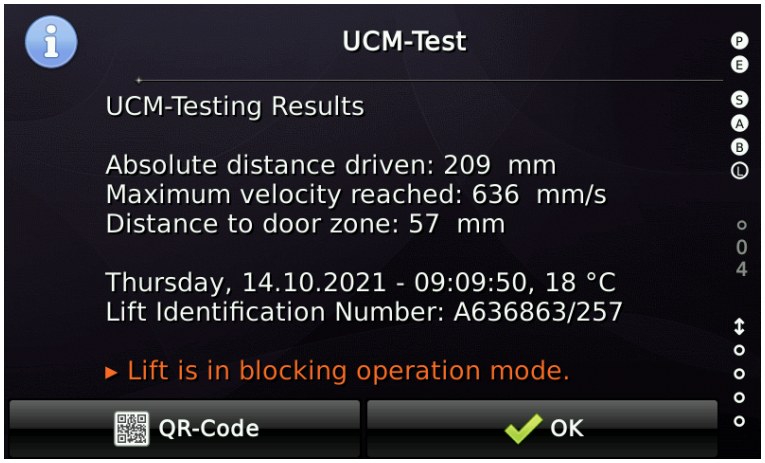


Figure 115: The testing results and a note that the lift is now in blocking operation mode. The background light starts to blink until being touched by the user again.

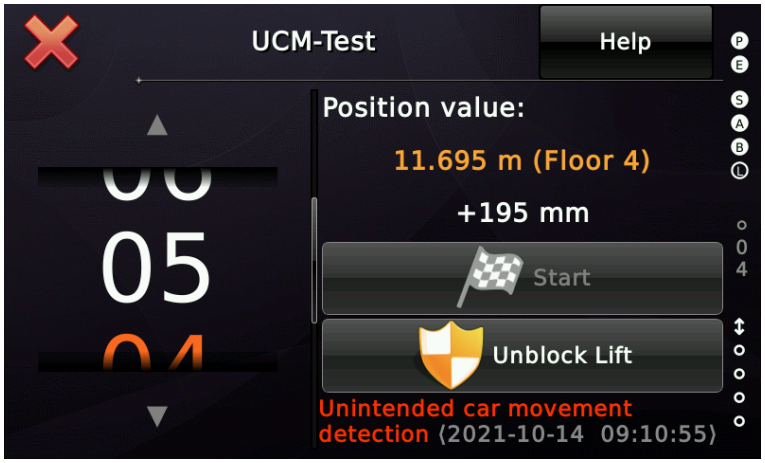


Figure 116: Unblocking the lift before going back to the floor level.

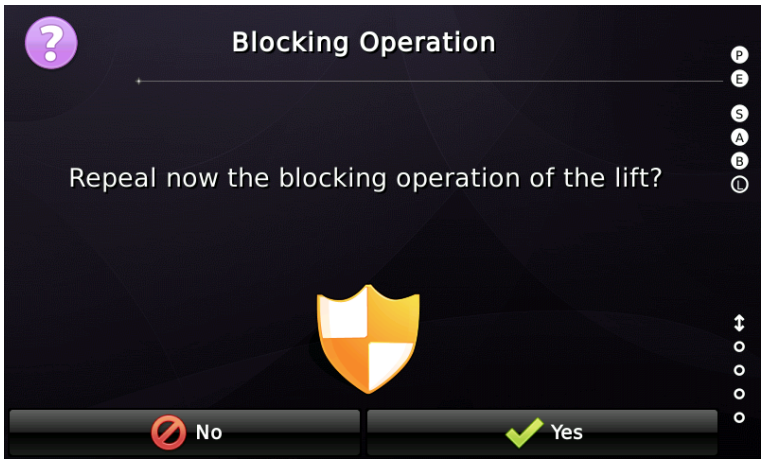


Figure 117: Safety request for unblocking the lift.

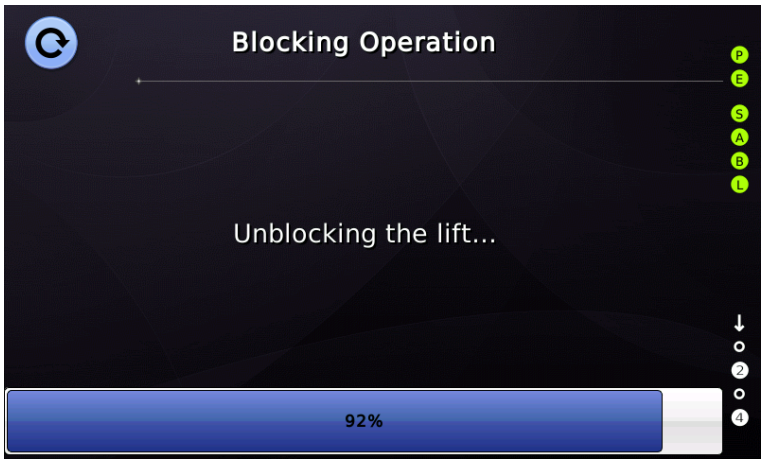


Figure 118: Unblocking of the lift is in progress.

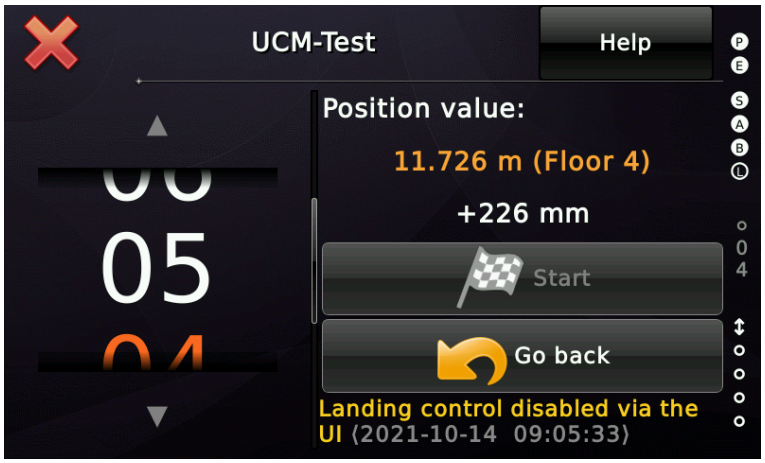


Figure 119: Touch the 'Go back' button to start driving back to the floor.

After having the lift unblocked and the car/cabin being back at floor level, the test may be repeated by driving in the opposite direction, by swiping the floor indicator on the left side of the screen down under the current floor level. Then the 'Start' button may be touched again.

If finally the assistant is closed by the technician via the user interface by touching the cross ✖ symbol, the lift will automatically enter the blocked operation mode again to ensure not to be automatically back in normal operation. So the technician has a second chance to check if all manipulations have been undone, that may have been needed in the real lift installation for testing purposes.

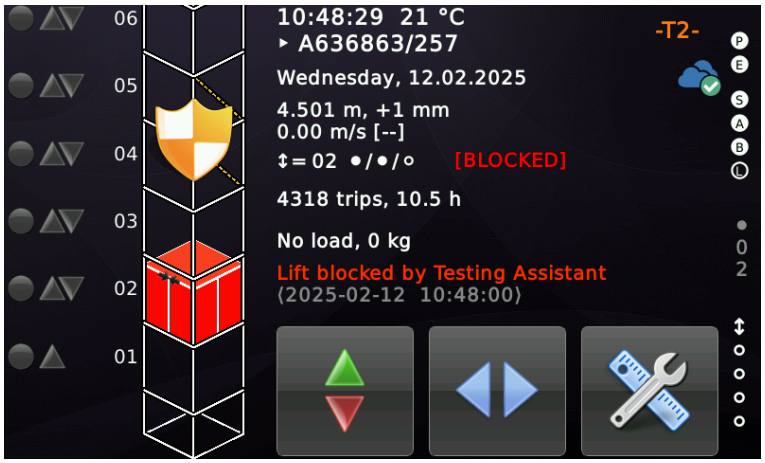


Figure 120: Lift blocked by the testing assistant, after having closed the assistant.

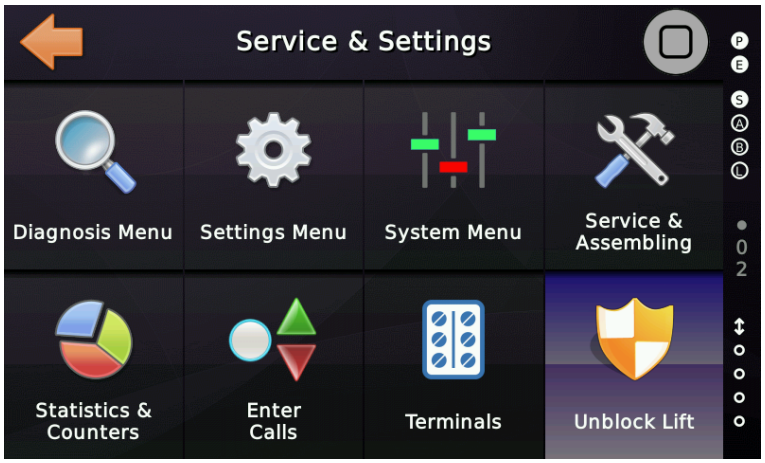
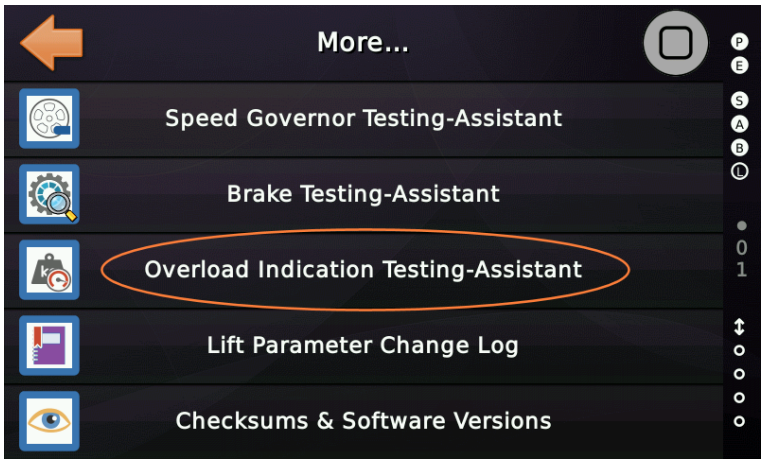


Figure 121: Finally unblocking the lift to enter normal operation mode.

49 Overload Indication Testing-Assistant

This assistant will simply set a threshold to the current car load +50kg, when being activated. The technician can then step into the car and shall trip the overload indication, making it easy to check the display and the buzzer and the generic behavior of the lift.

What you do **not test** with this, is if the sensor or the car weighing device actually would work, when the lift for real would be confronted with 'Overload'.



50 Safety circuit bridge testing assistant

This assistant can be used to '*trigger*' the safety bridge supervision function. This will block the lift, when the safety bridging test will be executed, once the doors have been fully opened. This emulates the safety chain being bridged by a wire. To start the testing procedure, enter a call via the assistant's user interface.

You find the assistant by pressing first 'Home' and then the hardware button 'Service & Assembly' and then go to 'Testing & Inspection' → 'More...' → 'Safety circuit bridge testing assistant'.

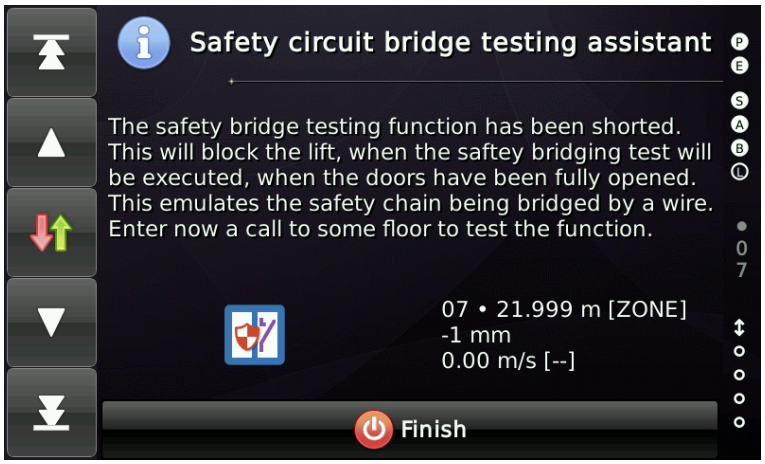
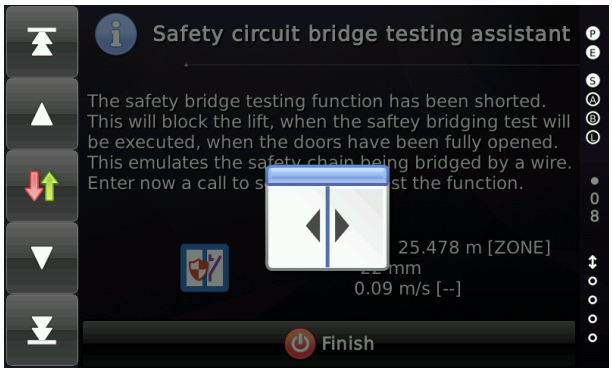
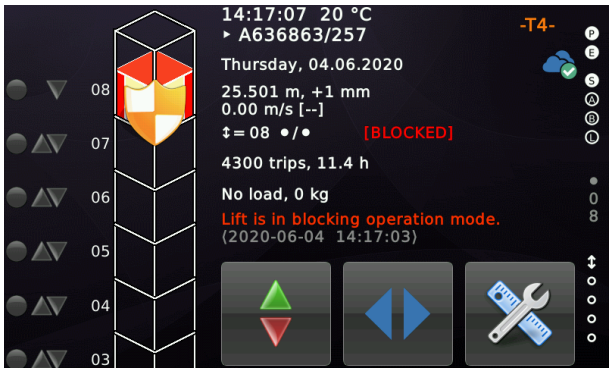


Figure 122: Safety circuit bridging testing assistant

Use the call-buttons on the left screen edge in order to start the lift driving to a floor. When the lift arrives, it will open the doors and trigger a detected safety chain bridging event.





51 Runtime Supervision Testing

This test assistant can be used to provide an easy way to test the runtime supervision without manipulating the associated parameter, which would require the input of the setup password.

You find the assistant by pressing first 'Home' and then the hardware button 'Service & Assembly' and then go to 'Testing & Inspection' → 'Runtime Testing-Assistant'.

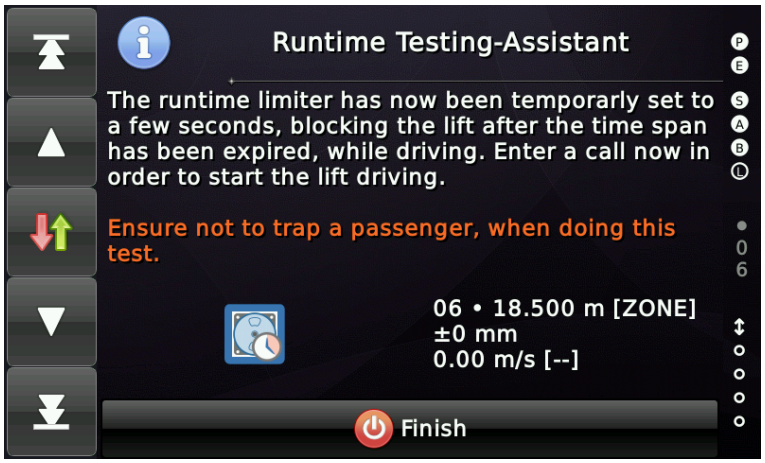


Figure 123: Runtime Testing-Assistant

Use the call-buttons on the left screen edge in order to start the lift driving to a floor.

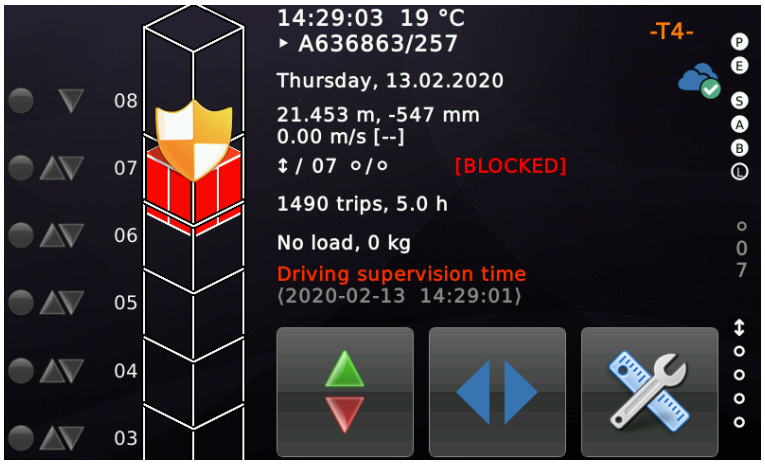


Figure 124: Lift being blocked by the runtime supervision

52 Service Trip/Position Operation

To enter the car roof or the shaft pit easily, this automated operation can be used. It will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will be driven to the service position by the distance given for entering the car roof or the shaft pit.

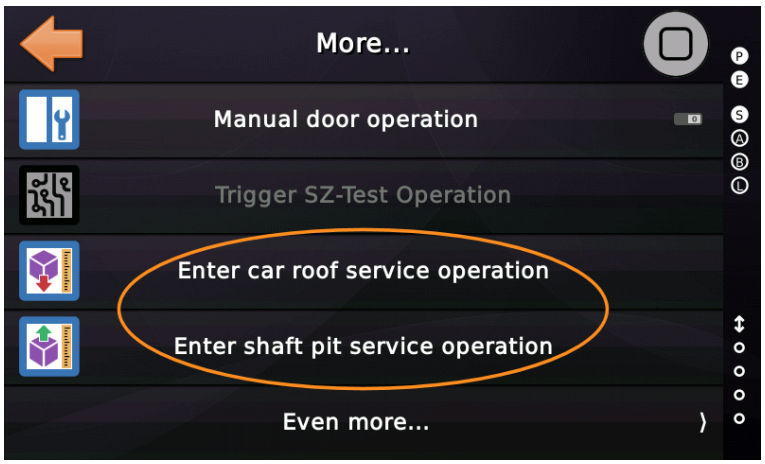
You find those distances under 'Settings Menu' → 'More' → 'Position Unit' → 'Distances & Parameter' → 'More' → 'Even more'.

▶ This feature can be activated either with input signals or via the user interface.

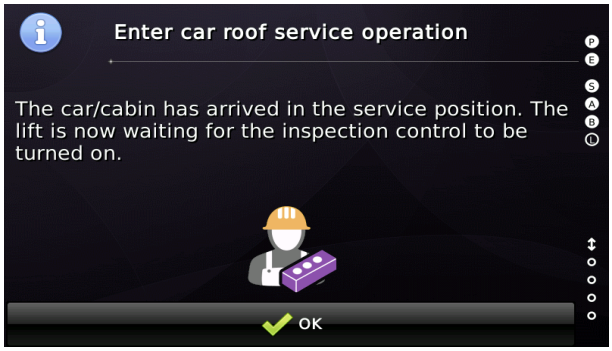
52.1 Interactive Service Trip Operation via the User Interfaces

Alternatively to activating the operation via dedicated input signals as described in the next chapter, it can be used via the user interface. That makes sense, if the lift controller is located directly next to one of the landing doors.

You find the assistant under 'Service & Assembly' → 'Maintenance' → 'More'.



To activate the operation, swipe in the floor were you are waiting next to the landing door. Then touch the blue 'Flag' button. The lift will now drive to the floor and let you peak inside. If you reply the message with 'Yes' it will drive to the service position.



52.2 Using the Service Trip operation via input signals

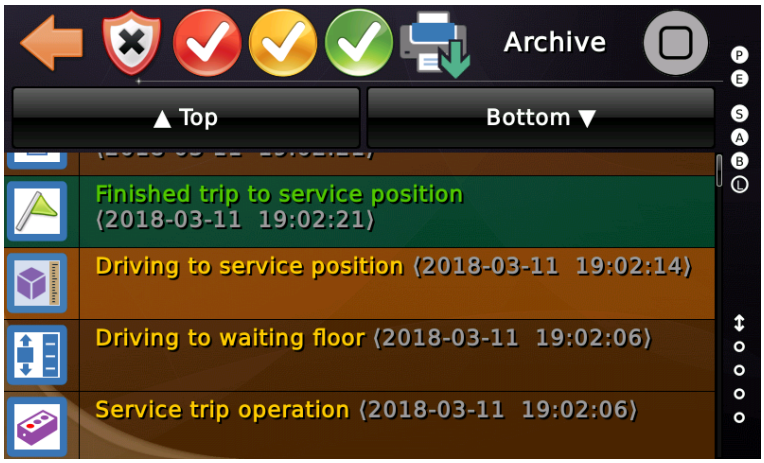
This feature can be activated with an impulse to either the input signal '*Enter car roof inspection operation*' or input signal '*Enter shaft pit inspection operation*' that has to be at least 250 ms long. This might be actuated with a hidden magnet switch or a non-latching key switch. When having activated the operation, you will have the '*Service operation acknowledge*' output turned on as long as the operation is pending. The acknowledge signal is transmitted twice via the bus system, once for the car and once for the landing corresponding with the input signal.

Additionally these two signals are indicated:

- Drive to service position, floor x - used for a yellow lamp.
- Arrived at service position, floor x - used for a green lamp.

These signals may be used for a kind of LED indicator, telling the technician, when to open the landing door.

As shown in the log-book below (starting from bottom [*oldest entry*] to top [*newest entry*]), we can see that all stages of the process are logged. First the lift starts to the floor & door that was indicated by the CANopen input signal, which had triggered the function. When the lift arrives it opens & closes the door, so that the technician can have a sneak peak into the car.



By default, the operation can be canceled at any time with another impulse of at least 250 ms by means of the same input signal. Using the parameter '*Service Trip requires second input impulse after stopover*' you can change that behaviour, so that the lift will instead wait at the stopover floor for a timeout of 3 minutes, until you create a second impulse of at least 250 ms, that then will make the lift continue the operation, driving to the dedicated stop. To ensure proper operation, there is an inhibit time of two seconds after the signal has been operated once, before the next impulse is accepted. This input signal is usually operated at CAN2, so ensure having selected the right lift, when parameterize the signal.

52.3 Using the Service Trip operation via COP and LOP

Alternatively the Service Trip operation can be activated at the lift controller via the user interface first by means of using *'Service & Assembly'* → *'Maintenance'* → *'More...'* → *'Enter car roof... / Enter shaft pit...'* Then instead of processing via the user interface or using an input function, the technician can leave the machine room and call the lift via a landing call first, then enter the car, register a car call to the dedicated floor. Once the lift has arrived and everyone else has left the cabin, he/she can apply constant pressure to the car call, at the floor were the lift currently is stationary, for about 10 s in a row, until the Overload Indication will be activated for 3 s as an acknowledge signal. Now the technician needs to leave the car and apply constant pressure to the landing call button at that very floor for 10 seconds, until the doors close and the lift will travel to the service position, waiting for the inspection panel to be activated.

52.4 Input Signals

- Status/controller signals → Enter car roof service operation, floor x, door y
- Status/controller signals → Enter shaft pit service operation, floor x, door y

52.5 Output Signals

- Status/controller signals → Service operation acknowledge, cabin/car, all doors
- Status/controller signals → Service operation acknowledge, floor x, doors y

- Status/controller signals → Drive to service position, cabin/car, all doors
- Status/controller signals → Drive to service position, floor x, doors y

- Status/controller signals → Arrived at service position, cabin/car, all doors
- Status/controller signals → Arrived at service position, floor x, doors y

52.6 Logbook Items

- Service trip operation
  The function has been activated via the input signal.

- Driving to waiting floor
  The lift is driving to the floor were the technician is waiting, so that he/she can check the car to be empty.

- Driving to service position
  The lift is driving to the service position. Downwards to enter the car roof or upward to enter the shaft pit.

- Finished trip to service position
  The lift has arrived at the service position.

- Waiting for inspection panel to be turned on
  The lift is now waiting for the technician to turn on the inspection operation.

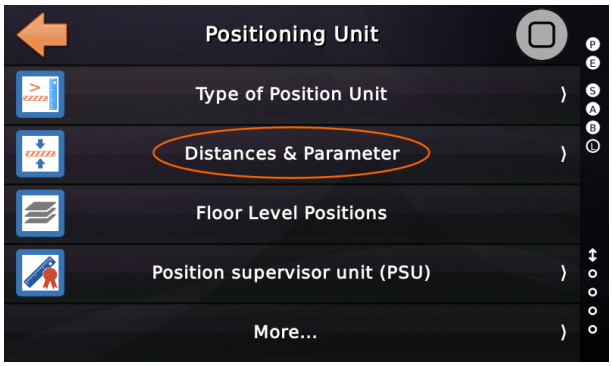
- Service operation timed out
  The service operation has timeout, waiting for the technician to turn on the inspection operation.

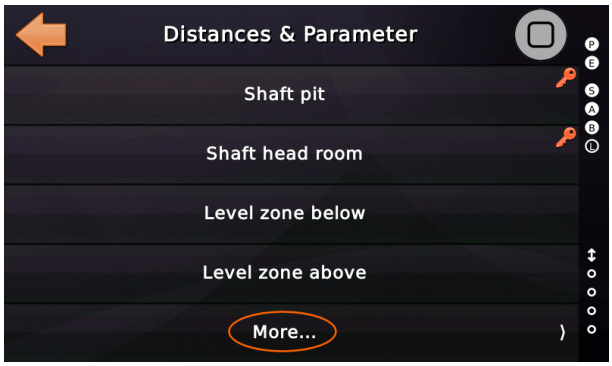
If using the special variant of the service operation to enter the car roof in order to test the smoke detector in the shaft head (see next chapter), you will have one more item in the log book.

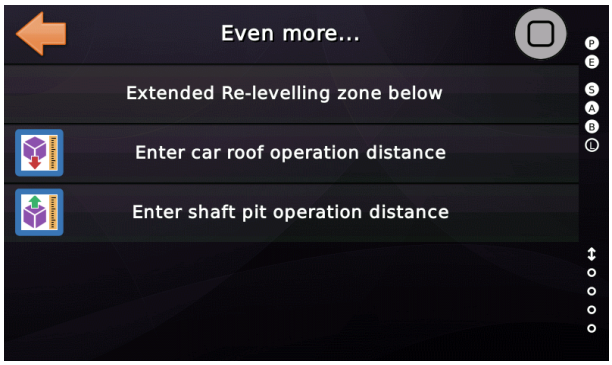
- Smoke detector has been tested
  In order to test the smoke detector in the shaft head, an automated procedure had be used to enter the car roof. Driving to the shaft head is done via the inspection control. The smoke detector can now be tested with a spray. A buzzer is activated when the smoke detector has been tripped.

52.7 Distance Parameters

The distances parameter for this operation can be found by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Position Unit' → 'Distances & Parameter' → 'More' → 'Even more'.







52.8 Special Variant for Smoke Detector Testing

There is a special variant of the service trip operation for entering the car roof, that is adapted to test the smoke detector in the shaft head.

First the lift moves the car to the floor where the technician is waiting, so that he/she has a chance to look into the car first. Then, the car is lowered by the specified distance to enter the roof in the service position. If the technician is now on the car roof, he/she switches on the inspection control and then drives manually to the shaft head. The smoke detector can now be tested with a spray. A buzzer is activated when the smoke detector is tripped. There are two output functions activated for a second in order to reflect the smoke detector being tested.

- Status/controller signals → Fire alarm/service inspection buzzer
- Lift status indication → Inspection pit activated indication

You find this variant under 'Service & Assembly' → 'Maintenance' → More...' → 'Even more...' → 'Test smoke detector service operation'.

53 Support of Drop Protection Systems

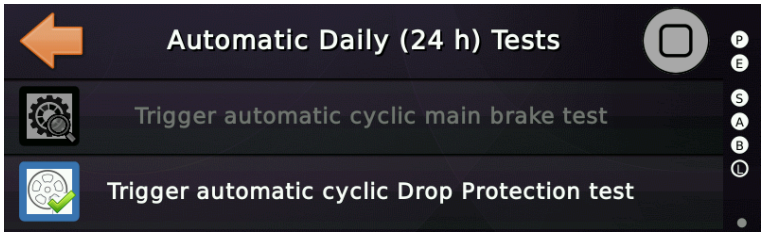
A drop protection unit can be implemented mechanically using a bolt (actuated via a coil) blocking the speed governor's pulley, when the lift has stopped. If the lift would move, while the bolt is in the blocking position, the safety gear would stop the lift.

To control those units basically an output to activate the coil (*actuating the bolt*) and an input from the feedback contact is required. The feedback input signals, that the bolt is '*out of the way*' if the coil had been activated, making it safe to start driving the lift.

If the feedback contact does not reflect the requested bolt position, the lift will cancel all pending calls, being not able to drive the lift. Before this happens the lift controller had at least tried three times to operate the bolt. If operating the bolt fails the first or second time before driving, only a warning will be added to the Logbook. After the third time, all pending calls will finally be canceled.

Figure 125: Menu path to the Drop Protection options

If using a Drop Protection system that is engaged basically 24:7 and only dropped in the case of a fault or when the lift is turned off, the drop protection unit needs to be tested once a day, in order to make sure, it actually works properly, when its needed. An automatic 24 hour test has been implemented for that purpose, that can also be manually triggered via the '*Testing & Inspection*' menu, if such a Drop Protection variant has been chosen from the supported types in the first place.



53.1 Options

Currently the drop protection handling can only be turned always off [default] or always on. The same parameter is also used to choose a variant from the supported Drop Protection types. Additionally the timeout may be altered: that is used when the bolt is to be moved to the actuated or unactuated position.

Figure 126: Option for defining the supervision time for operating the bolt

In addition, a delay time can be specified, which is used, when the bolt is to return to the blocking position, after a stop, to make sure that the bolt is operated, when no other mechanical part is moving anymore.

Figure 127: Defining a delay for operating the bolt after the lift has stopped

The option *'Safety Chain enables Drop Protection operation*' defines, if the drop protection bolt can only be engaged with the safety chain being closed. If so, the supervision of the feedback signal will take the end of the safety chain in account, in order to decide if the drop protection works correctly or is faulty.

53.2 Event Items (Logbook)

Event logs regarding the drop protection handling are basically about faults that may happen while operating the bolt.

- Drop protection activation delayed

  If operating the bolt in order to drive the lift fails the first or second time, only a warning will be added to the Logbook. The controller will retry moving the bolt.

- Drop protection activation fault

  The drop protection could not be activated properly. That means that the feedback contact of the bolt, blocking the speed governor, did not signal that the bolt is free and therefore enabling the speed governor pulley to spin.

- Drop protection release fault

  The drop protection could not be released properly. That means that the feedback contact of the bolt did not signal, that the bolt is back in its position, blocking the speed governor pulley.

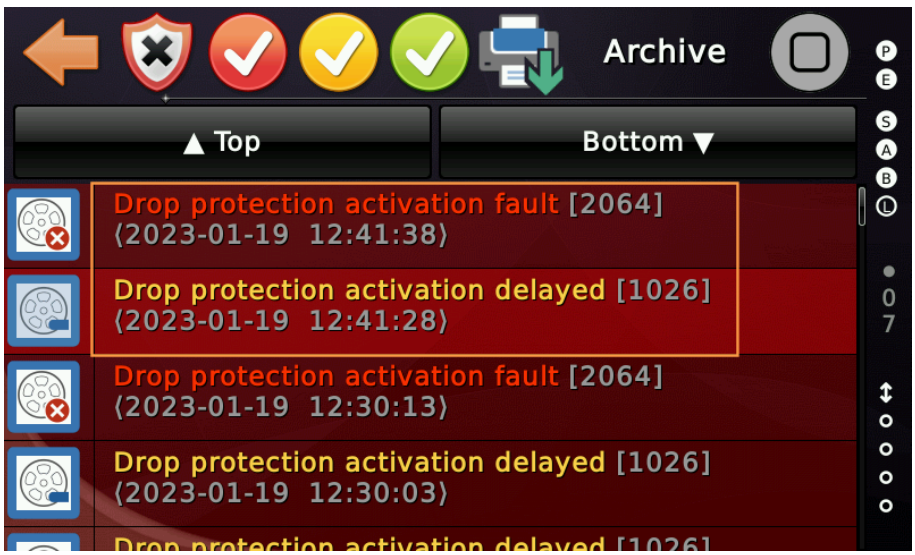


Figure 128: Events stored in the log-book.

53.3 Drop Protection under Inspection Operation

Usually if being in inspection mode, the drop protection shall be operated as usual. But some variants, that are mounted on the hoistway rails need to stay powerless, when being in inspection, in order to catch the car when driving into the safe space.

53.4 Inputs

The feedback signal usually fired by a switch operated by the bolt itself.

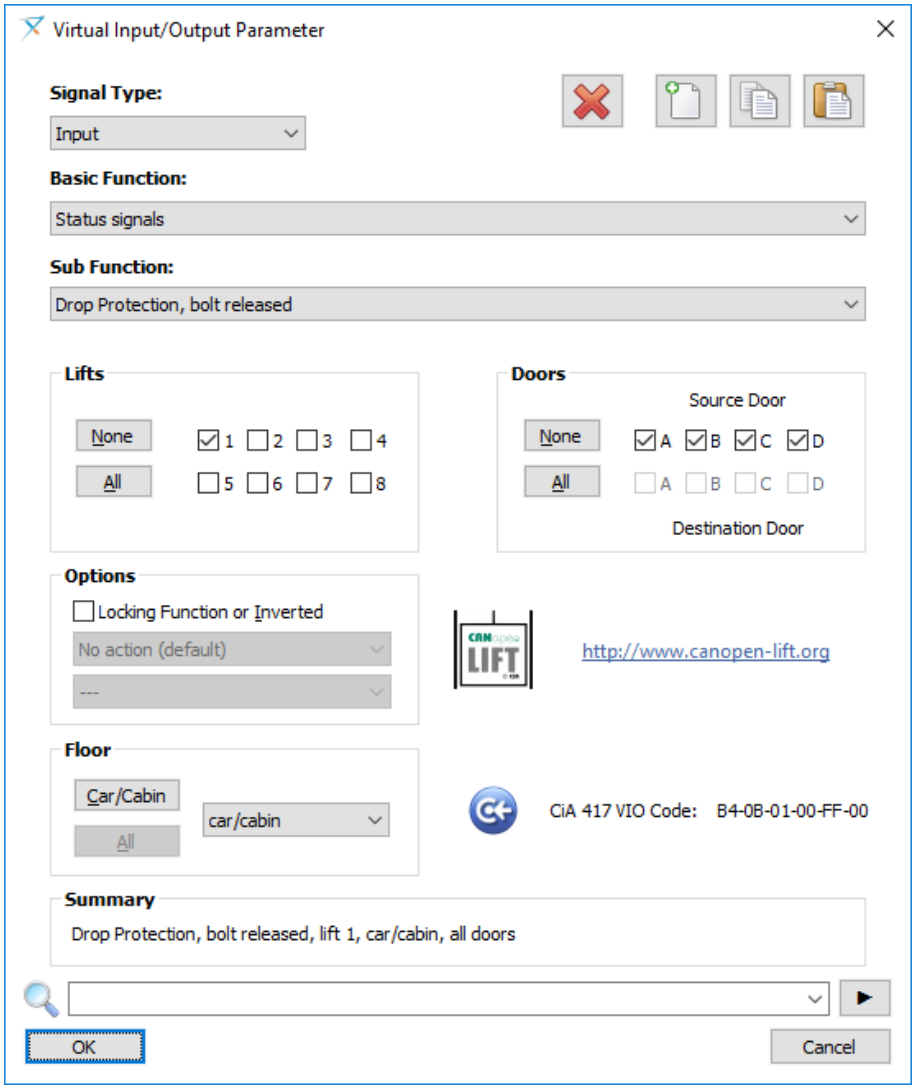


Figure 129: Feedback signal from the drop protection [Toolbox View]

53.5 Outputs

Output to feed the coil actuating the bolt.

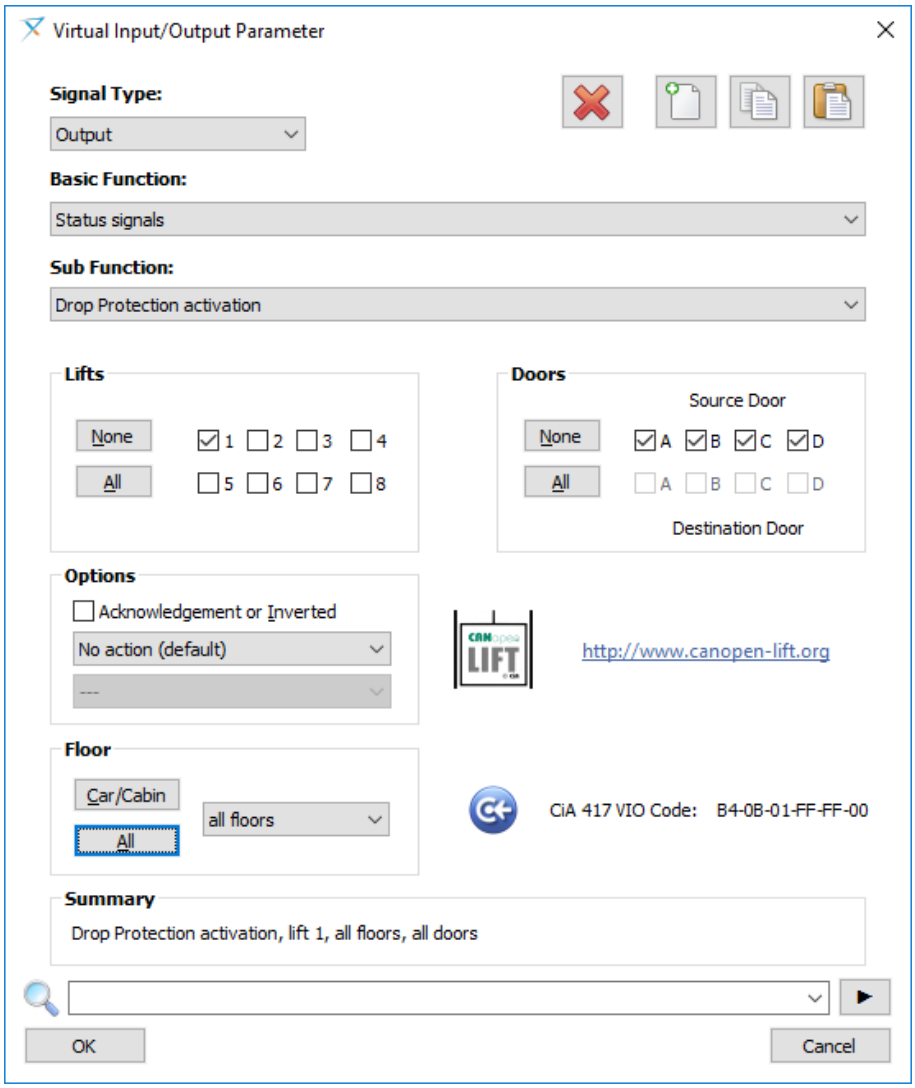


Figure 130: Output to actuate the bolt of the drop protection [Toolbox View]

53.6 Notes

The reason why the lift controller tries to release the bolt several times before throwing a fault is, that for mechanically reasons the bolt may stuck for a second, because of the passengers making the car/cabin swing.

54 Standby Operation

The 'Standby' operation, also called 'Remote-Off' operation, shall provide an easy way of sending the lift to a standby floor in order to turn it software driven into 'soft-off' or 'standby' mode. The function can be triggered via an input on the controller board as well as any CANopen CiA 417 based input panel. The function can also be triggered via the build-in Time (Week) Planner.

The function also provide a way to let a person look/peak into the cabin, to ensure the lift is empty, before finally drive to the standby floor. This is fairly known in hotel or hospital environments.

The function also include turning the cabin light off (even if no cabin light off timer has been activated) and sending 'Power Saving Level S4' via the CANopen bus.

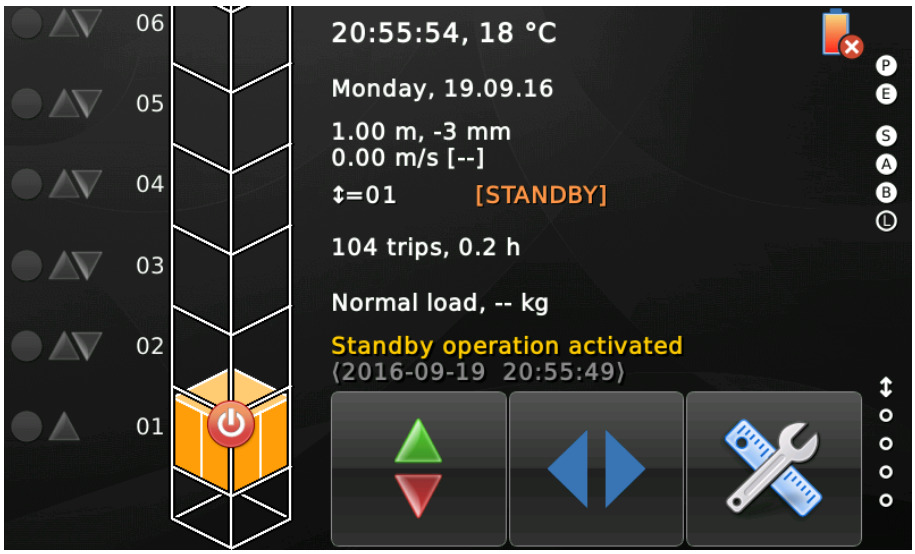


Figure 131: Lift in Standby/Remote-Off operation.

54.1 Options

The options for standby operation can be found by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Controller/Piloting' → 'Remote-Off/Standby'.

- A 'remote off/standby' floor to which the lift drives before turning light/displays and all components, that react on the corresponding CANopen message, off.
- Optional a 'check/stop-over' floor where the lifts stops in order to open/close the selected doors and then drive to the standby floor. Usually used in hotel/lobby environments to let the person triggering the command, having a look to ensure the car is really empty.
- Optional 'check/stop-over' door mask. This is used to define which door or doors shall open, when doing the stop-over at the check/control floor used to heave a peak inside the cabin, ensuring that the cabin is really empty.
- Typically, the doors should remain closed after reaching the standby/remote-off floor. However, it is possible to specify that a door should remain open for special applications.
- Option to enable the landing call button at the 'remote off/standby' floor for opening the door to have a look inside at any time.
- Option to define if the floor displays shall be turned off or turned to "Out of Order" when being remote-off/standby.
- Option to define if the car light shall be turned off, when entering standby operation mode.
- Option to define if Energy Saving shall be signaled via the bus system, if the lift has been turned to Remote-Off/Standby. Excluding the door drive unit from being send to energy saving mode is possible as well.

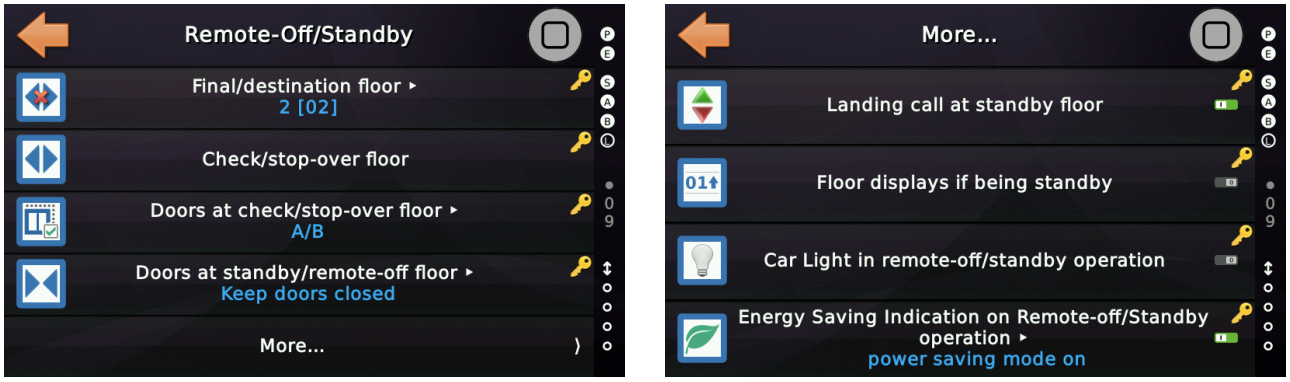


Figure 132: Options regarding Remote-Off/Standby operation.

54.2 Event Items (Logbook)

The following log-book items may be created for a Standby operation.

- Driving to the check/stop-over floor
- Arrived at the check/stop-over floor
- Driving to the standby floor
- Arrived at the standby floor
- Remote-Off/Standby operation turned on
- Remote-Off/Standby operation turned off

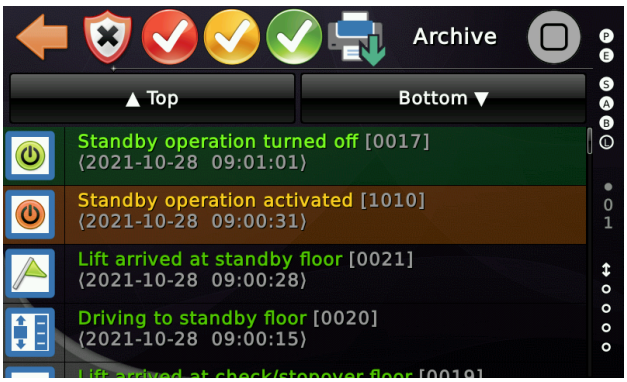


Figure 133: Events stored in the log-book.

54.3 Inputs

- Remote-Off/Standby activation using the CANopen CiA 417 input function 'Special Function' → 'Out of order'.

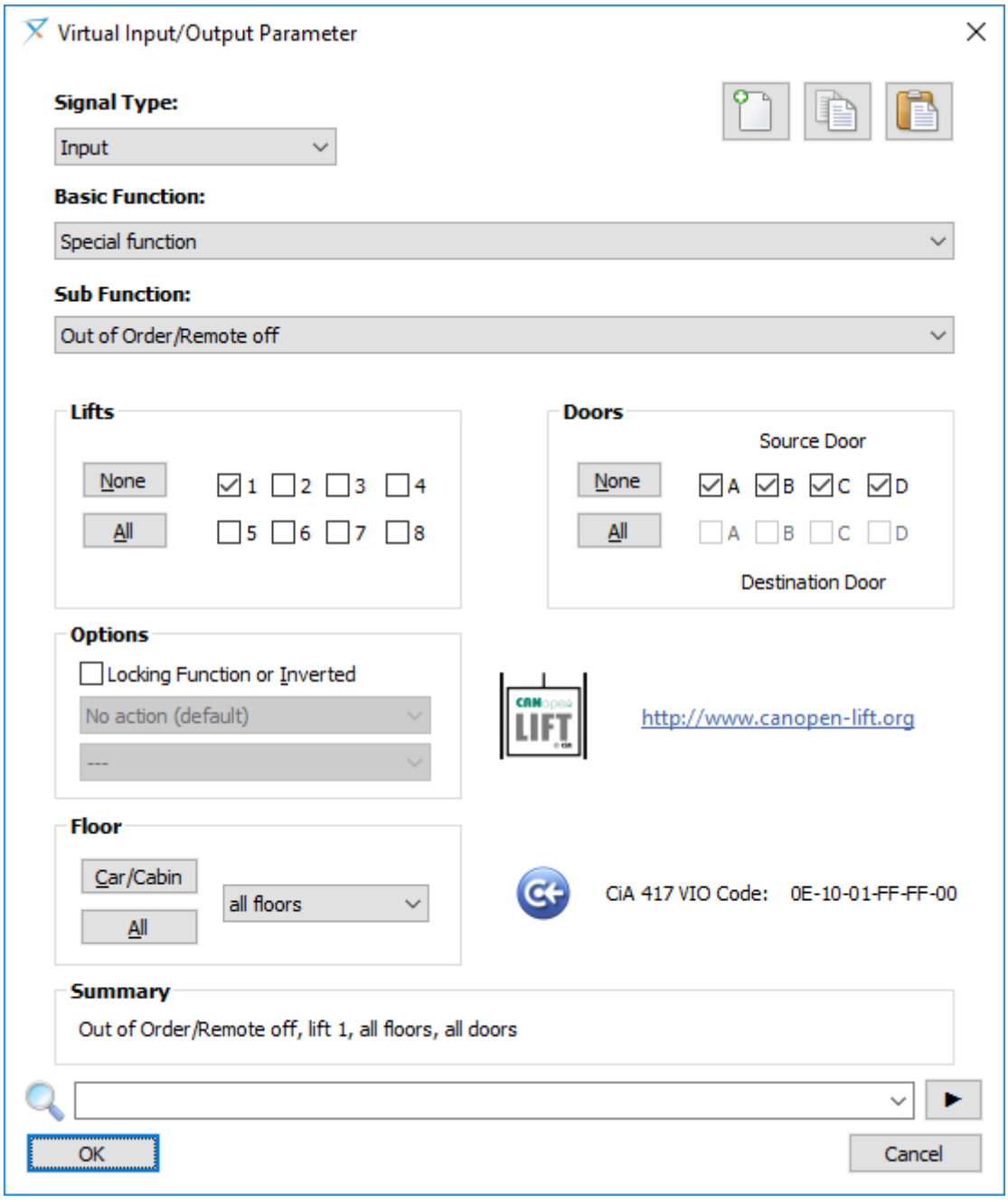


Figure 134: Input Function for activating remote-off/standby [Toolbox View]

54.4 Outputs

- Remote-Off/Standby operation using the CANopen output function 'Special Function Acknowledge' → 'Out of order'.
- Driving to the check/stop-over floor acknowledge output
- Arrived at the check/stop-over floor acknowledge output
- Driving to the standby floor acknowledge output
- Arrived at the standby floor acknowledge output

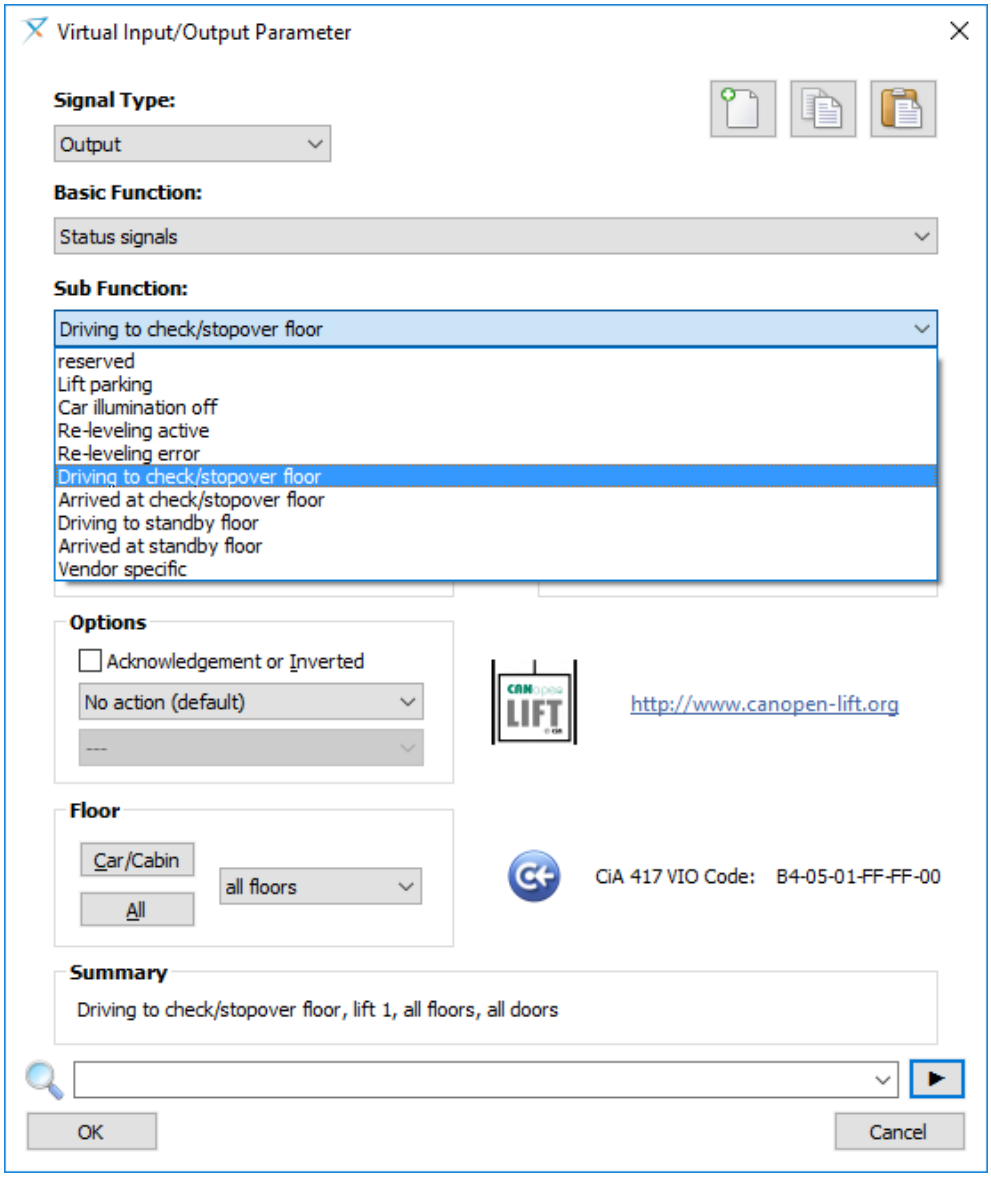


Figure 135: Output functions reflecting the process [Toolbox View]

54.5 Notes

1. The option to turn off the displays, normally used for showing the lift floor and direction, might not work, if the displays show some kind of 'Out of Order' indication, if a zero floor value is transmitted to them.
2. You may setup a door-mask that shall open when doing a stop-over, typically in the lobby floor, for checking that the car/cabin is empty, before leaving to the destination floor and turning the lift to remote-off/standby.
3. Consider, if the landing call button shall open the door at the remote-off/standby floor, if being in standby operation. You find an option for that.

55 Intermediate Stopover Operation

The options for the intermediate stopover operation can be found by pressing the hardware button 'Settings Menu' and then entering the menu and going further to 'Controller/Piloting' → 'Time & Options' → 'Intermediate Stopover'.

The 'Intermediate Stopover' operation, shall provide an easy way for doing an intermediate stop-over on a defined floor, using a pre-selected door mask in the parametrized direction.

This feature is used in warehouses and hotels, where the customer wants the lift always to stop on a certain floor, opening a certain door, if driving in a specific direction. Like a hotel lift that comes from the hotel rooms down to the lobby.

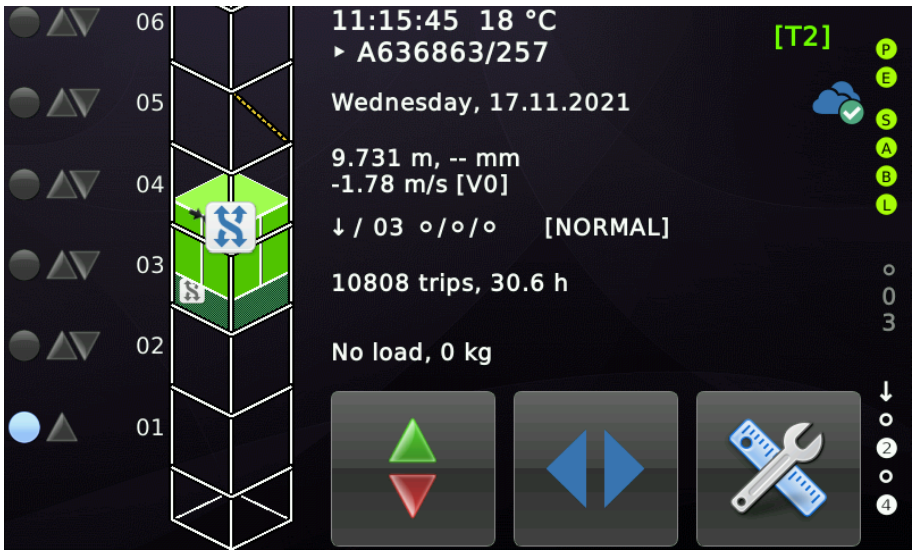


Figure 136: Lift in Intermediate-Stopover operation.

Additionally the user may select the option, that the lift shall only do a stopover, if the car is not empty, using a car load measuring unit in that case. This requires a reliable cabin load measuring device.

There is an input function called *'Status/Controller signals → Disable intermediate stopover function'* that can be used to temporarily disable the function, if required.

55.1 Options

- A floor where the lifts automatically stops in order to open/close the selected doors and then drive further to the passengers destination.
- The direction in which the lift shall do a stopover. In hotel applications, this is often the downward direction, if the lift is coming from the rooms to the lobby floor.
- Option to define if stopover shall only be done, if the car-load-measuring unit is not signaling zero-load, indicating that the car is not empty.
- Door mask. This is used to define which door or doors shall open if doing the stop-over. If also a passenger call is pending on that floor, the door masks are merged.

Figure 137: Options regarding Intermediate-Stopover operation.

55.2 Wait for security signal at the intermediate stopover floor

Another seldom used parameter defines, if the lift shall wait, having arrived at the intermediate stopover floor, for the security run signal being indicated, before continuing driving to its dedicated destination.

The signal in question would be 'Special Function ▸ Security Run'. The signal has to peak up once, in order for the lift to continue driving to the registered call.

56 Fire Alarm Operation

The 'Fire Alarm' operation, also known as 'Case Of Fire' operation, shall provide an easy way to send the lift to a fire alarm floor for evacuation.

The function can be triggered via inputs on the controller board as well as any CANopen CiA 417 based input panel.

The function also takes care about the proper door handling, ignoring the light curtains and notify the door drive to turn to 'nudging' operation, using reduced force/torque when closing the doors, regarding to the EN81-73 and EN81-20/50.

Figure 138: Lift in Fire-Alarm-Operation mode.

56.1 Details & Options

There are three fire alarm strategies to choose from:

- **Off** - No fire alarm strategy at all. The lift will not react on the fire alarm input.

- **Simple Fire-Alarm mode**, targeting just one fire-alarm floor.

  Fire Alarm Center mode, using inputs to define the target floor. So the Alarm Center controls the lift.

- **Dynamic Fire Alarm mode**, using fire/smoke detectors inputs to let the lift decide to which floor to drive.

- **Smoke detector only mode,** using fire/smoke detectors inputs to indicate which floors/doors are smoked. The lift will stay operational, but will not allow to drive to those floors nor will the lift be parking at those floors.

56.1.1 Common

In all Fire Alarm modes the doors are turned to 'Fire Alarm Operating Mode', so that the light curtains are ignored and the door machine is told to use reduced force when closing. This is done via an output or the CANopen control word. If the lift does a stopover, the doors are kept closed but the door-open button remains active.

Be aware that if the region where the lift is operated has the requirement that you have a 'Fire Alarm Set' and a 'Fire Alarm Reset' signal, like in some regions of Switzerland, the lift controller will store the 'Fire Alarm' state non-volatile, so that once you have activated Fire Alarm, a power-loss will not deactivate Fire Alarm until the 'Fire Alarm Reset' signal has been triggered.

56.1.2 Simple Fire-Alarm mode *(very often used)*

Using the 'Simple Fire-Alarm Mode' the lift just targets one single floor and stays there with the doors open or open/close, as being parametrized.

56.1.3 Fire Alarm Center mode *(quite often used)*

Using the 'Fire Alarm Center Mode', the lift is informed via the Fire Detector inputs to which of the fire alarm levels to go. We have 16 fire alarm levels in the system. For each level you can assign a floor and a door. Fire detector input #1 one corresponds to fire alarm level #1 and so on...

56.1.4 Dynamic Fire Alarm mode *(used not so often anymore)*

The third fire alarm mode is the most complicated.

The lift controller basically does what normal the Fire Alarm Center in a building would do. This is used for retrofitting, if a lift controller is upgraded and the building does not have a Fire Alarm Center.

In that case some smoke detectors on the relevant floors will be added and the lift has to do the decision, which fire alarm level to use. If doing so the '*Policy for passing smoked/burning floors*' is in charge.

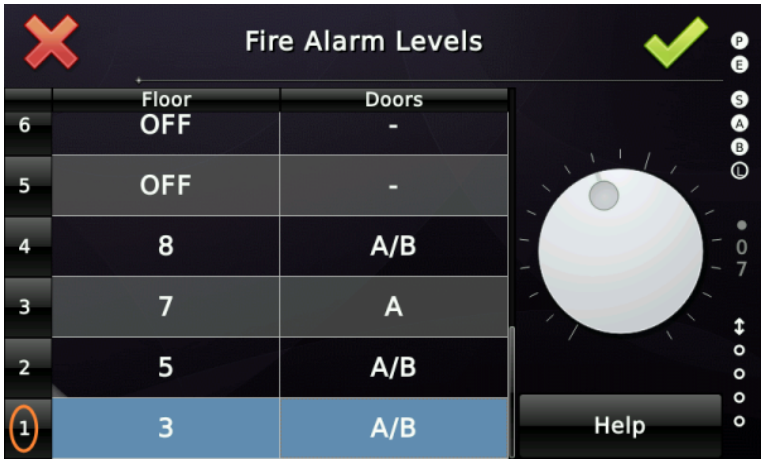
By default this option is set to '*Passing of smoked or burning floors is forbidden*', because only a few lifts have doors that fulfill the specification required to let a lift with passengers pass a smoked/burning floor.

56.1.5 Smoke Detector Only Mode (*very rarely used*)

This is not really a fire alarm operation mode. This is just a way, to keep the lift operational but prevent the arrival or usage of the lift at floors/doors, were smoke had been detected.

The first fire alarm level corresponds to the first fire detector input, the second level to the second fire detector input, and so on. Each fire alarm level has to be defined with the floor and door.

Here is an example. In this table the Fire Detector 1 would block floor 3 door A & B.



56.2 Fire Alarm Levels

Each Fire Alarm Level is a pair of a floor number and a set of doors to open on that particular floor.

Figure 139: Fire Alarm Levels

If using '*Dynamic Fire Alarm mode*' and setting the policy for passing smoked floors to 'No', you might face the situation, that the lift is not able to go anywhere, without passing a smoked floor. So double check the evacuation plan for Fire Alarm.

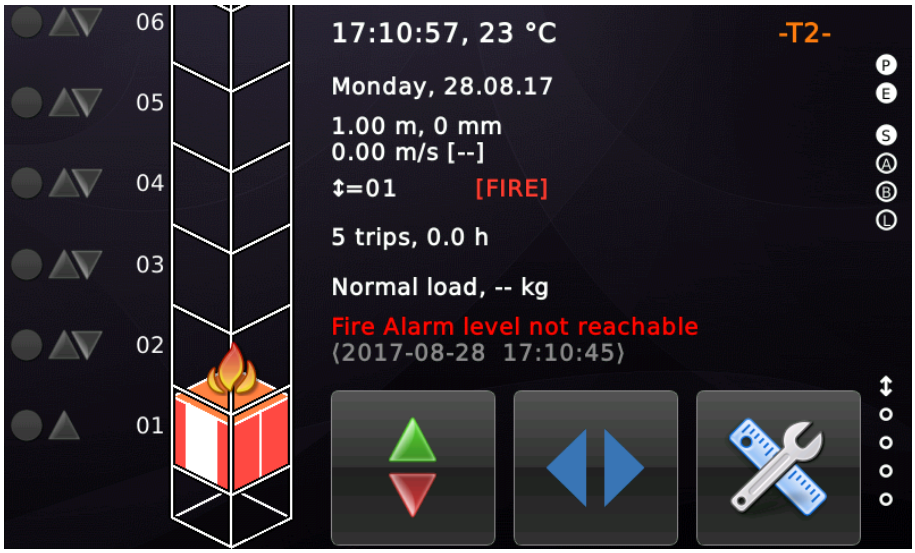


Figure 140: Fire Alarm level not reachable

56.3 Event Items (Logbook)

These are the typical four log-book items a fire alarm operation will generate, if everything went well.

Figure 141: Fire Alarm logbook items.

56.4 Fire Alarm Options

56.4.1 Doors in fire alarm floor

This parameter defines if the doors shall close after a while after having reached the fire alarm floor.

56.4.2 Doors at fire alarm floor closing time

This parameter defines an optional time span, if the doors shall close (delayed) after a while, having reached the fire alarm floor.

56.4.3 Policy for driving to the fire alarm floor

This parameter holds the policy for driving to the fire alarm floor. Depending on the rules of the local fire department, the lift shall always drive to the fire alarm floor or only, if the fire alarm was activated while the lift was driving but not if it was standstill.

56.4.4 Policy for passing smoked/burning floors

This parameter is only valid if the fire alarm strategy '*Dynamic Fire Alarm mode*' is used It defines the policy for passing smoked/burning floors, when evacuating the lift and its passengers to the fire alarm (evacuation) floor. If passing smoked/burning floors is allowed or not, depends heavily on the used doors in the lift installation.

56.5 Inputs

The 'Special Function' → 'Fire Alarm' input activates the fire alarm operation. This input is often used '*inverted*' to make it fail safe.

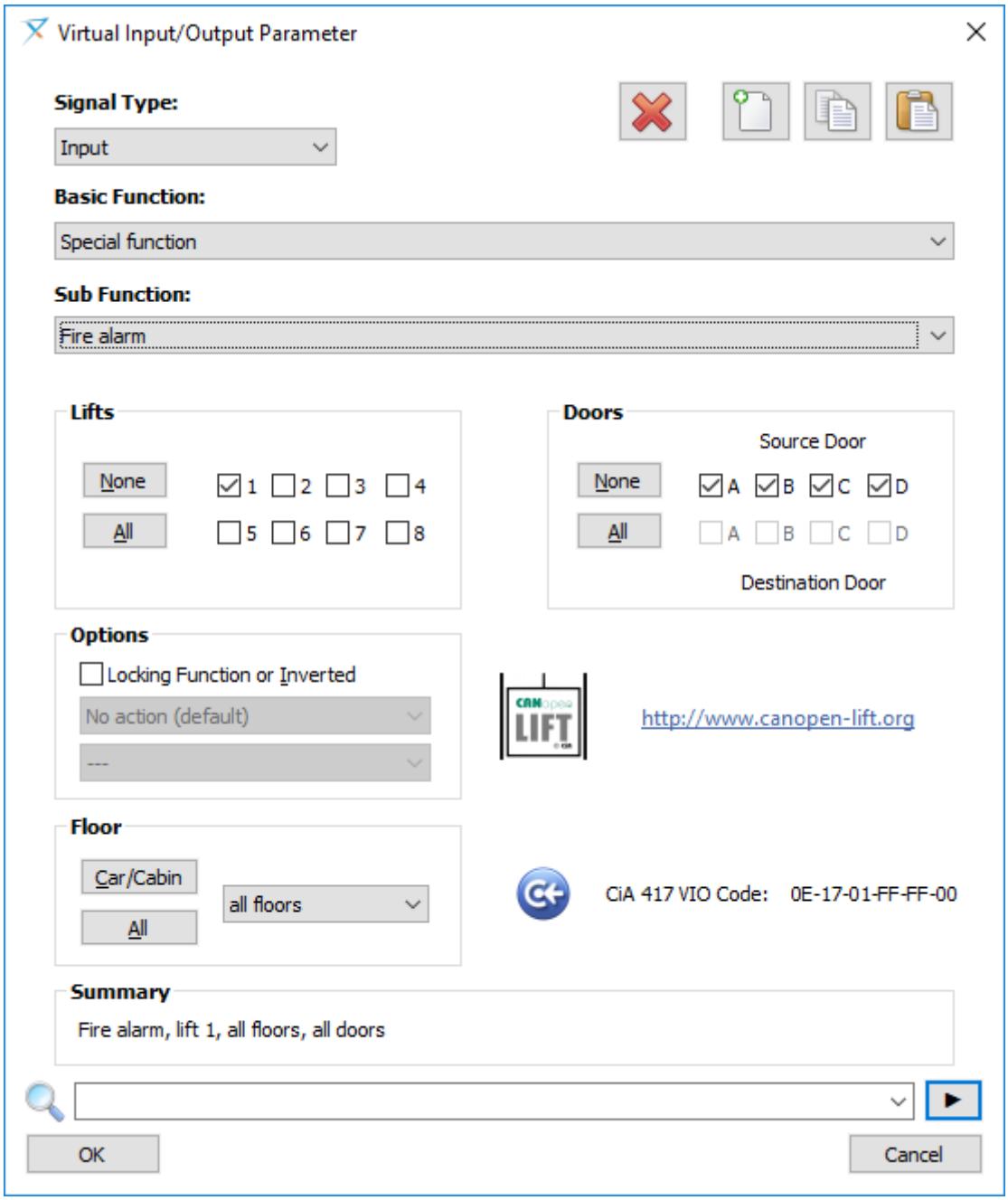


Figure 142: Input functions used to activate Fire Alarm [Toolbox View]

The Fire Detector Inputs (1..x) can be found here. Check the polarity with your actual schematics. They may be used '*inverted*' as well to make them fail safe.

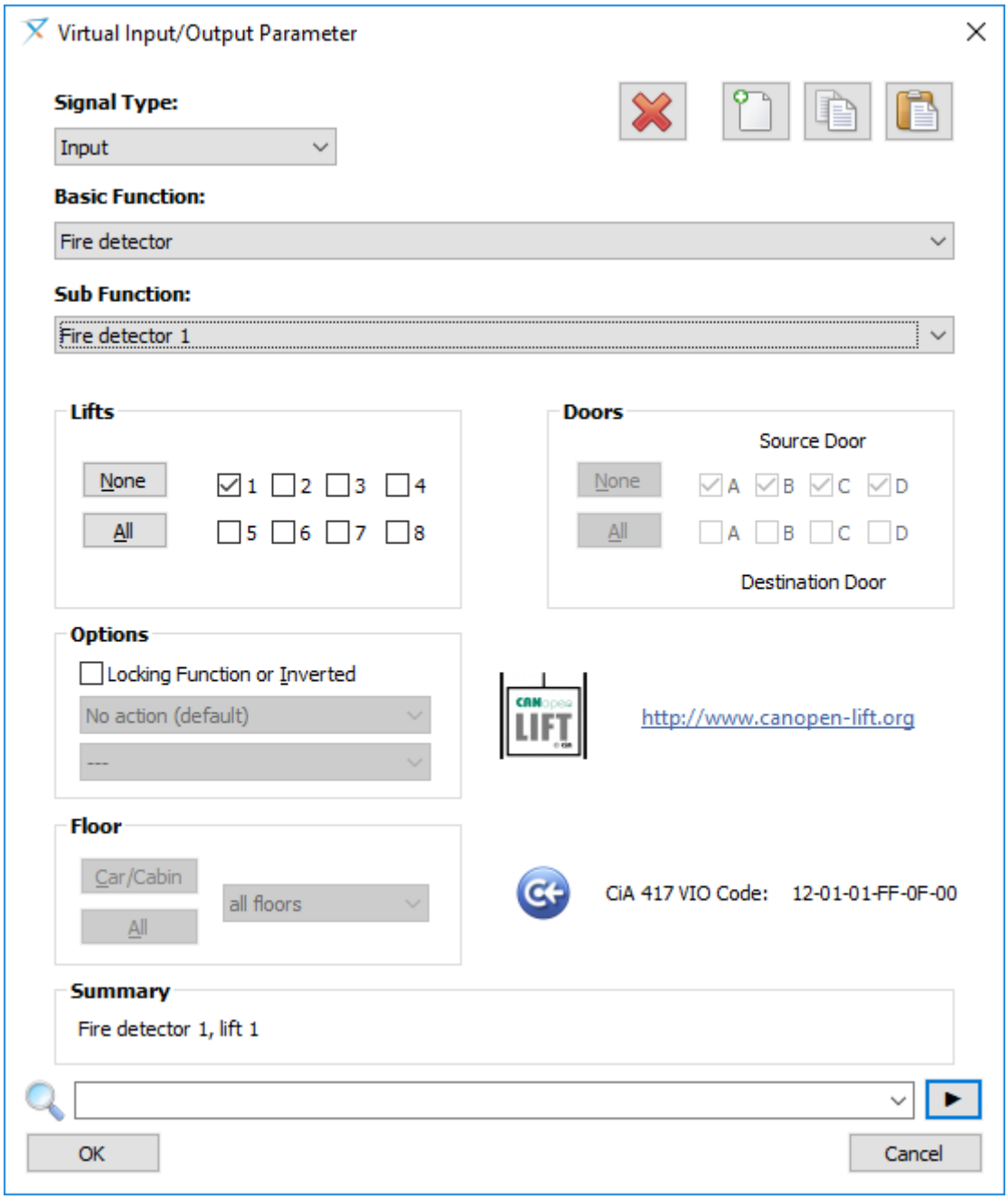


Figure 143: Input functions used for the Fire/Smoke Detectors [Toolbox View]

56.6 Outputs

- **Special Indication** → **Fire alarm** is turned on immediately when Fire Alarm is activated.
- **Special Indication** → **Travel to fire alarm floor** is turned on when the lift is driving to the fire alarm floor.
- **Special Function** → **Fire alarm acknowledge** is turned on when the lift has arrived the fire alarm floor.
- **Lift status indication** → **Reached Fire Alarm floor, doors fully opened** is turned on when the lift has arrived at the fire recall floor and the doors have been fully opened.

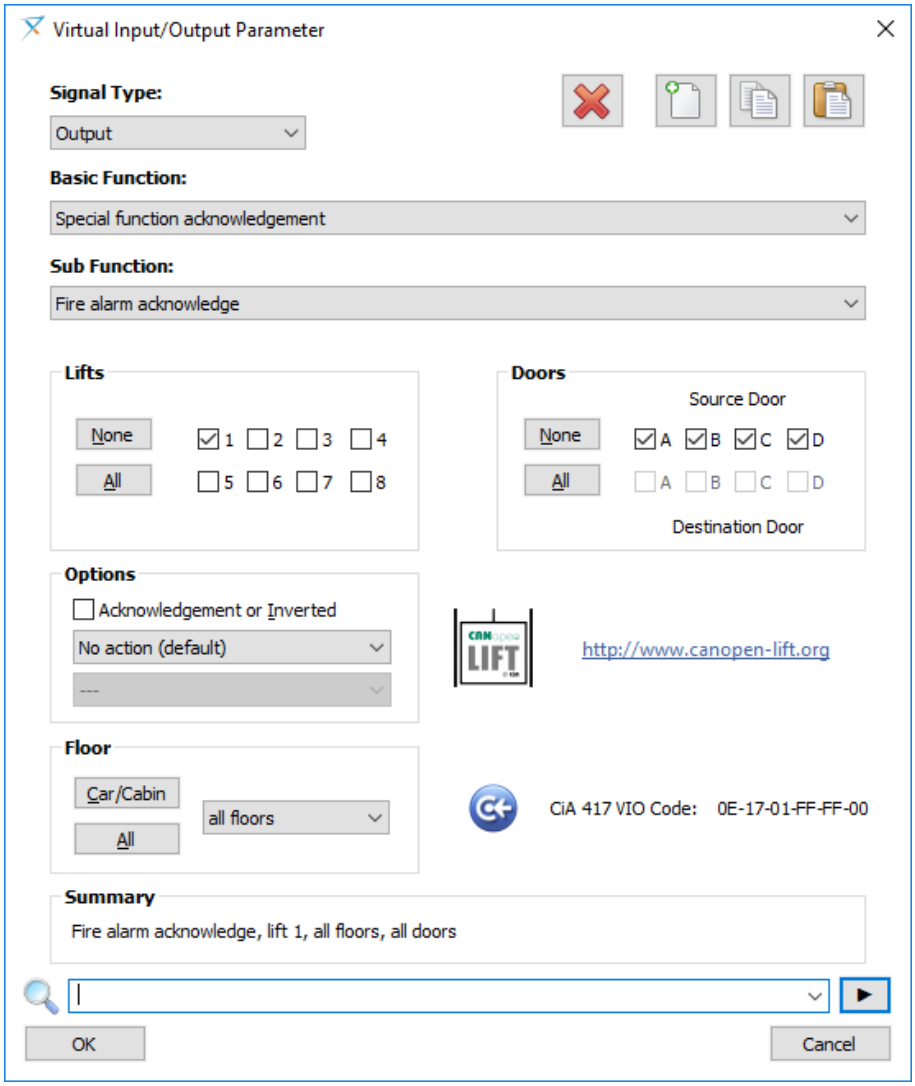


Figure 144: Output functions for the Fire Alarm acknowledgment [Toolbox View]

57 Rescue/Salvage/Evacuation Operation

This operation mode is usually used to evacuate disabled or elderly people, often in a wheelchair, out of the building. A simplified variant (rescue lift) and an extended variant (evacuation lift) are available.

The options for the Rescue/Salvage/Evacuation operation can be found by pressing the hardware button 'Settings Menu' and then go further to 'Controller/Piloting' → 'More...' → 'Even more...' → 'Even more...' → 'Rescue/Salvage operation'.

57.1 Simplified Rescue Operation

The simplified rescue operation feature has to be enabled in the lift controller first. That operation mode is usually activated via an input terminal and will behave like a simple fire alarm operation but provides the possibility to control the car via car calls, once the lift has arrived at the rescue floor and a key-switch in the car has been activated. Doors are on constant pressure operation mode and have to be operated via the door-open and door-close buttons. The light curtains will be ignored to ensure they are not effected by smoke.

57.1.1 Options

57.1.1.1 Rescue operation floor

This parameter is used to select the floor to which the car is driven, when the lift has been turned to rescue operation mode.

57.1.1.2 Rescue operation floor doors

This parameter is used to select the doors that shall open at the floor, to which the car has been driven driven, when the lift has been turned to rescue operation mode.

The doors typically stay open, once the lift has arrived at the rescue floor.

57.1.1.3 Table for excluding doors in Rescue operation

This parameter holds the cross-out table of all landing doors that can not be operated in evacuation service operation. After arrival of the lift, the output signal 'Special Indication ▸ Door open request acknowledge, lift 1, car/cabin, door X' can be used to lit up the 'Door open button' on that floor and door side, that actually can be opened by the evacuation assistant.

57.1.2 Inputs

- **Status/controller signals → Rescue/Salvage operation** shall be activated in order to initiate the rescue/salvage operation and drive the car to the given rescue floor.
- **Status/controller signals → Rescue operation car calls enable** shall be activated (*usually by means of a key switch*) in order to control the lift via car calls, once the car has arrived the rescue floor.

57.1.3 Outputs

- **Status/controller signals → Rescue/Salvage acknowledgment** will be activated when the rescue/salvage operation has been activated and the lift has turned to this operation mode.
- **Status/controller signals → Travel to rescue operation floor** will be activated as long as the lift is driving to the given rescue floor. This output signal may be used for a dedicated voice announcement as well.
- **Status/controller signals → Arrived at rescue operation floor** will be activated when the lift has arrived the given rescue floor.
- **Special Indication → Rescue/Salvage operation** will be activated when the car calls have been enabled via the dedicated input functions, usually via a key switch in the car and the lift is now able to rescue waiting passengers.
- **Door controlling signals → Door closing buzzer signal fire/evacuation** will be activated while the doors are closing. This can be used for a voice announcement or a simple buzzer signal.

57.1.4 Logbook

In the logbook the phases of the rescue/salvage operation will be recorded like this:

Figure 145: Rescue/Salvage operation mode recorded by the logbook

57.2 Advanced Evacuation Lift

The advanced evacuation lift offers more options to adapt the lift installation to the requirements of the building, if elderly people or passengers in wheelchairs have to be evacuated out of the building. There are two variants available, that can be selected using the dedicated input signal:

- Driver assisted evacuation/rescue service operation
- Automatic evacuation/rescue service operation

57.2.1 Phase 1

Both variants have the phase 1 in common, that will be activated via a local key switch at the landings or via an input, driven by the building management system.

When activating the phase 1 all pending landing and/or car calls will be cancelled. The call buttons in the car and at the landings are rendered non-operational.

In this phase the door light curtains stay operational but will be rendered non-operational, if the doors are kept open for more than 20 seconds. The idea is to keep them operational in order to not crash into a passenger but at the same time ensure that smoke will not block the doors from closing.

57.2.1.1 Inputs

- **Status/controller signals → Rescue/Salvage operation** shall be activated in order to initiate the evacuation operation and drive the car to the given rescue floor. This is usually done by a key switch at the landings.

- **Status/controller signals → Rescue/Salvage operation via Building Management (BMS)** shall be activated in order to initiate the evacuation operation and drive the car to the given rescue floor. This is usually done via the building management system, remotely.

- **Status/controller signals → Evacuation/Rescue operation suspend signal** shall be activated by the building management system to interrupt the evacuation operation, if smoke, fire or heat make it unsafe to proceed evacuating passengers. If the evacuation operation has been suspended by the building management system, the lift will be recalled to the evacuation floor.

57.2.1.2 Outputs

- **Status/controller signals → Rescue/Salvage acknowledgment** will be activated when the evacuation operation has been activated and the lift has turned to this operation mode.
- **Door controlling signals → Door closing buzzer signal fire/evacuation** will be activated while the doors are closing. This can be used for a voice announcement or a simple buzzer signal.
- **Vocal messages → Announce lift is in emergency operation** will be peaked up, when the lift starts to drive to the evacuation floor.
- **Vocal messages → Announcement 'Please leave the lift'** will be peaked up, when the lift has arrived at the evacuation floor and opens the doors.

If the lift has reached the evacuation floor in phase 1, the doors will close again after 20 s at the latest. The doors can be re-opened by a landing call at the recall floor.

57.2.2 Phase 2 - I/O signals

57.2.2.1 Inputs

- **Status/controller signals → Driver assisted evacuation/rescue service operation** shall be activated in order to initiate the driver assisted operation mode. This input signal has precedence over the input used to activate the automatic evacuation mode.
- **Status/controller signals → Automatic evacuation/rescue service operation** shall be activated in order to initiate the automated operation mode. This input signal will be overruled by the input used to activate the manual driver assisted evacuation mode.

57.2.2.2 Outputs

- **Vocal messages → Announcement 'Wait for the rescue service'** will be peaked up, when the lift has arrived at some landing and the doors have been fully opened, to let the passengers step in. There is no need for the passengers to enter a call. All they have to do is to wait for the doors to close again.
- **Vocal messages → Announcement 'Please leave the lift'** will be peaked up, when the lift has returned to the recall floor and the doors have been opened.
- **Special Indication → Rescue/Salvage operation** will be activated in phase 2.

57.2.3 Phase 2 - Driver assisted evacuation/rescue service operation

The driver assisted evacuation operation is activated via a key-switch in the car. The assistant will drive the car using the car call panels. The doors will open automatically at the floors to pickup the wheelchairs. Closing of the doors has to be initiated by constant pressure on the next car call or the door close button. If the call button or the door close button are released before the doors have been fully closed, the doors will be re-opened. The next car call will not be registered, before the doors have been fully closed.

All door light curtains will be rendered non-operational at any time. The doors operate in nudging operation mode.

Passengers at the landings will press the landing call buttons to indicate that they are waiting to be rescued.

The driver of the lift will be notified about the waiting passengers, by blinking car call acknowledges (lamps).

To make this work the car calls have to be connected to an I/O panel unit that can detect the car call button press, even if the car call lamp has been turned on. So, use a 4-wire solution or a smart I/O panel, that supports pulsing of the outputs in order to sense the inputs with the output being turned on, like THOR Engineering's CTU units.

If the doors have been fully closed again, after having picked up a waiting passenger, but no further car call has been registered within 15 seconds, the lift will automatically return to the evacuation floor.

57.2.4 Phase 2 - Automatic evacuation/rescue service operation

Like for the driver assisted operation mode, the passengers will use the landing call buttons to indicate that they are waiting. The lift will automatically drive to the landing call that is farthest away from the evacuation floor and rescue that person first. If a landing call is registered, that is even further away, while the lift is already approaching to a landing, it will go straight back to the evacuation floor, before rescuing that passenger in the next cycle. So, the lift will never take a passenger further away from the evacuation floor.

If the lift is not indicating '*Full Load*' and the option '*Rescue operation stopovers*' has been activated, the lift may stopover to pick-up for passengers on the way back to the evacuation floor. The doors will be operated automatically. The light curtains will rendered operational for a maximum time of 20 seconds. Then they will be ignored in order to prevent the doors from being kept/blocked open by smoke.

When the lift arrives at a floor in order to rescue a waiting passenger, the voice

announcement signal '*Wait for the rescue service*' will be indicated. The passengers do not need to enter a call. The doors will close automatically and the lifts starts back to the evacuation floor. Pressing the landing call again will not re-open the doors in this situation.

When the lift finally is back to the evacuation floor, the voice announcement '*Please leave the lift*' will be triggered to ask the passenger to leave the car.

57.2.5 Suspending the evacuation operation

The evacuation operation will be usually interrupted, if smoke, fire or heat make it unsafe to proceed evacuating passengers. If the evacuation operation has been suspended by the building management system, the lift will be recalled to the evacuation floor.

The evacuation operation can be suspended by the building management system via the input function '*Status/controller signals → Evacuation/Rescue operation suspend signal* '.

If the lift is back at the evacuation floor, the voice announcement signal *'Please leave the lift'* will be triggered.

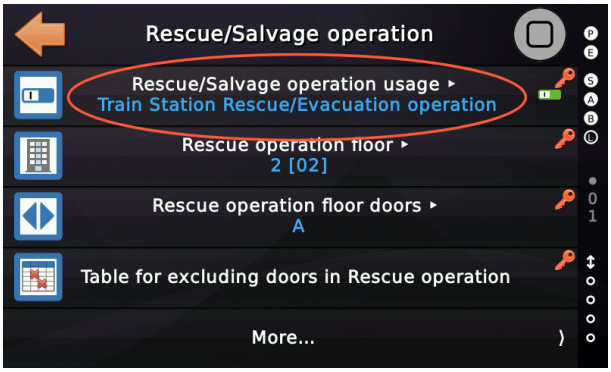
This event will be recorded in the log book and will ensure that the lift is driven back to the evacuation floor. The suspending signal has a higher priority that the input signal, used to turn the lift to driver assisted or automatic evacuation operation.

Figure 146: Evacuation operation suspended via an input signal

57.3 Train Station Rescue/Evacuation operation

Rescue operations at train stations for persons in wheel chairs usually follow a simple scheme. The lift will usually be driven to the train platform and waits there stationary. It can be opened by means of a landing call and will always drive the person to the same dedicated rescue floor, by pressing any car call button. After that the car will return to the train platform floor again to pickup the next wheel chair.

To activate the Train Station mode, simply select it when activating the Rescue/Evacuation operation by means of the dedicated parameter.



Use the '*Rescue operation floor*' to define the floor where the people are driven too. Usually the ground floor, if speaking about a Train Station. Also define the door that shall open.

Use the '*Train Platform 1/2*' parameter to define the Train Platform floors, were the passengers, usually in a wheel chair and in need of transportation, shall be picked up.

Use the *'Fire detector 2'* input to indicate, that the second Train Platform floor shall be used, instead of the first one.

When the function is activated, the lift behaves as follows:

- If the lift is not on the train platform level when turning to rescue mode, it will immediately go there and remain with the doors closed until a landing call is given at the platform level.

- If the lift car moves from the rescue level to the train platform level when switching to rescue mode, it will continue without stopping and - once it has reached the train platform floor - will remain with the doors closed until an landing call is given at the train platform level.

- If the lift car moves away from the train platform level towards the rescue level when turning to rescue mode, it will complete this travel, open the doors and, once the dwell time has elapsed, go directly down to the train platform level and - once it has reached the train platform - will remain with the doors closed until a landing call s given at the train platform level.

- If the lift car is already moving to another floor when switching to rescue mode, it will leave the doors closed and immediately move to the rescue level. After the dwell time has elapsed, the lift moves to the train platform level and - once there - remains with the doors closed until a landing call is given at the train platform level.

In order to evacuate as many people in wheel chairs as possible, the lift car automatically returns to the train platform level after the travel time has elapsed.

58 Fire Recall/Service (Fire Brigade) Operation

In order to use the lift to transport the fire brigade across the building, the lift controller is equipped with this operation mode.

All related parameters can be found by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to 'Controller/Piloting' → 'More' → 'Fire brigade/service'.

The implementation had been done in accordance to the EN81-72:2018. Please note that there are some differences between the somewhat older EN81-72:2003 and EN81-72:2018, especially for the '*Five seconds*' rule, which is required by lifts that have only one fire recall switch at the landing. This is the case in the Netherlands for example.

58.1 Theory of Operation

The Fire brigade/service operation is divided into two phases:

- Phase 1 – Fire Recall Operation (Priority recall for the fire fighter's lift)
- Phase 2 – Fire Service Operation (Lift under fire fighter control)

Being in Phase 1 the lift will drive immediately to the fire recall floor. If the lift (in that moment) is moving away from the fire recall floor, it will stopover in the very next floor level (keeping the doors closed) and start driving to the fire recall floor. The door open button remains active in this phase. When the lift has arrived at the fire recall floor, it stops and keeps the doors open.

Switching to phase 2 is done either by means of a key-operated switch in the car/cabin or automatically after arrival and door opening, depending on the setting of the parameter '*Fire brigade/service on/off*' (mode):

- Fire service operation with landing & car key
  → Turning to phase 2 using the key-switch in the car/cabin.
- Fire service operation with landing key only (Benelux)
  → Automatically turning to phase 2 after door opening.

If the lift was turned to phase 2, it can be moved by using car calls, with the next car call always cancelling the previous one.

The doors do not automatically open when the lift has arrived at a floor level, being on fire service operation.

To open the door, the '*Door-Open*' button has to be constantly pressed. Which door can be opened is indicated by using the signal '*Special Function Acknowledgment → Door open request acknowledge, lift 1, car/cabin, door X*'. See the chapter about the '*Fire service door Table*' for details.

Normally, when the '*Door-Open*' button is released, the door close immediately (automatically) when the door is not in the '*fully opened*' state. However, this behavior can be adjusted due to local fire brigade regulations, so that the doors stop rather than automatically close again. By using the parameter '*Fire service door operation mode*' the behavior can be defined:

- Automatically close, if door is not at the 'opened' position [standard]
- Stop/hold door, if door is not at the 'opened' position
  This setting requires a door drive unit mechanically capable of doing so.

If the '*Fire service*' key switch in the car is turned off (*if the car has a fire service key*) while operating in phase 2, the lift remains in phase 2 but can not be driven by new car calls.

58.1.1 Returning to normal operation

To return the lift to normal operation, the lift has to be returned to the fire recall floor and the '*Fire service*' key-switch in the car (if existing) and the '*Fire recall*' key-switch at the landing, have to be turned back to the '*off*' position.

58.1.2 '*Five second rule*' using the key-switch '*Fire recall*' at the landing

The lift can be recalled back to the fire recall floor, using the key switch '*Fire recall*' at the landing. For that, the key-switch has to be turned off for more than five seconds and then turned back to the 'on' position again. If the lift is equipped with a '*Fire service*' key-switch in the car and the door is opened, the lift will not return.

Please note that there is a noticeable difference between the older EN81-72: 2003 and EN81-72: 2018 in exactly this '*five second rule*' function!

58.2 Fire brigade/service on/off (Mode)

This parameter defines if the lift features fire brigade/service (fire fighter) operation. This parameter also defines the actual variant of the fire service operation, as there are some local/national differences. So please refer to your local regulations.

58.3 Fire brigade recall floor

This parameter defines the floor to which the lift drives, if the fire brigade (fighter) operation has been activated, using the key switch at one of the landings.

58.4 Fire brigade recall floor doors

This parameter is used to define the doors to operate when the lift has arrived at the fire recall (fire brigade) floor.

58.5 Fire service door operation mode

Use this parameter to define how the doors shall behave in fire service operation mode (phase 2).

Typically the doors are opened manually via the 'door-open' button and shall automatically close, if the door has not been moved into the (fully) 'opened' position.

If the door has once moved into the (fully) 'opened' position, it can only be closed by constant pressing the 'door-close' button or constant pressing a 'car call' button. If the button is released before the door is fully closed, it will automatically re-open again.

Anyhow, depending on local regulations, the doors might have just to stop in the position they are, instead of auto closing. This parameter can be used to archive this.

58.6 Fire service door table

This parameter holds the cross-out table of all landing doors that shall not be operated in fire service operation, as requested by the EN81-72 regulations, especially regarding to chapter 5.8.9 of the EN81-72 regulation.

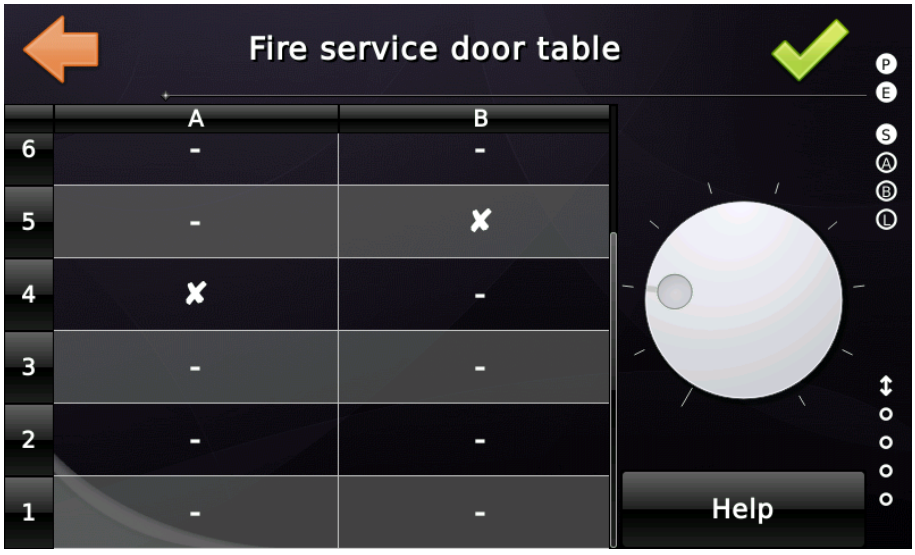


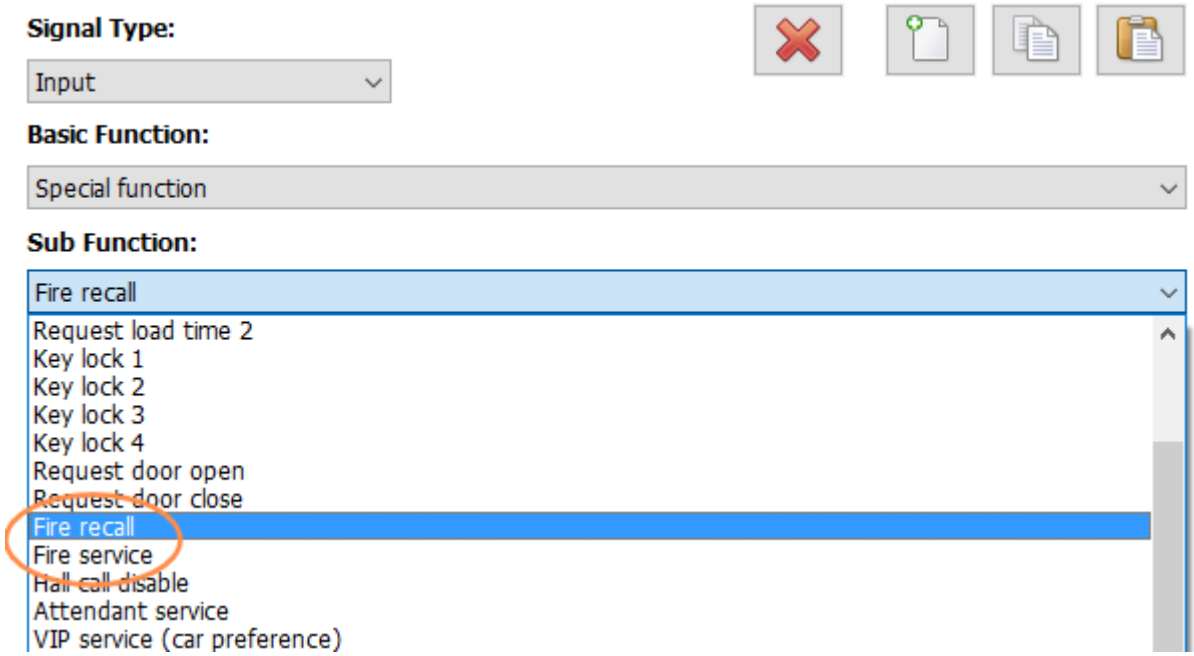
Figure 147: Fire service cross-out door table

After arrival of the lift, the output signal '*Special Function Acknowledgment → Door open request acknowledge, lift 1, car/cabin, door X*' can be used to lit up the '*Door open button*' on that floor and door side, that actually can be opened by the fire fighter.

58.7 Fire recall/service Input signals

58.7.1 Key-Switch Inputs

You find the CANopen CiA 417 standard input signals for the '*Fire recall key switch*' and the '*Fire service key switch*' in the '*Special Function*' group.



Here is an example:

- Special Function → Fire recall, lift 1, all floors, all doors *[at the landings]*
- Special Function → Fire service, lift 1, car/cabin, all doors *[in the cabin]*

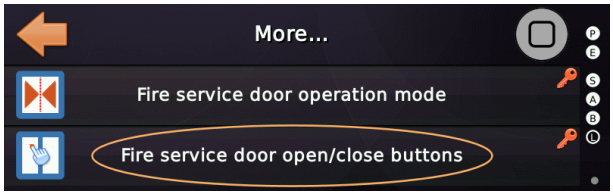
58.7.2 Request Door Open/Close Inputs

58.7.2.1 Variant 1 – Using the regular door open/close buttons

If you feature the regularly door open/close buttons, use the '*Special Function → Request door open/close, lift 1, car/cabin, door X*' for that purpose. For the signal lamps, indicating that the fire fighter can operate the open/close buttons, use the '*Special Function Acknowledgment → Request door open/close acknowledge, lift 1, car/cabin, door X*'.

58.7.2.2 Variant 2 – Using special door open/close buttons

To use special door open/close buttons for the Fire Fighter panel, you have to activate this option first.



If you feature special door open/close buttons, just for a Fire Fighter panel, use the '*Door Controlling Signals → Fire service door open/close button, lift 1, car/cabin, door X*' for that purpose. For the signal lamps, indicating that the fire fighter can operate the open/close buttons, use the '*Door Controlling Signals → Fire service door open/close button acknowledge, lift 1, car/cabin, door X*'.

58.7.3 Specifying the Car Call Panel to feature for Fire Service Operation

The parameter '*Fire service car call panel A/B/C/D usage*' let you define which car call panel (door A/B/C/D) shall be featured for the fire service operation. This panel might include calls for a door X even if there is no door X at a specific floor. In fire service operation, the lift will just check the floor indicated by the call buttons of that panel and will drive there.

58.7.4 Door open button, driving to the fire recall floor

This Parameter defines if the door-open button shall be kept operational, when the lift does a stop over at some floor, in order to change the direction, driving towards the dedicated fire recall floor.

58.7.5 Note about Car Call Canceling in Phase 2

Usually entering the very next (new) car call will cancel any pending car call, if the lift is operated in fire service mode (phase 2). This behaviour can actually be influenced by means of a dedicated parameter. Anyhow some Fire Fighter lifts might have an extra input called '*Call Cancel Fire Brigade*'. If so, this button can be connected to the input signal '*Special Function → Call cancel fire brigade, lift 1, car/cabin, all doors*'.

58.8 Fire recall/service Output signals

58.8.1 Fire recall (phase 1)

- Special function acknowledgment → Fire recall acknowledge, lift 1, all floors

  This acknowledge signal is turned on when fire recall operation (phase 1) has been activated and is kept on even if the lift has turned to fire service operation (phase 2). If the fire recall/service operation is finally turned off, then this signal is dropped.

- Special indication → Travel to fire recall floor, lift 1, all floors, all doors

  This signal is indicated while the lift is driving to the fire recall floor.

- Status/controller signals → Lift at fire recall floor, lift 1, all floors, all doors

  When the lift has arrived at the fire recall floor, typically the floor that has the fire recall switch at the landing, this signal is turned on.

- Status/controller signals → Fire service inspection buzzer, lift 1, all floors, ...

  This signal is turned on, if the lift is in inspection/emergency electrical operation operation and fire recall operation is requested. This signal is usually used for turning a buzzer on.

- Status/controller signals → Fire Recall/Service requested indication

  This signal is turned on as soon as fire recall is requested, even if the lift cannot switch to fire fighter operation mode.

58.8.2 Fire service (phase 2)

- Special function acknowledgment → Fire service acknowledge, lift 1, all floors
  While the lift is operated in phase 2 by the fire brigade from within the car.

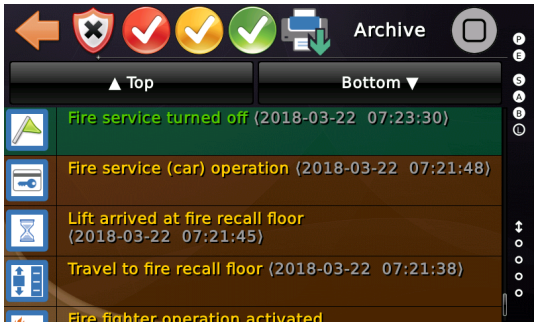
- Special Indication → Door open request acknowledge, lift 1, car/cabin, door X
  This signal can be used to lit up the 'Door open button' on that floor and door side, that actually can be opened by the fire fighter.

- Status/controller signals → Disable Fire Fighter Car Intercom
  This signal can be used to disable an InterCom unit in the car, when the lift is at the recall floor with the doors not being closed, in order to prevent acoustic feedback.

58.9 Fire recall/service Events (Logbook)

The logbook items give a record of a fire recall/service operation procedure. Starting with the lift being turned to fire brigade/fighter operation by the '*Fire recall*' key switch at the landing.

Driving to the fire recall floor and turning to '*Fire Service*' operation by either using the key-switch in the car or (depending on local regulations) automatically after arrival and door opening in the fire recall floor.



And finally returning to the fire recall floor and turning fire service off again.

59 Emergency Power Net Operation

Some buildings (like hospitals) provide an '*Emergency Power*' indication for their lift installations, making it for the lift possible to handle those situations safely.

Usually the lift shall stop flush at the next floor, if the signal function '*Emergency Power activation*' has been signaled. Optionally the lift can perform an emergency stop, if required. If then the input function '*Emergency Power enable evacuation*' is signaled as well, the lift will start driving to the '*Emergency Power Floor*', that has been setup in the '*Emergency Power Settings*'. If having reached the '*Emergency Power Floor*', the output function '*Lift arrived at Emergency Power floor*' is indicated, that can be used as an input for the next lift's input function '*Emergency Power enable evacuation*', if running several lifts in a team/group, making them evacuate one by one.

If (*after the Diesel generator has been fired up*) some lifts shall stay operational, probably with reduced velocity, the input '*Emergency Power lift stays operational*' can be signaled to these lift installations.

Open the parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to 'Controller/Piloting' → 'More' → 'Emergency power'.

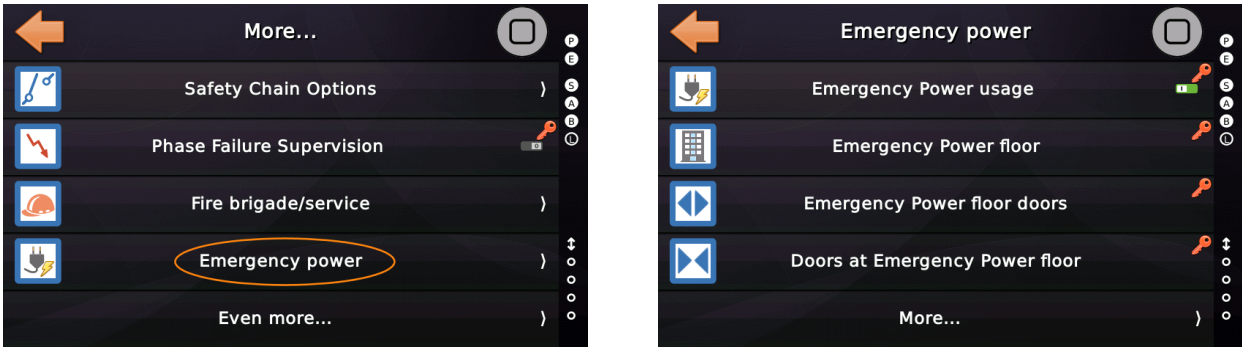


Figure 148: Emergency Power Settings

Inputs:

- Status/controller signals → Emergency Power activation
- Status/controller signals → Emergency Power enable evacuation
- Status/controller signals → Emergency Power lift stays operational
- Status/controller signals → Emergency Power Battery Rescue
- Status/controller signals → Emergency Power Battery Rescue Direction

Outputs:

- Status/controller signals → Travel to Emergency Power floor
- Status/controller signals → Lift arrived at Emergency Power floor
- Status/controller signals → Reached Emergency Power floor, doors fully opened
- Status/controller signals → Emergency Power lift stays operational acknowledge

There is another '*Traveling*' signal, called '*Lift status indication → Travel to Emergency Power floor indication*'. The difference is, that when using an Emergency Power evacuation delay, this indication is turned on, when the lift actually starts driving, while the status/controller signal is already turned on together with the delay timer.

When configuring the Emergency Power handling, it is possible since version V1.31.04 to decide, if featuring two signals separately for activation and enable traveling or just one single enabling signal:

When having two separate signals, you would need:

- Status/controller signals → Emergency Power activation
- Status/controller signals → Emergency Power enable evacuation [Emergency Power Battery rescue]

If using the mode, with a single signal, skipping the activation signal, you will need:

- Status/controller signals → Emergency Power enable evacuation [Emergency Power Battery rescue]

59.1 Emergency Power Operation Options

59.1.1 Emergency Power Operation usage

Defines if the lift installation features the Emergency Power operation mode.

59.1.2 Emergency Power floor

Defines the floor to which the lift drives, in a case of an emergency power operation.

If no '*Emergency Power Floor*' has been setup and the lift stops in between the floors (outside the door zone), it will drive to the next floor upward for traction lifts or the next floor downwards for hydraulic lifts.

59.1.3 Emergency Power floor doors

Use this parameter to define the doors to operate when the lift has arrived at the emergency power floor.

59.1.4 Doors at Emergency Power floor

This parameter defines if the doors shall close after a while, when having reached the emergency power floor.

59.1.5 Emergency Power evacuation sequence timeout

Use this parameter to define the timeout used when evacuating the lifts in a sequence to ensure that the next lift can evacuate even if the predecessor lift does not react as intended or simply does not reach the 'Emergency Power Floor'. You can create a sequence by connecting the output 'Lift arrived at Emergency Power floor' to the input 'Emergency Power enable evacuation' of the next lift.

59.1.6 Emergency Power evacuation delay

Use this parameter to define a time span that has to expire, before the lift drives to the emergency power floor.

59.1.7 Emergency Power, lift stays operational timeout

Use this parameter to define the timeout, used when waiting for one of the other lifts, in the lift team, to enter the '*Emergency Power, lift stays operational*' state. If this timeout expires, without any other lift having reached that state, this lift will stay operational instead, under the conditions of emergency power.

59.1.8 Emergency Power, traveling to floor timeout

Use this parameter to define the timeout used when traveling to the emergency power floor. If the lift does not start within the given supervision time, the operation will be cancelled. In that case the fault '*Emergency Power Trip failed*' is thrown into the logbook.

59.1.9 Emergency Power nominal velocity

Use this parameter to define the velocity (V1..V4) that the drive shall feature if running on 'Emergency Power', regarding limitations of the emergency power supply.

59.1.10 Emergency Power sequence via CANopen bus

Use this parameter to define that the output signal '*Lift arrived at Emergency Power floor*' from the predecessor lift is monitored directly on the CANopen bus, in order to start the 'Emergency Power' evacuation trip for the very next lift in the sequence.

59.1.11 Emergency Stop on Emergency Power activation

This parameter defines if the lift shall do a quick stop (Emergency Stop), if the Emergency Power function has been activated. Otherwise the lift will try to finish the current driving operation to reach the next floor level in the current direction.

59.2 Emergency Power Battery Operation

If the lift is equipped with a battery pack that feed the inverter directly via DC bus or by one single AC phase only, it might be useful to let the lift drive just to the very next floor level and let the drive decide the direction of the lowest resistance, depending on the car/cabin load.

To activate this feature the usage of 'Emergency Power Operation' has to be enabled in the lift controllers parameter and two signals have to be indicated at run time:

- Status/controller signals → Emergency Power activation
- Status/controller signals → Emergency Power Battery Rescue
- Status/controller signals → Emergency Power Battery Rescue Direction

The drive unit has to be informed about this special operating mode. This is usually done via an input on the drive unit itself, signaling that it is now fed directly via DC bus or by one single AC phase only.

The lift controller will deactivate its '*Rotation-Sense Monitoring*' to let the drive choose the direction for entering the very next floor. Via the special input '*Emergency Power Battery Rescue Direction*' the drive might inform the lift controller in which direction it will start evacuating the cabin. If the signal is electrically on, the evacuating direction is downward, it is upward otherwise.

59.3 Emergency Power Items in the Archive (Logbook)

Emergency power operation is documented in its individual steps in the history. From the start of activation, via the trip to the emergency power floor, to the deactivation of the emergency power operation.

Figure 149: Logbook items for Emergency Power Operation

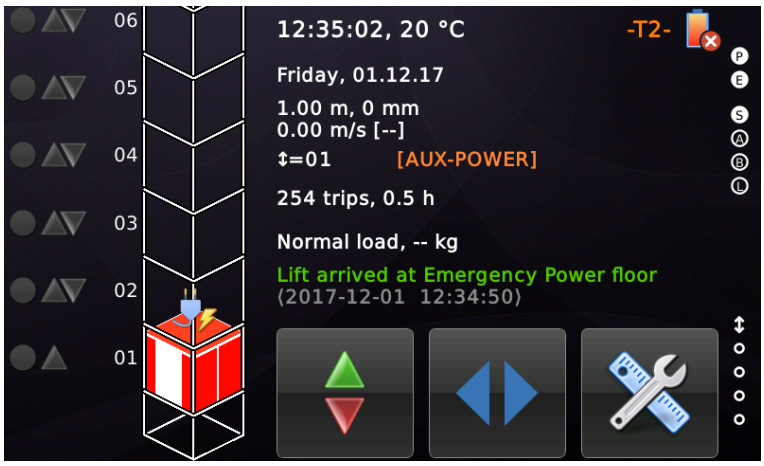


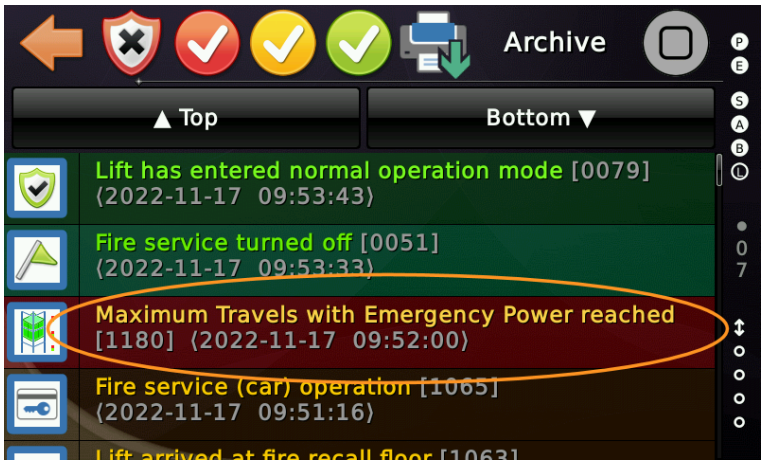
Figure 150: Desktop on Emergency Power Operation

59.4 Emergency Power Maximum Travels

Use this parameter to define a maximum count of travels, that can be done under Emergency Power Mode. This can be interesting when executing Fire Alarm, Fire Service or Rescue/Salvage operation mode, being powered with an emergency or auxiliary power source.

You can find this parameter under 'Settings Menu' → 'Controller/Piloting' → More...' → 'Emergency power' → 'More...'→'Even more...' → 'Emergency Power Maximum Travels'.

If the parameterized trip count has been reached, a warning in the logbook is added and an output is turned on, that can be used to notify the person in the call to return to the recall floor soon.



The dedicated output function is '*Status/controller signals → Maximum Travels with Emergency Power reached*'. This signal is turned on/off together with the warning.

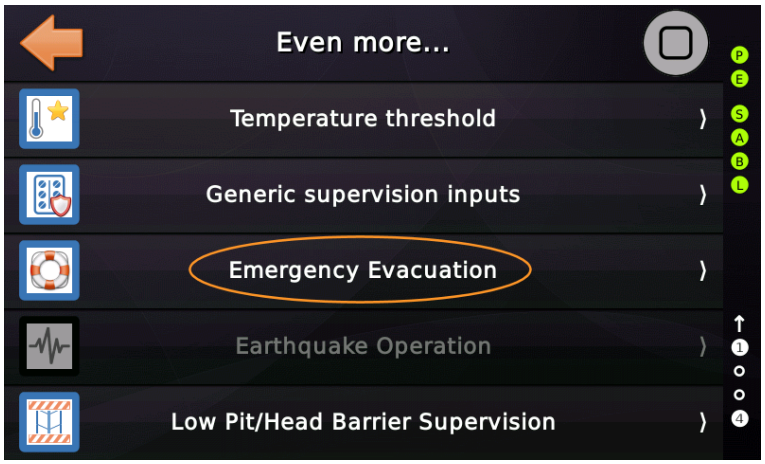
60 Emergency Evacuation Operation

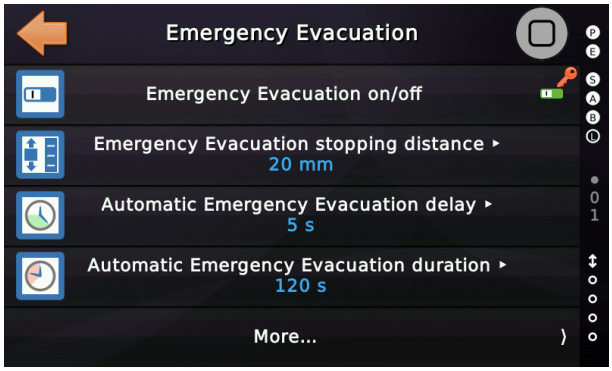
(Manual & Automatic)

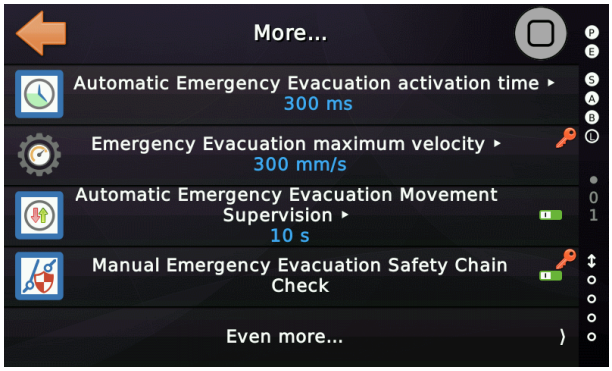
This operating mode is used to move the car to the very next floor by opening the brake and limiting the velocity to 0.3 m/s maximum. Typically the position encoder, the lift controller and the brake system are powered via a backup battery. The drive system (inverter) is usually not powered up.

In order to use the feature it has to be enabled in the lift controller first.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*Controller/Piloting*' → '*More...*' → '*Even more...*' → '*Emergency Evacuation*'.







60.1 Theory of Operation

60.1.1 Manual Emergency Evacuation Operation

The Manual Emergency Evacuation is operated by a technician or a sufficiently skilled person from the lift controller cabinet. First the backup battery power is activated via a switch, that will power up the lift controller, the position encoder and the brake system. This switch will also cut the system from the mains. The input function '*Status/controller signals → Emergency Evacuation, lift x, all floors, all doors*' is activated, when the switch has been put to the '*Manual Emergency Evacuation*' position.

If the lift controller has turned to '*Emergency Evacuation*' operating mode, the output function '*Status/controller signals → Emergency Evacuation Acknowledge, lift x, all floors, all doors*' is turned on to reflect the status.

In the very same moment the '*Drive unit signals → Manual Emergency Evacuation brake enable, lift x, all floors, all doors*' will be peaked up. This enable signal is usually used to feed a push-button that is pressed by the technician in order to release the brake, to move the car. The enable signal is dropped, if the lift's car/cabin exceeds the parameterized velocity, typically but not necessarily 0.3 m/s. If the lift enters the floor level area of the next floor this signal will be dropped as well for three seconds and the doors will automatically open, if possible.

60.1.2 Automatic Emergency Evacuation Operation

The Automatic Emergency Evacuation is operated by the lift controller autonomous. First the backup battery power has to be activated automatically on a main power loss. This battery backup power will power up the lift controller, the position encoder and the brake system. The input function '*Status/controller signals → Emergency Evacuation, lift x, all floors, all doors*' is activated by the battery backup system, when it has been started up and is ready for operation.

In order to use the '*automatic*' variant of this feature, you have to setup the parameter '*Automatic Emergency Evacuation **duration***' to a useful value, like 60 seconds.
The second parameter '*Automatic Emergency Evacuation **delay***' defines the short delay between activating the Emergency Evacuation and opening the brake, in order to move the car.

The output function '*Drive unit signals → Automatic Emergency Evacuation brake release*', that will be used by the lift controller to automatically release the brake, in order to move the car into the next floor level, should be put in series with a contactor, that indicates that the door's safety chain is surely completely closed.

The output will be automatically turned off, if the evacuation timeout has been expired or the lift has reached the floor door zone or (temporarily) if the velocity has exceeded the parameterized velocity, typically but not necessarily 0.3 m/s. In that case the output will be turned on again, when the lift is under the parameterized velocity threshold, using a 0.1 m/s hysteresis.

When the lift has arrived roughly the floor level, it will drop the signal and open the doors automatically in order to release the passengers. To do so, the lift has to be in the door zone and the floor has to have at least one door in the door table, that can be opened.

60.2 Input Functions

- Status/controller signals → Manual Emergency Evacuation, lift x

  This signal activates the 'Manual Emergency Evacuation'.

- Status/controller signals → Automatic Emergency Evacuation, lift x

  This signal activates the 'Automatic Emergency Evacuation'.

▶ Are both input signals active, then '*Manual Emergency Evacuation*' has priority.

60.3 Output Functions

- Status/controller signals → Emergency Evacuation acknowledge, lift x, all floors
  This signal is turned on when the operating mode has been activated and is dropped when the operating mode has been deactivated.

- Drive unit signals → Manual Emergency Evacuation brake enable, lift x
  This 'enable' signal is usually used to feed a push-button that is pressed by the technician in order to release the brake. The enable signal is dropped, if the lift's car/cabin exceeds the 0.3 m/s. If the lift enters the floor level area of the next floor this signal will be dropped as well.

- Drive unit signals → Automatic Emergency Evacuation brake release, lift x
  This signal is usually used to release the brake and is automatically turned on, after the delay time has been exceeded. The signal is dropped, if the lift's car/cabin exceeds the parameterized maximum velocity, typically 0.3 m/s. Be aware that this

velocity threshold can be parameterized to a different value. If the lift enters the floor level area of the next floor this signal will be dropped as well. As this is an automatically generated signal, it will finally be dropped, if the parameterized timeout has been exceeded.

- Vocal messages → Announce lift is in emergency operation, lift x
  This signal is generated once as an impulse, when the emergency evacuation operation is activated and is used to trigger a voice/speech announcement module in the car/cabin.

- Vocal messages → Announcement 'Please leave the lift', lift x
  This signal will be generated once as an impulse, when the lift has arrived at some door zone and is opening the doors for the passengers to leave.

60.4 Emergency Evacuation maximum velocity

This parameter is used to define the velocity threshold used to engage the brake, typically but not necessarily 0.3 m/s. Basically it shall limit the possible velocity, when using the emergency evacuation function. Be careful with this value as it will surely influence the '*Emergency Evacuation Stopping Distance*' as well.

60.5 Emergency Evacuation Stopping Distance

If the operating mode '*Manual/Automatic Emergency Evacuation*' is used to move the car to the very next floor by opening the brake and limiting the velocity to the parameterized value, typically but not necessarily 0.3 m/s, this parameter defines the stopping distance, used to fine-tune the stop position in order to reduce the 'step' between the car and the floor level.

60.6 Manual Emergency Evacuation Safety Chain Check

For the manual variant of the emergency evacuation, there is a dedicated option that defines, if he safety chain is taken in account as a prerequisite to open the brake.

In the case there is no power on the safety chain, the technician has manually to check that all doors have been closed properly, before releasing the brake. This is the same as he/she would manually release the brake mechanically. We always suggest to keep the safety chain alive for this operation mode, but it is not always possible. So use that feature with care.

60.7 Manual Emergency Evacuation Drop Protection

Defines whether a Drop Protection should be activated in the event of a Manual Emergency Evacuation. This option is only available if the Safety Chain check for the Manual Emergency Evacuation operation has also been activated as well.

60.8 Automatic Emergency Evacuation Activation Time

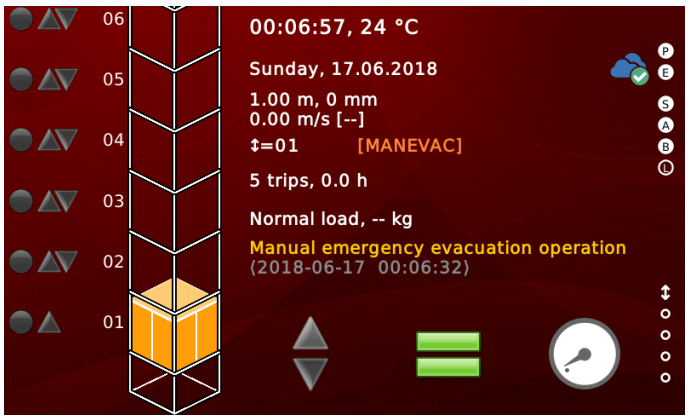
This parameter defines a delay time used to accept the input for turning the lift into '*Automatic Evacuation Operation*'. This might be useful, if the output that triggers this input, may be peaked up for a short time, without the lift being in need to react on it.

60.9 Automatic Emergency Evacuation needs Car Call

This option can be used to define if the automatic evacuation procedure shall not start, before the passenger has pressed any car call button.

60.10 User Interface

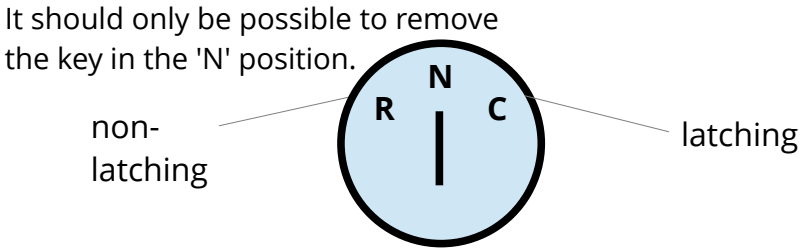
The desktop of the controller will change when the '*Emergency Evacuation Operation*' has been turned on. The background is tinted red and the big buttons at the bottom of the screen have been replaced with three symbols.



	Indicates if the car is moving up, down or is standstill.
	Indicates if the lift is in the door zone or not.
	Indicates if the lift is standstill, moving with a velocity lower or equal the parameterized velocity, typically but not necessarily 0.3 m/s or if the velocity exceeds the given value.

61 Chemical/Hazard Goods Operation

If the lift shall be featured to transport chemicals or other hazard goods without a person being inside the cabin/car, this operation mode is an option. In this operation mode a technician can call the lift to a specific floor via the key-switch being in the '***C**hemical Operation*' position and then load the car and finally close the doors, by dropping the same key switch again. Then using the same key on another floor, he/she can call the lift again to unload the cabin. When finished, the key-switch can be operated to the '***R**eset*' position in order to enter the normal operation mode again.



You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to 'Controller/Piloting' → 'More...' → 'Even more...' → 'Even more...' → 'Further more...' → 'Chemical operation parameter'.

When activating this operation mode, all registered landing calls will be cancelled. The lift will proceed with the current pending or all car calls if any, depending on the setting of the dedicated option.

61.1 Inputs

- Status/controller signals → Chemical transport

  This input signal is used to activate the chemical operation and shall be parameterized using the door and floor, were the key-switch is mechanically mounted. This key-switch position shall be latching. As long as the key is in this position the lift will keep the doors opened to be loaded or unloaded.

- Status/controller signals → Chemical transport reset

  This input signal is meant to be used in order to finally reset the chemical operation and shall be parameterized using the door and floor, were the key-switch is mechanically mounted. This key switch position shall be non-latching.

61.2 Outputs

- Special indication → Chemical transport

  This signal will be turned on for the car and for all floors as long as the lift is in this operation mode.

- Status/controller signals → Chemical transport acknowledge

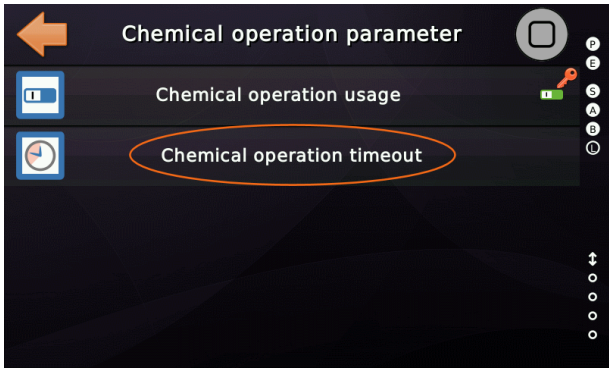
  This signal will be turned on for the car/cabin and for the floor, were the key-switch had been actually activated.

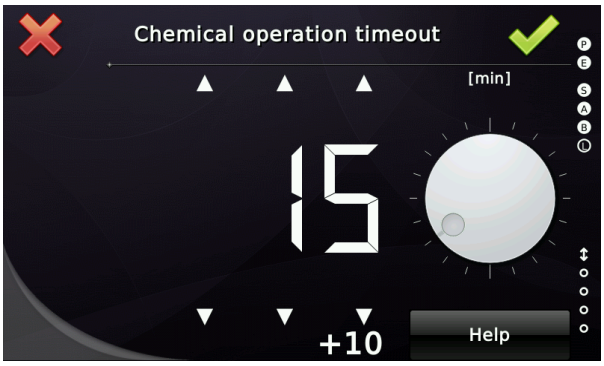
- Status/controller signals → Drive to chemical/hazardous goods operation floor

  This signal will be turned on for the car/cabin and for all floors, when the lift actually starts driving to the first chemical operation floor.

61.3 Timeout

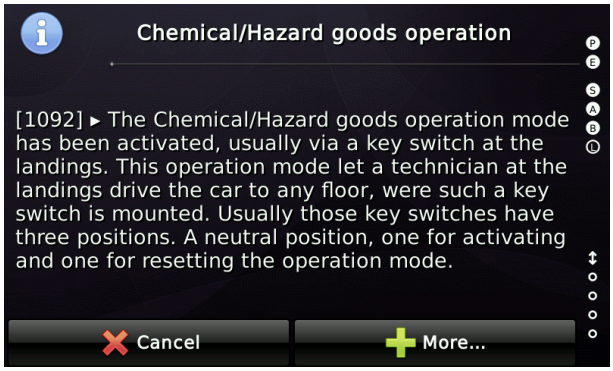
In order to set back the lift to normal operation when the technician has simply forgotten to use the 'Reset' position of the key switch an timeout can be defined.





61.4 Logbook

The activation and resetting of the chemical run are recorded, either regularly by using the key switch in the '*Reset*' position or by the end of the control time (timeout).



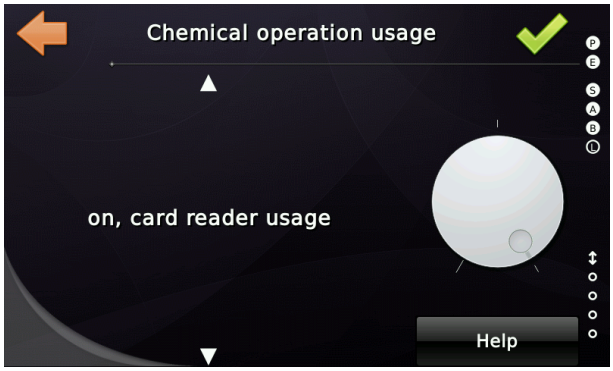
61.5 Variant featuring a Card Reader

A simplified variant of the chemical operation can be implemented with just a single card reader contact per landing. This contact will '*tick*' a state machine from step to step, that will emulate the usage of the 3-state key switch, like so:

1. When using the card the first time, the lift will drive to the given floor and opens the doors and keep them opened.
2. When using the card again on the same floor, the lift will close the doors again and keep them closed.
3. If using the same card reader at the same landing again the doors will re-open.
4. Using the card at another landing will drive the lift to this floor, opens the doors and keep them opened.

5. Using the card reader on that landing again will finally reset the operation.

In order to use that variant of the chemical operation, the parameter used to activate the feature, has to be set to the second possible option, like so:

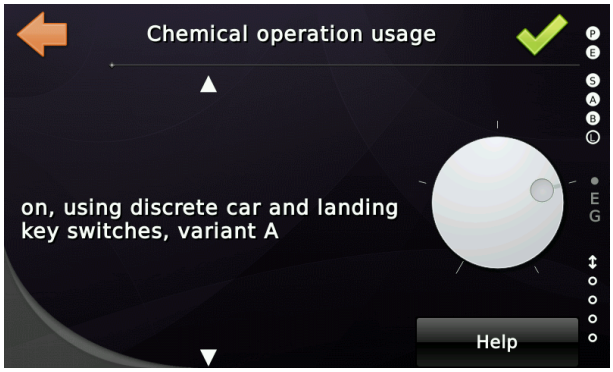


The input function '*Status/controller signals → Chemical transport*' indicating the floor and door side where the card reader is located is used for this variant. The input function '*Status/controller signals → Chemical transport reset*' remains available and could also be used in this variant if required or desired.

61.6 Featuring an In-Car Key and Landing Keys, Variant A

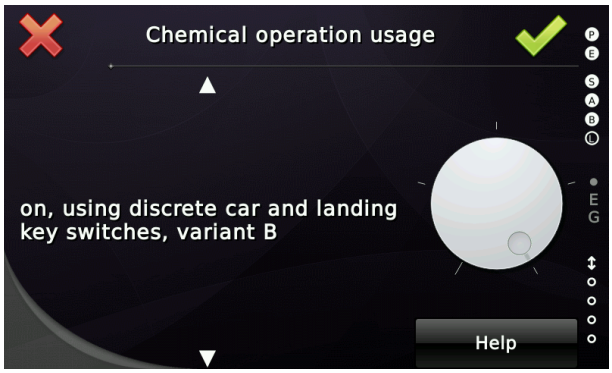
This is a rarely used and extra-complicated variant were you have an additionally In-Car key switch with an '*Off*' and '*On*' position, that are both latching. The key in the car can be withdrawn in either position. For the '*On*' position use this exact input function '*Status/controller signals → Chemical transport, cabin/car, all doors*'.

At the landings a spring loaded 3-state key switch with an '*Off*', '*Call Lift*' and '*Close Doors*' position has to be installed. The key can only be withdrawn in the '*Off*' position. A timeout makes sure, that the passenger has enough time to withdrawn the key at the landings and using the same key in the dedicated In-Car key switch. For the '*Call Lift*' position the input function *'Status/controller signals → Chemical transport, floor x, door y'* is used. For the '*Close Doors*' position, the input function '*Special Function → Request door close, floor x, door y*' can be used.



61.7 Featuring an In-Car Key and Landing Keys, Variant B

This is a rarely used variant were you have an additionally In-Car key switch with an '*Off*' and '*On*' position, that are both latching. The key in the car can be withdrawn in either position. For the '*On*' position use this exact input function '*Status/controller signals → Chemical transport, cabin/car, all doors*'.



At the landings a spring loaded 2-state key switch with an '*Off*' and 'Open/*Close Doors*' position has to be installed. The key can only be withdrawn in the '*Off*' position. For the '*Open/Close Doors*' position the input function *'Status/controller signals → Chemical transport, floor x, door y'* is used.

▶ This variant features car calls to send the lift.

61.8 Notes

1. The car preference will remain non-operational as long as the chemical operation has been activated. The chemical operation can't be activated as long as the car preference has been turned on.

2. The priority calls will remain non-operational as long as the chemical operation has been activated. The chemical operation can't be activated as long as priority calls are still pending.

3. When Fire Recall (Phase 1) is activated while being on Chemical/Hazard Goods Operation, and the doors have **not** been closed, the operation will be cancelled and for 10 seconds the output signal '*Status/controller signals → Fire alarm/service inspection buzzer, lift 1, all floors, all doors*' will be indicated, before the lift is actually starting to the designated floor. Additionally the output '*Vocal messages → Announcement 'Please leave the lift', lift 1, all floors, door A*' will be triggered once.

62 Shuttle Service (Snow Cleaning Operation)

This feature can be used if the lift has to travel once in a while to one end of the hoistway and then the next time to the other end. This might be used for snow cleaning, if the lift in question is an inclining lift or there is the risk of the car freezing to the rails. This function is usually activated via an input terminal.

You will find the feature under 'Settings Menu' → Controller/Piloting' → 'Times & Options' → 'More...' → 'Shuttle Service (snow cleaning)'.

62.1 Options/Parameter

The parameter '*Repeat timer shuttle service*', given in minutes, define how often such a travel is automatically triggered, if the lift is idle and now calls are pending.

62.2 Inputs

- Status/controller signals → Shuttle Service (snow cleaning)

62.3 Outputs

- None.

62.4 Logbook

- Shuttle Service (snow cleaning) activated
  Indicating that the input is enabled, the lift is in the right operating mode and the timer is running.

- Shuttle Service (snow cleaning) turned off
  Indicating that the function has been turned off, due to the current operating state or the input having dropped.

- Driving to Shuttle Service/Snow cleaning floor

The message '*Shuttle Service (snow cleaning) active*' indicating that a shuttle service or snow cleaning operation has been engaged is only written to the list of pending events but not into the logbook, in order to not 'spam' the logbook with those items.

63 Docking Service Operation

The docking service operation is used to level the lift to a truck bed, by manually driving the cab up & down, featuring re-leveling velocity, using constant pressure on the dedicated up and down buttons or simply by using the car calls buttons for that purpose. This operation is used for loading or unloading the cab.

You can find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*Controller/Piloting*' → '*More...*' → '*Even more...*'→ '*Much more...*'→ '*Further more...*' → 'Special Functions' → '*Docking Service*'.

Leveling is usually done with the doors being opened and the door's safeties being bridged, within a defined work space. For this purpose a special contactor is used, that has a supervision contact, to ensure that it can't bridge the safety chain unattended.

It is also highly recommended, that a key switch with two normally open contacts is used. One contact to peak the docking service input high and one contact that then pass the acknowledge output from THOR to that dedicated contactor. Doing it this way, ensures, that the contactor will always drop, if men or machine are in need to turn docking service operation off again. It also ensures that the function can only be turned on in the first place, if men and machine agree to it.

To indicate the direction of movement, dedicated up & down buttons can be used. But it is common practice to feature the existing car call buttons for that purpose, in order to cut costs. By pressing a car call button above the current floor constantly, the lift will slowly drive upwards. By pressing a car call below the current floor constantly, the lift will slowly drive downwards. If there are no more car call buttons above or below, you can simply press the car call button of the current floor instead. On the upper floor that would drive the lift upward and on the lowest floor, that would drive the lift downward.

63.1 Docking Service Contactor Monitoring

The contactor for the docking service operation, that is used to bridge the door contacts needs to be monitored by a feedback input in order to ensure, that the contactor would never hung.

If this feedback signal would be kept in the wrong state, the lift will be blocked.
A simple power-cycle does not unblock the lift.

If the docking service operation is not active the feedback input must be peaked high. If the contactor has been activated in order to bridge the door's safety contacts, the feedback input must be peaked low. To put it into a nutshell, the supervision contact must be a normally closed forcibly guided contact.

63.2 Parameter

63.2.1 Docking Service Operation usage

This parameter defines if the lift shall feature the docking service operation, used to level the lift to a truck bed, with the doors being open.

63.2.2 Docking service workspace

This parameter hold the docking service workspace in millimeter per floor. This is the distance the cab can travel upwards from the floor level position, in order to match the level of a truck bed. This parameter is a table, allowing to define a workspace per floor.

63.3 Docking Service under Fire Alarm/Service

If the fire alarm or fire service is activated during the docking service operation, the output '*Status/controller signals → Fire alarm/service inspection buzzer*' is switched on. This output is usually connected to a horn or buzzer to signal that there is a fire alarm/service request.

63.4 Inputs

- Special Function → Docking service enable
- Special Function → Docking service up
- Special Function → Docking service down
- Optional the car call-buttons can be used to indicate the direction
- Drive unit signals → Docking service contactor monitoring [NC]

63.5 Outputs

- Special function acknowledgment → Docking service enable acknowledge

64 Peak-up/down Operation

The 'peak-up/down' operation is used, if a large group of passengers is in need of transportation to the lower or upper floors, for example when employees enter an office building in the morning or later leave the building in the evening again.

64.1 Activating the feature via the Time Planner

In the given example the 'peak-up' operation will be activated for working days from 7AM to 8AM. The peak floor is floor 2, the lobby or main entrance floor of the office building, in this example.

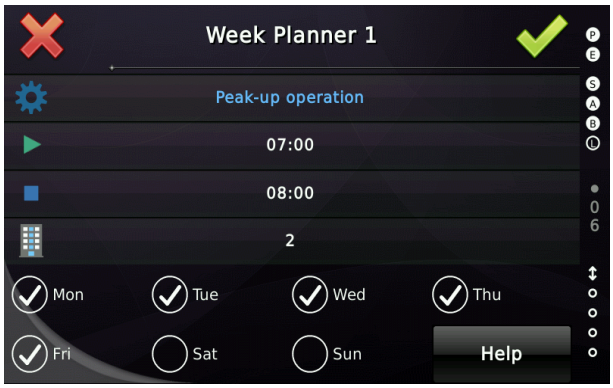


Figure 151: Week planner activating the peak-up operation

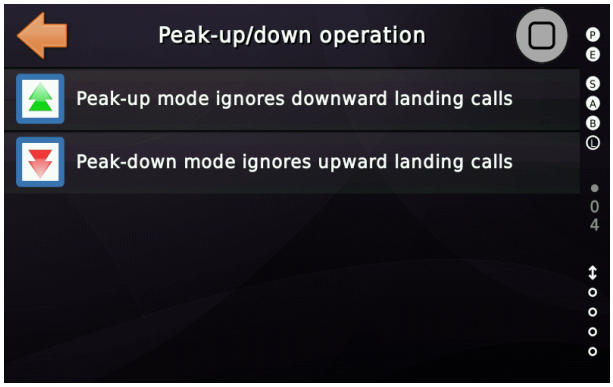
64.2 Activating the feature via input terminal function

When setting up an input function to activate the 'Peak-up/down' operation mode, which is typically triggered by a key switch at the landing, take care to specify a floor, like in this example:

► The inputs indicating peak-up or peak-down operation have precedence over the time planner functions.

64.3 Options

Additionally two more options have been introduced to define if being on peak-up operation, downward landing calls shall be ignored, when the lift travels back to the peak-up floor. The very same for the lift being on peak-down operation, just that in that case, upward landing calls would be optionally ignored.



You can find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*Controller/Piloting*' → '*More...*' → '*Even more...*'→ '*Much more...*'→ '*Further more...*' → '*Peak-up/down operation*'.

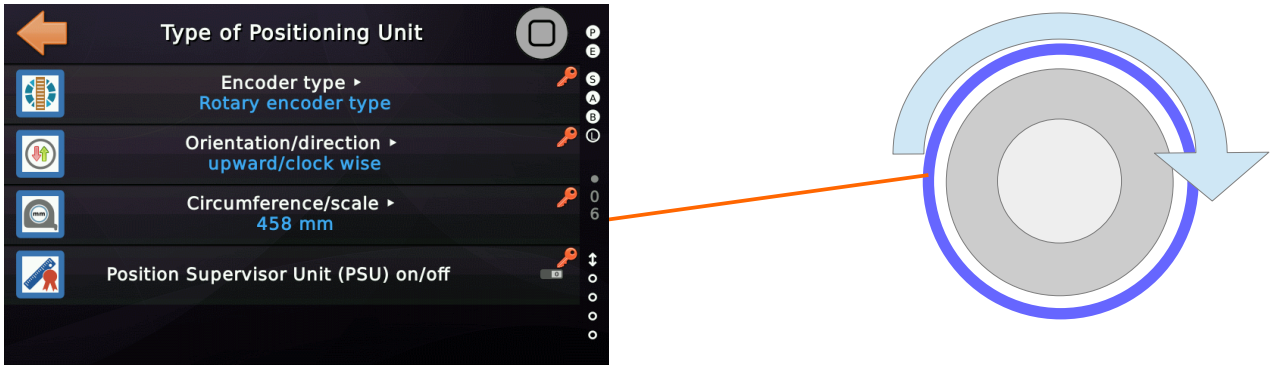
65 Position Encoder

The THOR lift application supports CiA 417 CANopen encoders that are connected to the CAN1 interface, that interconnects the encoder, drive, car load measuring and the cabin/car I/O-panel unit.

Basically there are two encoder types:

- Linearly Encoders (Class 1)
- Rotary Encoders (Class 2)

For rotary encoders, keep in mind to double check the pulley circumference. The default value is 458 mm. The value does not describe the diameter, it describes the perimeter or length=d*π, the value of the blue line in the picture below, given in [*mm*].



The orientation parameter for rotary encoders simply define, if they spin clockwise or counter clockwise in upward direction.

If the encoder seems to operate the wrong way around after being installed, you may check this parameter and change the orientation.

The resolution, typically 1024 increments for a rotary encoder, or 1 or 2 increments for a linearly encoder, is automatically parameterized by THOR via the bus system.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to 'More' → 'Positioning Unit' → 'Type of Position Unit'.

65.1 Note about Class 1 & 2 encoders

For the technician on side the difference may not be important in real life.

The basic difference between class 1 and class 2 encoders is that class 2 encoder can be internally preset to a specific position, like the lowest floor, while class 1 encoders can not. In that case the lift controller does the offset handling.

65.2 Check the encoder after installation

After having the encoder installed, check if the lift controller can 'see' the unit by checking the CANopen node list. To open the CANopen node list, press the 'Favorites' hardware button and go to 'Diagnosis Menu' → 'CANopen Node-List' → 'CAN1 (car)'.

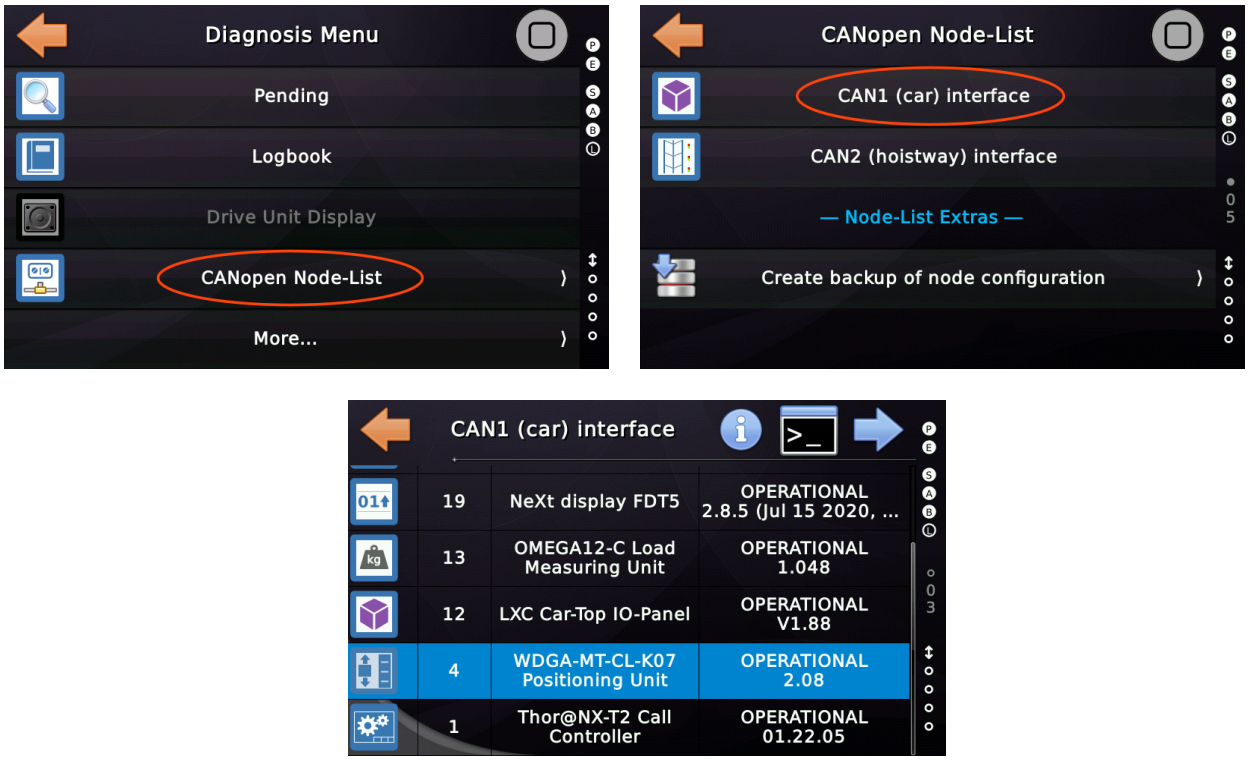


Figure 152: CANopen Node List, showing the encoder

Check that the encoder is 'operational' and therefore should send a position value, even if it is out of range. That will be fixed, if you do a 'Learning Trip' or an 'Encoder replacement' operation.

The encoder usually has node-id 4. The node-id values are not part of the CiA 417 specification but there is a list made by the 'Special Interest Group (SIG) Lifts' that is highly recommended to avoid conflicts.

You find a list of node-id's on the CANopen Lift website here:

http://en.canopen-lift.org/wiki/Node-IDs

65.3 Optional Position-correction (Preset) Signals

Mainly used for inclining lifts, this feature provides two tables (up-/downward) containing the positions to which the special correction (preset) switches trip. This method is typically used if the absolute encoder is mechanically connected to a pulley and has to deal with micro-slip.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*More...*' → '*Positioning Unit*' → '*More...*' → '*Position-correction (Preset)*'.

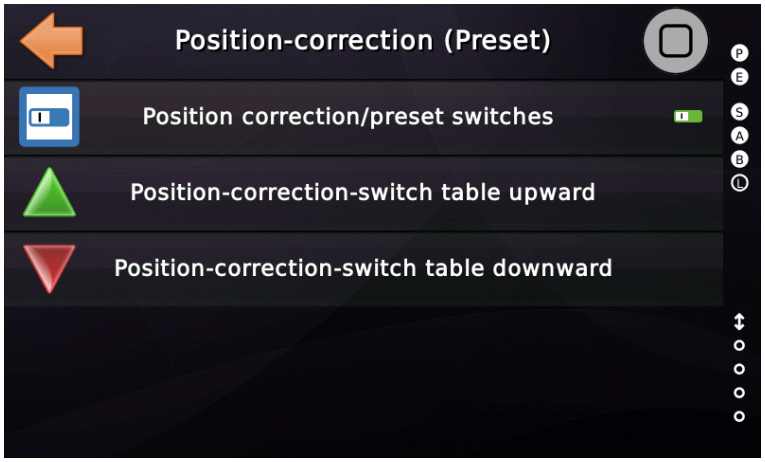


Figure 153: Position-correction (Preset) parameter

There are two separate tables for the series of correction (preset) switches in upward and downward direction.

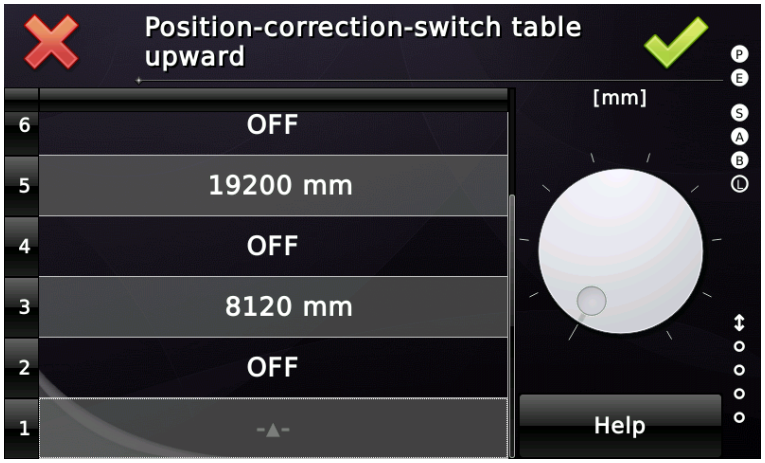
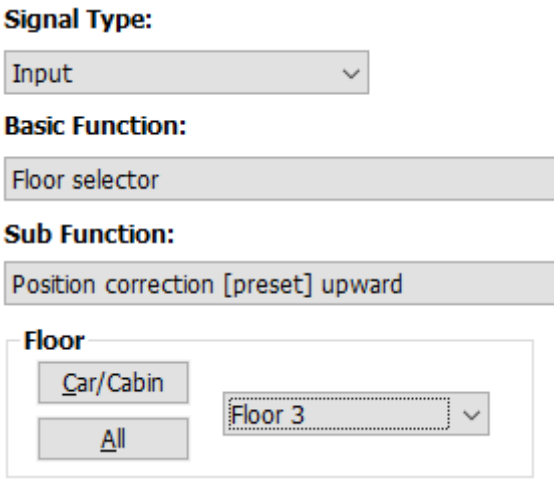
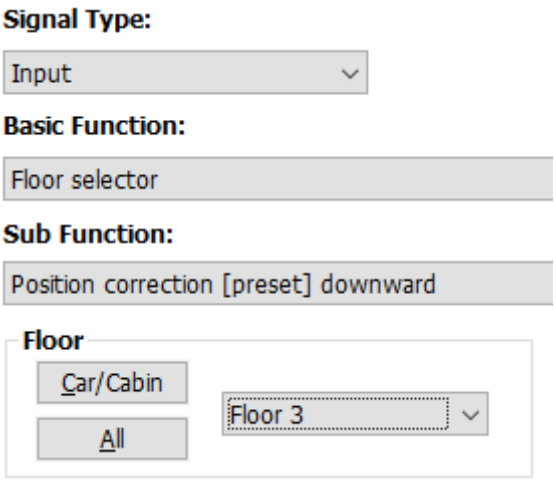


Figure 154: Position correction (Preset) value table [upward]

▶ Floors that do not have position correction (preset) switches are left 'OFF' in the table setup.

65.3.1 Input Signals





The position correction signals preset to the corresponding values in the table, if tripped, with the signal peak-up.

65.3.2 Notes & Hints

When using rotary encoders (Class 2), make sure that the device type used supports a position preset while driving (in motion). Not all of the devices we tested were able to do this. Some transmit no position value after a preset for 100...200 ms, which inevitably leads to an emergency stop of the system.

66 Drives

The THOR lift application supports traction drives and hydraulic drives. The factory default setting is suitable for a CANopen CiA 417 based inverter featuring a motor encoder and powering a traction lift, using an absolute positioning unit for the car.

The following table shows the currently supported drive types and the featured profile mode. The classic or legacy type of drive profile mode is the velocity profile. In that profile the lift controller selects the velocity the drive shall operate and handles braking and minimum driving distances internally. The modern way of controlling drives is called position profile mode. In that operating mode the drive does all the acceleration, driving and deceleration parameter calculation and will usually stop flush-on level, without any creeping independent from the car load.

Another big advantage of the position profile mode is that the technician on side does not have to deal with parameterizing braking or creeping distances nor has to define which velocity to use for which minimum driving distance.

Traction Drive Type	Profile Mode
Two-speed drive	Velocity Profile
Frequency drive (inverter) controlled via terminals	Velocity Profile
DCP drive (inverter) unit	Velocity Profile / Position Profile
CANopen frequency drive (inverter) via CiA 417	Velocity Profile / **Position Profile**
Emulated drive unit *1)	Velocity Profile

*1) Only for Training Boards, running '*on a desk*' rather than a real lift installation.

Hydraulic Drive Type	Profile Mode
Unregulated hydraulic drive unit	Velocity Profile
LRV made by Bucher Hydraulics	Velocity Profile
LRV/iValve made by Bucher Hydraulics	Velocity Profile
LRV/iCON made by Bucher Hydraulics	Velocity Profile / Position Profile
NGV made by GMV/Oildinamic	Velocity Profile
NGV A3 made by GMV/Oildinamic	Velocity Profile
SEV made by Blain Hydraulics	Velocity Profile
AZRS/FR/MR made by ALGI Hydraulik-Systeme	Velocity Profile
GMV3010 made by GMV/Oildinamic	Velocity Profile
CANopen CiA417 Hydraulic Drive	Velocity Profile

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to 'More' → 'Drive Unit'.

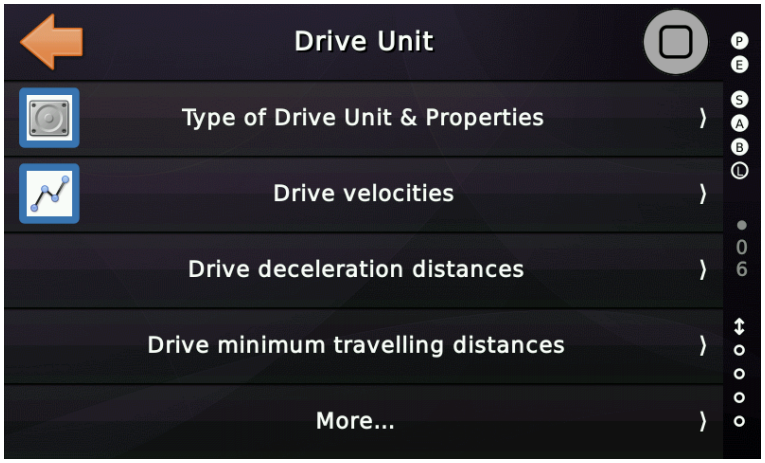


Figure 155: Drive unit settings

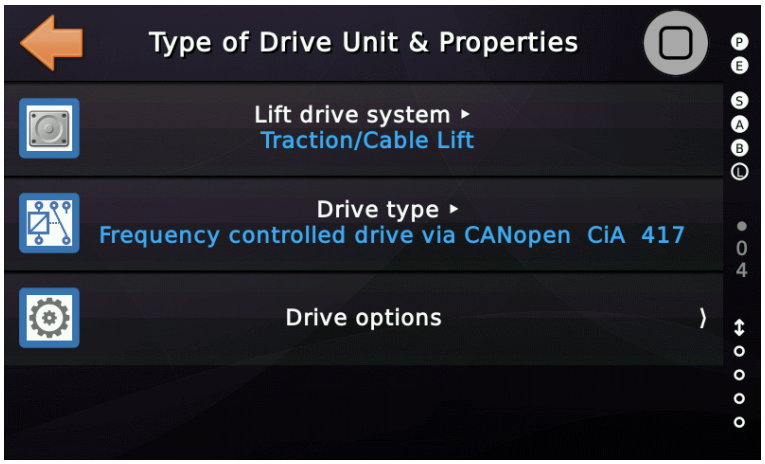


Figure 156: Type of Drive Unit Parameter

66.1 Lift Drive System

This object defines the basic drive system, like hydraulic lift or traction/cable lift.

66.2 Drive Type

This object defines the type of the drive unit used to operate the traction or hydraulic lift. See the table 'Traction Drive Type' and 'Hydraulic Drive Type' on the page before for possible settings.

66.3 Drive options

These are parameters that define the used profile, signal mapping and supervision.

Figure 157: Drive Options

66.4 Drive unit control enable signal (rarely used)

This parameter defines if an external signal (*an input seen from the THOR controller*) is used in order to enable the drive unit control output signals, used to select direction and velocity. If the drive features such an output signal, it is usually powered on by the drive shortly after the lift controller has fired up the main contactors.

66.5 Terminal Mapping

If having selected a classic terminal driven drive type, the mapping of the terminals might be modified to suit the given brand.

66.6 Drive Mode

If having selected a drive type that can run on velocity profile or modern position profile mode, the preferred mode can be setup here. Usually for CANopen and DCP4+ drives, '*Position Profile Mode*' is chosen.

66.7 Drive Afterrun Time

This parameter defines a short delay, that the drive and brake will be kept going, after the direction and velocity signals have been dropped. That makes it possible for the drive unit to do the last bit of stopping electrically. For a classical terminal (parallel) driven inverter, using the default output functions for K11...14, the direction K11/12 will be dropped together with the velocity signals (*Drive unit signals → Drive unit control*

signals 1..10), while the drive/brake signals K13/14 are kept on. If you are in need of the same for a 2-speed drive, that requires a kind of additional enable signal, which is to drop out with a delay, after the actual main contactors (direction/speed) drop out, the signal '*Drive unit signals → Drive/Enabled*' can be used. For example, if the time were set to one second, the signal would continue for that second after the main contactor dropped out.

66.8 Brake drop/close delay time

This parameter defines the time used to delay the moment, when the brake is dropped/closed after stop. Setting up this time might be useful, if the '*zero speed*' or '*target reached*' indication from the drive comes a bit early. This will prevent the brake from closing, when the mechanical drive system has not quite stopped yet.

66.9 Contactor Supervision

Because of more and more inverter units being 'contactorless' units, this parameter is more in the focus than it was in the past. This parameter defines how the main contactors are monitored. If the drive unit in question is a contactorless model or controls the main contactors internally, the contactor supervision can be done in the drive unit. In that case the lift controller may not or just monitor turning off the contactors. On classic drive units, the lift controller directly turns the main contactors on and off and therefore has to monitor the proper working of them.

These are the possible values for this setting:

- Contactor stuck supervision [**default**]

  The classic way of monitoring the contactors working properly. After the lift has stopped, the supervision input has to indicate, that the contactors have turned off and do not hung or are stuck in any way.

- Full contactor supervision (on/off)

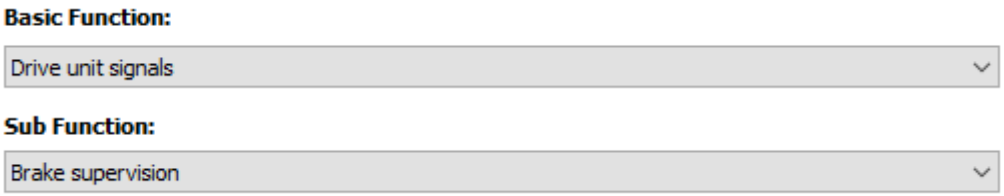
  Beside checking that the contactors are turned of after stop, the lift controller also checks via the supervision input that the main contactors have been turned on when the drive starts. This might not always be possible, if extra safety elements have been added beyond the 'visible safety chain' or if the supervision input does not directly come from the contactors, but from a drive unit having the contactors 'inside the drive's box'.

- No contactor supervision

  Be careful if turning the contactor supervision off. You might do that if the drive unit or inverter is a contactorless unit and simply does not have classic main contactors anymore.

66.10 Brake supervision (Drive brake)

This parameter defines if the lift features supervision of the brake contactors or contacts. Select the count of supervision signals and use the input function(s) proposed below...



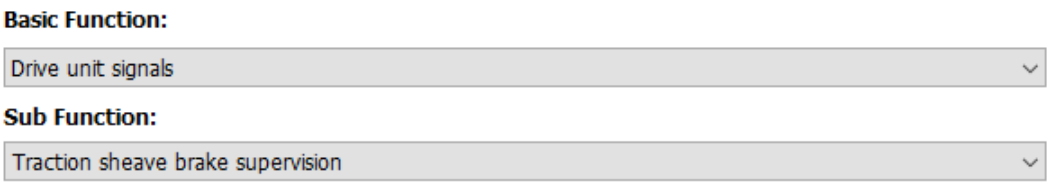
Use '*Drive unit signals → Brake supervision*' for the first and '***Second*** *brake supervision*' for the second and '***Third*** *brake supervision*' for the third monitoring contact and so on.

These supervision input signals are meant to be used for the drive brake supervision. In order to supervise a traction sheave brake, a designated input function is available.

If having selected more than one supervision signal, all of them must be in the right state within a plausible time-span to allow normal operation.

66.11 Traction Sheave Brake Supervision

If the lift features a separate traction sheave brake, a designated input may be used to supervise that unit by the lift controller.



▶ The input shall be 24V if the brake is blocking the sheave and the lift is not driving. As this input is a supervision input, there is **no** need for inverting the input in logic.

66.11.1 Traction sheave brake supervision time

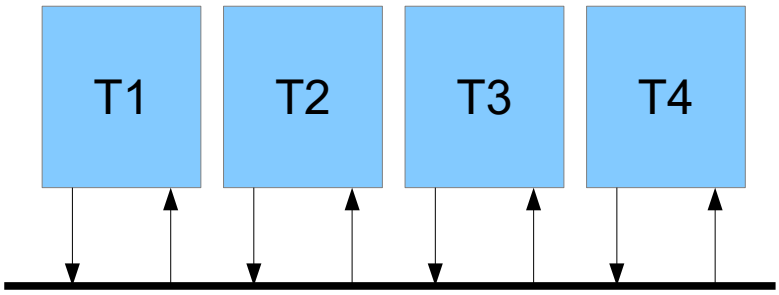
This parameter defines the supervision time for monitoring a separate traction sheave brake, that is checked via an input by the lift controller. When the lift has stopped this supervision input shall peak up again, when the brake has been released.

66.11.2 Traction sheave brake inspection policy

This parameter defines, if the lift can be driven with inspection or emergency electrical operation, if the sheave brake supervision has been tripped before.

66.12 Lift/Drive start interlocking

This feature is used to interlock the start of several lifts at the very same time by connecting one output and one input signal from every lift to the very same line. The lift will only start when the line is low. For the output signal a timeout can be defined. When the lift stops again before the timeout has been expired, the output is dropped as well.



- The input function used would be:
  Drive unit signals → Lift start interlock

- The input function used would be:
  Drive unit signals → Lift start interlock indication

You will find the options by pressing the hardware button 'Favorites' and then go to 'Settings' → 'More...' → 'Drive Unit' → 'More...' → 'Even more...' → 'Lift/Drive start interlocking'.

66.12.1 Drive/Motor Fan

The drive or motor fan can be controlled using the output function '*Drive unit signals →*

Motor fan'. You may want to parameterize an afterrun time for the signal, so that it is not immediately dropped with the drive having stopped. You find that timer following '*Settings Menu → More... → Drive Unit → Type of Drive Unit & Properties → Drive options → More... → Motor fan afterrun time*'.

66.13 Rope Brake (Rope Gripper)

If an external circuit is used to trigger a rope brake (rope gripper) in an UCM situation, this supervision function is used to supervise the functionality of that circuit.

You find the options for turning the *Rope Brake External Circuit* feature 'on/off' in the menu under 'Settings Menu' → 'More' → 'Drive Unit' → 'More' → 'Even more' → 'Further more' → 'Rope Brake external circuit usage'.

66.13.1 Schematics

The external Rope Gripper circuit will trip the rope brake, if the car leaves the door zone with the safety chain (doors) not being closed, by detecting the door zone signal peaking down. The door zone signal is created from two independent door zone channels. One channel is coming directly from a solenoid or fork light barrier. The other channel is an output from the lift controller, indicating being in the door zone via the data from the absolute position encoder.

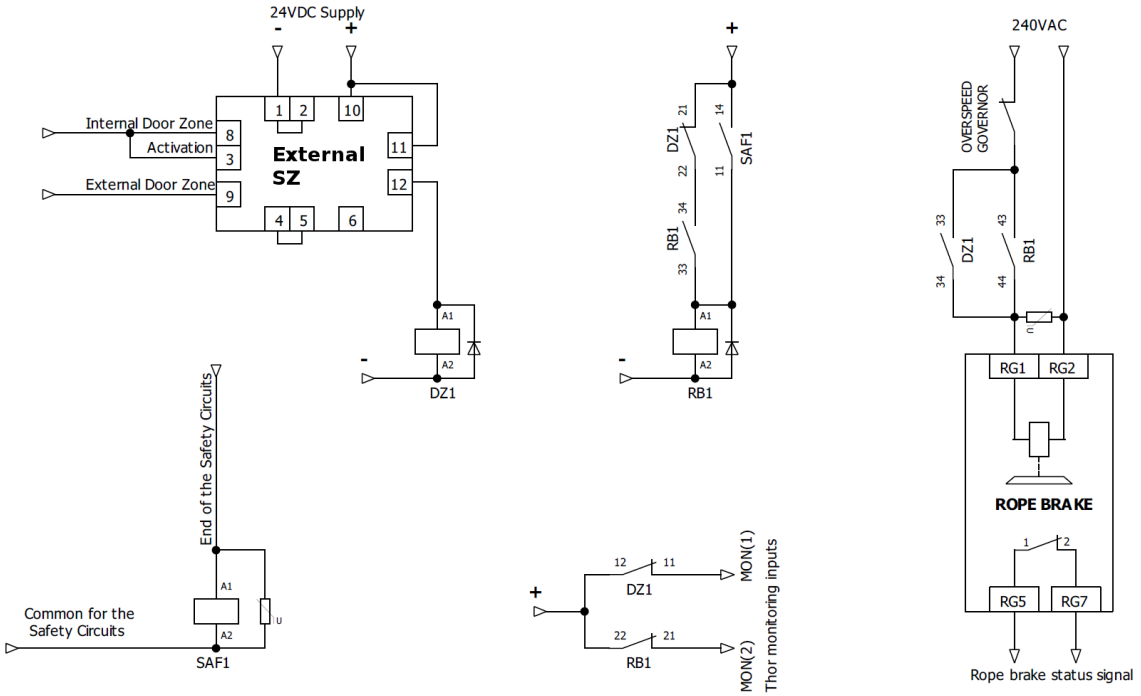


Figure 158: Rope Gripper Schematics

66.13.2 Input functions

There are three supervision input signals in the schematics above, used for monitoring the correct operation of the Rope Gripper tripping circuit.

- Rope Brake, door-zone contactor supervision - *MON(1)*

  This is the supervision signal for the contactors, that reflect the status of the two door zone channels. This supervision signal is normally peaked high, if the car has left the door zone and will be dropped again, when the lift arrives at the door zone. This signal shall be a logical 'AND' of both door zone channels. It might be the result of a safety circuit, testing that none of the channel is 'hung' as well. If the lift controller detects that the door-zone contactors do hung, it will block the lift with the fault 'Rope Brake door zone contactor supervision [2229]'.

- Rope Brake safety chain contactor supervision - *MON(2)*

  This is the supervision signal for the contactor that reflect the status of the end of the safety chain. This supervision signal is normally peaked high, if the safety chain has been opened within the door zone. The signal will be peaked low, if the end of the safety chain is closed or has been opened but with the car being already out of the door zone. If the lift controller detect that this contactor is hung, it will block the lift with the fault 'Rope Brake safety chain contactor supervision'[2230].

- Rope Brake status indication – *RG5/RG7*

  This status signal shall be peaked high as long as the rope gripper has not being tripped. If the lift controller detects the rope brake having tripped, it will throw the fault 'Rope brake (gripper) has tripped [2228]' into the log book and block the lift non-volatile.

66.13.3 Output functions

- Lift status indication → Car in door zone indication

  This output signal is one channel for the safety circuit, representing the door zone channel, derived from the absolute position encoder data.

66.14 Automatic cyclic main brake test

Some brake systems need a cyclic automatic test in order to fulfill their certifications. Typically they have to be tested once a day. You can use the Time Planner to more exactly define when the test shall be done or you simply use the available cyclic timer, defining the time span in between two automatic brake tests in hours.

The automatic brake test should not be confused with the Brake Test-Assistant, that can be found in the Service & Assembly menu, in which the lift is accelerated and brought to a stop with one side of the brake at a time. The **Automatic Brake Test**, on the other hand, is carried out when the **car is stationary** at a floor and only checks whether one side of the brake is able to **hold the car in position**. The lift will always ensure, that the test is only performed when being idle. While performing the test, landing calls will be registered but put on hold, until the test has been finished.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*More...*' → '*Drive Unit*' → '*More...*' → '*Even more...*' → '*Further more...*' → '*Brake Testing*' → ' *Automatic cyclic main brake test*'.

66.14.1 Parameter & Options

66.14.1.1 Automatic cyclic main brake test usage

Simply defines, if the lift is using this feature or not. By default this parameter is off and the related parameters are grayed out.

66.14.1.2 Automatic brake test repeat timer

This parameter is only useful if the Time Planner is **not** used to trigger the test. In that case this cyclic timer will trigger the test in a fixed time span regularly. If car calls are still pending, the lift will simply wait to be idle again and then perform the test.

66.14.1.3 Automatic brake test floor

You can either define a dedicated floor for performing the brake test or set the parameter simply to '*off*' indicating, that the test can be performed at any floor, were the car currently is.

66.14.1.4 Trigger automatic cyclic main brake test

This item can be used to trigger the test manually, in order to check its function.

66.14.2 Inputs

The inputs for the brake supervision, like '*Drive unit signals → Brake supervision [NC]*' are used to detect, that the brake is opening for real, while performing the test.

Additionally the input '*Status/controller signals → Brake test circuit supervision [NC]*' is used to ensure, that the contactors involved in the braking test, all drop again, once the test has been finished and are not engaged by mistake, when the lift is **not** performing such a test. You have to turn this supervision feature on, in order to make use of it.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*More...*' → '*Drive Unit*' → '*More...*' → '*Even more...*' → '*Further more...*' → '*Brake Testing*' → '*Brake Test Circuit Supervision*'.

66.14.3 Outputs

- Drive unit signals → Automatic brake testing indication

  This output is turned on as soon as the test operation starts, including the time, when the lift is driving to the testing floor, if one has been defined. This output is turned off again, if the test has been finished or cancelled - for a start when registering a car call, while the lift is still driving to the dedicated testing floor, if one has been setup.

- Drive unit signals → Automatic brake test running

  This output is turned on, once testing of the brake pads starts. The output is kept on as long as the brake pads are tested.

- Drive unit signals → Test brake module

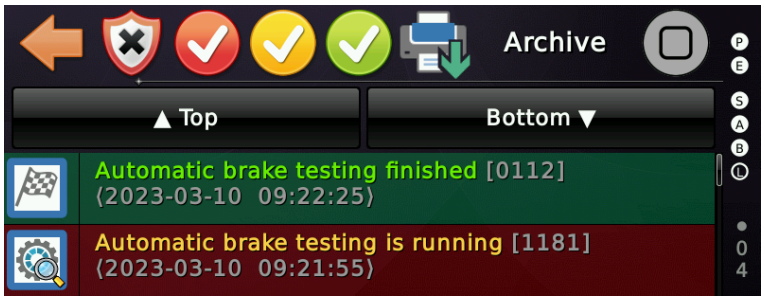
  This output is turned on, when the test starts to power the outputs '*Drive unit signals → Test brake 1 [A], Test brake 2 [B], Test brake 3 [C] and Test brake 4 [D]*'.

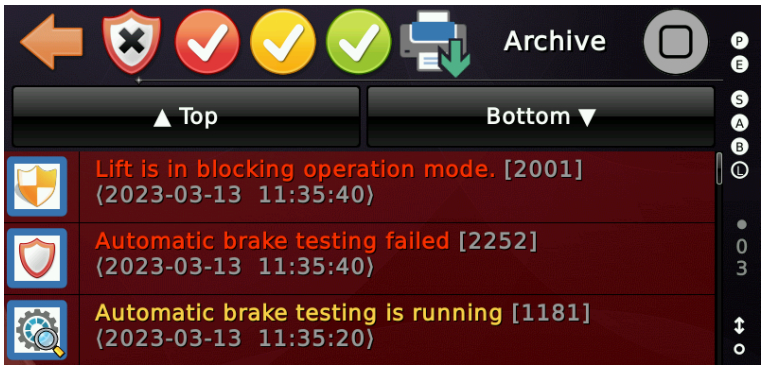
- Drive unit signals → Test brake 1 [A] ... Test brake 4 [D]

  These outputs are used to open the brake pads. So in the case the drive would have four brake pads, then B/C/D would be powered in order to check brake pad A, that stays closed and shall keep the lift in position.

66.14.4 History/Logbook

If the test is successful, the information about the start and end of the test can be found in the history of the lift controller. If the test fails, the lift will enter the Blocked Operation Mode.





66.15 Automatic cyclic safety gear test

Some safety gear systems need a cyclic automatic test, in order to fulfill their certifications. The test will usually check if the solenoid would be able to push out the bolt, that will engage the safety gear. Typically they have to be tested once a day, when the lift is stationary at some floor and no calls are pending. You can use the Time Planner to more exactly define when the test shall be done or you simply use the available cyclic timer, defining the time span in between two automatic tests.

You find the related parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then further to '*More*...' → 'Drive *Unit*' → '*More*...' → '*Even more*...' → '*Further more*...' → '*Automatic cyclic safety gear test*'.

66.15.1 Parameter & Options

66.15.1.1 Automatic cyclic safety gear test usage

Simply defines, if the lift is using this feature or not. By default this parameter is off and the related parameters are grayed out.

66.15.1.2 Automatic safety gear test repeat timer

This parameter is only useful if the Time Planner is **not** used to trigger the test. In that case this cyclic timer will trigger the test in a fixed time span regularly. If car calls are still pending, the lift will simply wait to be idle again and then perform the test.

66.15.1.3 Trigger automatic cyclic safety gear test

This item can be used to trigger the test manually, in order to check its function.

66.15.2 Inputs

The inputs for the detecting that the bolt has actually moved in the correct position, when cutting the power to the solenoid, that holds the bolt, would be:

- Status/controller signals -> Safety gear supervision input 1, car, all doors [left/first brake]
- Status/controller signals -> Safety gear supervision input 2, car, all doors [right/second brake]

66.15.3 Outputs

- Drive unit signals -> Automatic safety gear Test, car, all doors

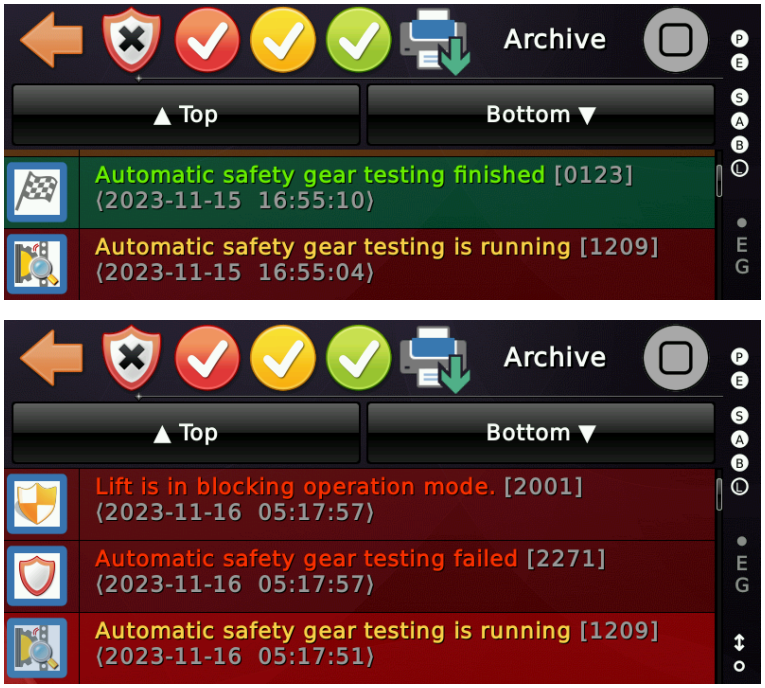
  This output is used to drop the holding solenoid. The output therefore controls an NC (normally closed) contact, typically via a small contactor. If an ELGO33CP is used, the normally closed contact must be chained in series before the **SG_POW** input. This is important because the ELGO 33CP monitors the coil impedance of the solenoid.

- Drive unit signals -> Automatic safety gear Reset, car, all doors

  This output is used to activate the second solenoid (reset coil), used to move the rod back into the original position.

66.15.4 History/Logbook

If the test is successful, the information about the start and end of the test can be found in the history of the lift controller. If the test fails, the lift will enter the Blocked Operation Mode.



67 Drive Curve, Distances & Deceleration

If using a modern position profile driven system, the technician has usually not to deal with minimum driving distances or deceleration distances. But if using a classic velocity driven system, these values have to be setup.

To provide help with this task, Thor has two dialogues. Press the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'More...' → 'Even more...' to find them.

67.1 Distances & Deceleration

This dialog provides an easy way to drive the lift to different floors and look a the recorded values for the minimum driving distance and deceleration distance.

Figure 159: Distances & Deceleration dialogue

67.1.1 Classic Velocity Profile

In this profile the lift controller defines the velocity to drive and the deceleration and stop points to use.

The minimum driving distance is the distance the drive requires to use a given velocity. This includes the distance used to accelerate and a short distance of constant driving. The lift controller will add the '*minimum driving distance*' and the '*deceleration distance*' and compare the result against the distance to drive, in order to reach the given floor. By doing this comparison the controller makes the decision, which velocity [V0...V4] to actually use to drive to the given floor.

67.1.2 Modern Position Profile

If featuring position profile mode, the drive system calculates the travel curve. The controller always specifies the permissible nominal speed in the respective operating mode used for traveling. Drive and controller handshake the target in order to start. The drive provides the '*control effort*' continuously (*the distance required to stop again)* used by the controller to determine the next floor a call could still be caught.

▸ There are a few inverters on the market that may calculate a travel curve without any constant traveling on shorter distances, when the lift has a high permissible nominal speed. Starting with V1.37.08 you will find an option, right next to the parameter that let you select the profile mode, that will make use of V3...V1 instead of V4, when it can be estimated, that no constant travel for 3 seconds is possible.

67.2 Drive Curve View

The drive curve view provides the recorded velocity data, sensed via the absolute positioning system, over the time as a diagram.

Press the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'More...' → 'Even more...' → 'Drive curve view' to open the dialog.

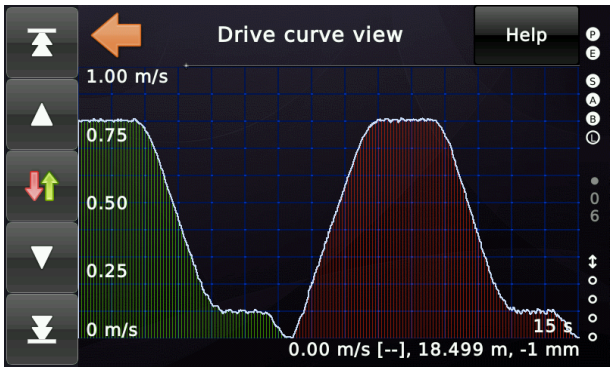


Figure 160: Drive curve using velocity profile with creeping

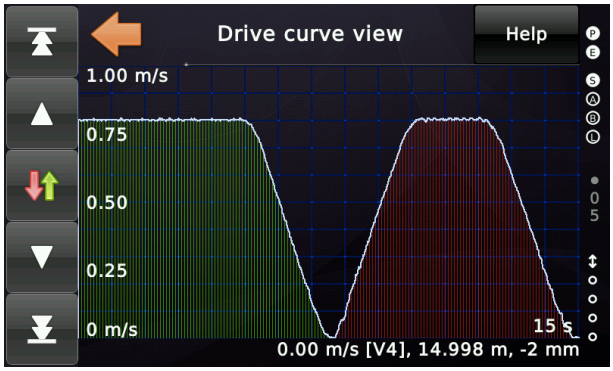


Figure 161: Drive curve using position profile without creeping

68 Quick-Start Operation

The Quick-Start feature is used to reduce the time-span the drive needs, after having the doors closed and locked, to actually start the lift going.

To implement this, the safety circuit (SZ) is used to bridge the doors, while they are still closing, in the same way as a re-levelling procedure would do it.

For traction lifts, this procedure includes opening the brake and keeping the cabin in balance with velocity 0 mm/s.

On hydraulic lifts the Quick-Start feature may be used as well in order to create hydraulic oil pressure, while the doors are still closing.

To ensure the doors are fully closed and locked and therefore the safety chain is completely closed, an extra Quick-Start relay cuts the line between the SZ output (*safety circuit, used for powering up the end of the safety chain*) and the landing door-lock input. If the lift controller can be sure about a fully closed/locked door, then it can drop the relay and afterwards the SZ, without dropping the main contactors or STO.

You can enter the related Quick-Start parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Drive Unit' → 'More' → 'Quickstart'.

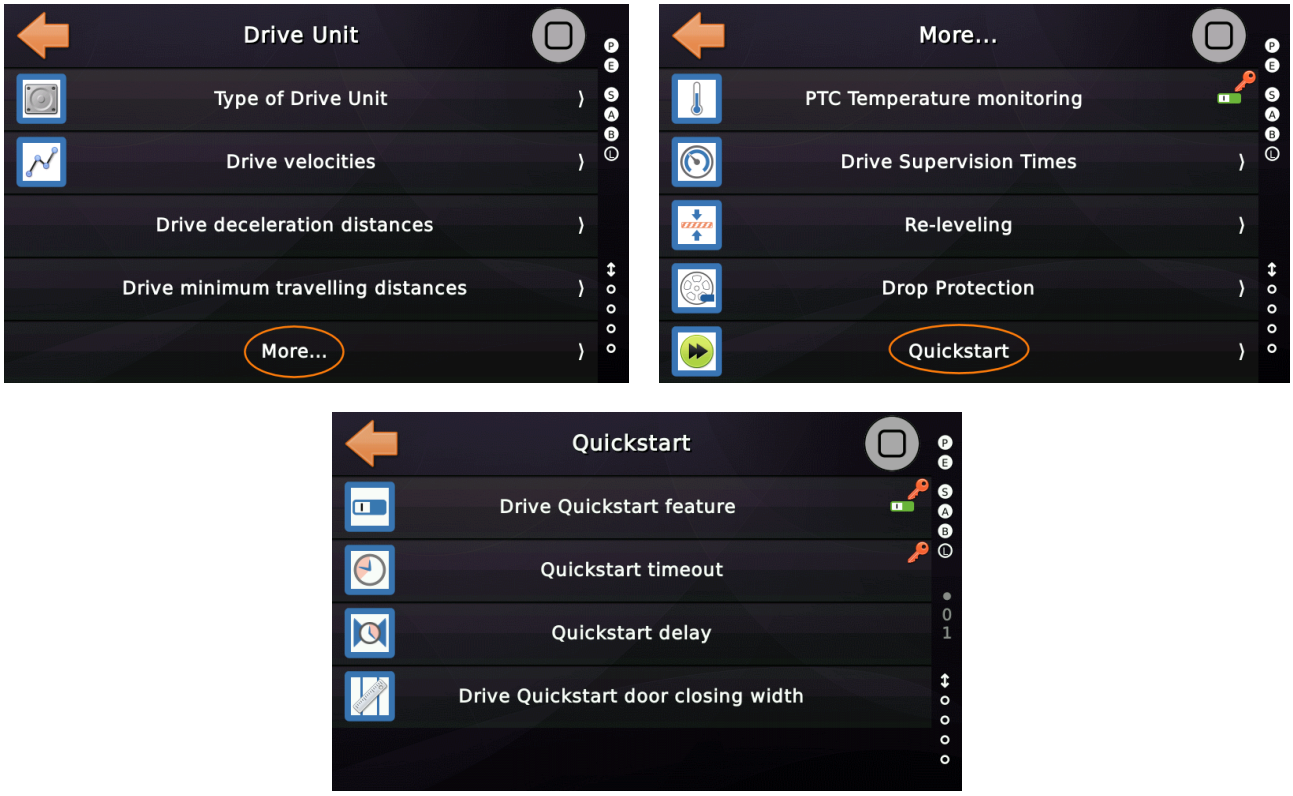


Figure 162: Quick start parameter

The lift controller will do a normal start, if the Quick-Start has been interrupted by door-reopening or light-curtain interruption too often.

The timeout for Quick-Start operations can be configured. The default value is 10 s.

You find the options for turning the Quick-Start Feature 'on/off' and setting the timeout for being continuously on Quick-Start operation, in the menu under 'Settings Menu' → 'More' → 'Drive Unit' → 'More' → 'Quickstart'.

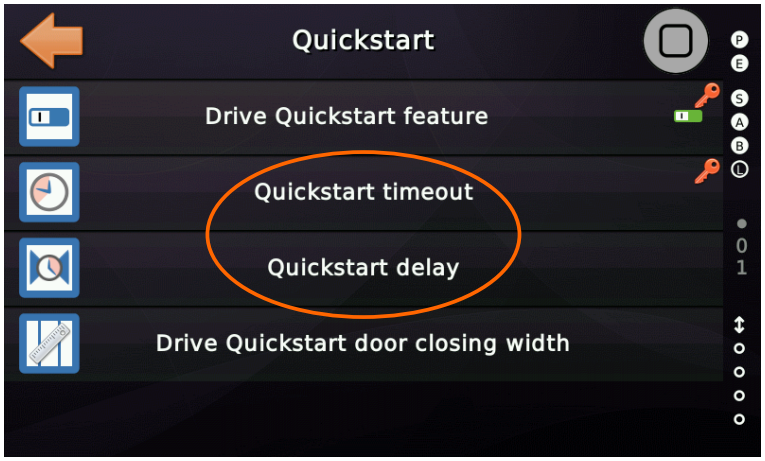


Figure 163: Parameter for the Quick-Start Timeout

Figure 164: Default Quick-Start timeout

68.1 More Quickstart Parameters

68.1.1 Quickstart delay

Figure 165: Parameter for delaying the Begin of the Quick-Start

This parameter defines a delay time, starting with the doors closing, before the quick start sequence will be engaged and the drive is powered up, while the doors are still closing.

68.1.2 Drive Quickstart door closing width

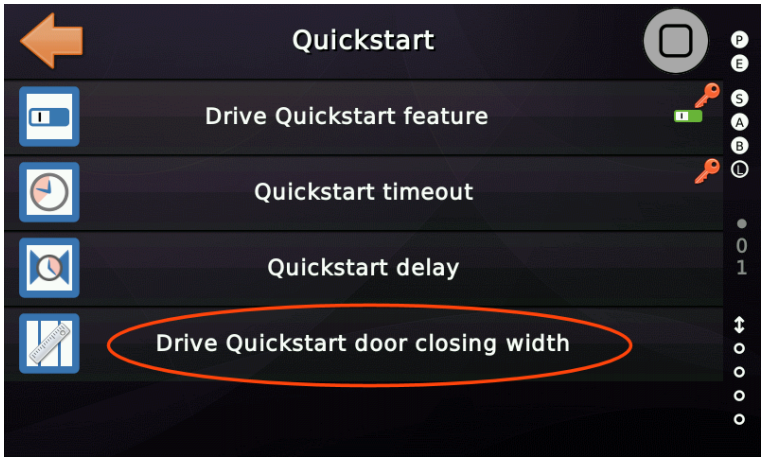


Figure 166: Door close width required for engaging the Quick-Start

This parameter defines how wide the doors have to be closed, before the quick start sequence will be engaged and the drive is powered up, while the doors are still closing. To use this feature a CANopen door machine is required that is capable of transmitting the door opening width via the bus system.

68.2 Block Diagram

This basic diagram shows how the safety circuit (SZ), the Quick-Start-Relay and the Safety Chain Inputs do work together.

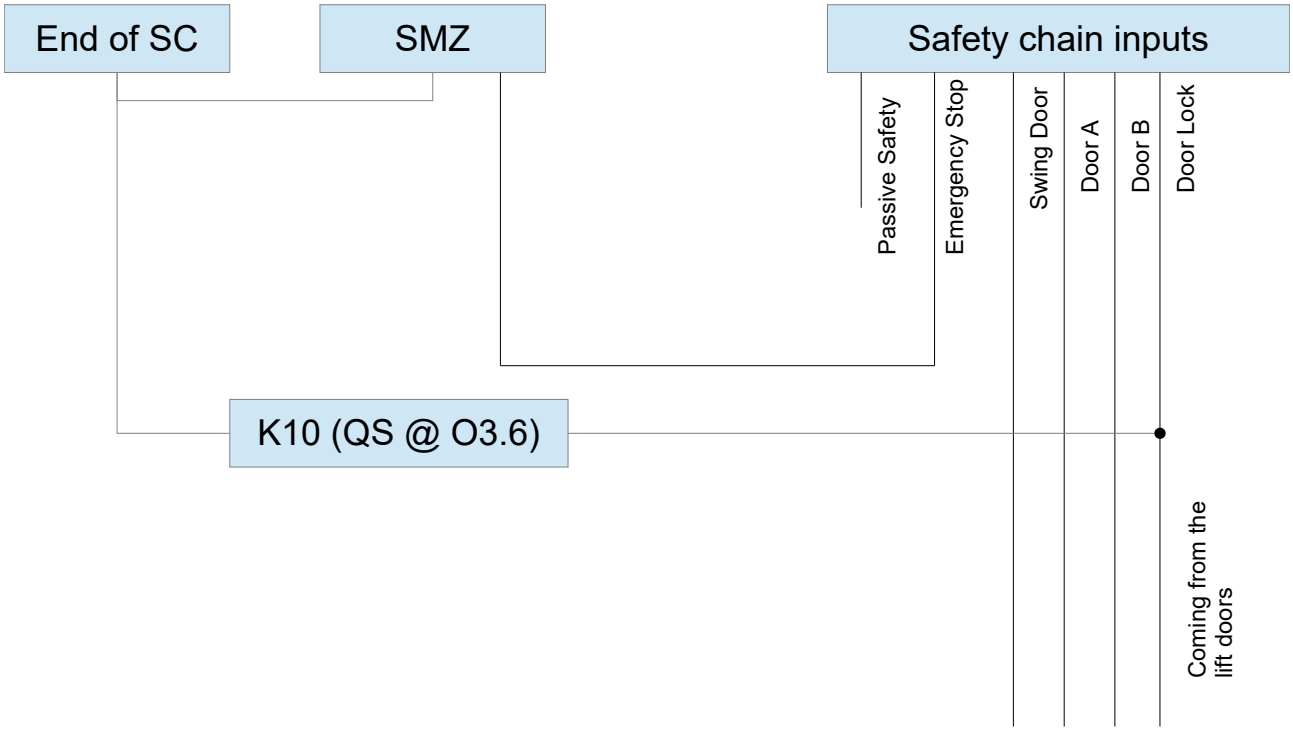


Figure 167: Quick-Start Block Diagram

In order to use the Quick-Start feature, you have to include the K10 (QS) relay in between the end of the safety circuit and the door lock safety chain input.

If adding the required wiring, turn the controller off. The safety chain operates usually with 230V AC.

68.2.1 Theory of Operation

If operating a quick-start the lift controller will activate the safety circuit (SZ) in the very same way as for re-levelling. The relay K10 will drop while doing a quick-start, so the door lock input will not be fed with 230VAC (backwards), when the SZ is activated. That means that the drive can start but the lift controller still can '*watch*' the doors being closed and locked.

If the doors are spot on (closed & locked), the lift controller will activate K10 again (*close the line between the end of the safety chain and the door lock input*) and then drop the SZ, while keeping the main contactors active. The lift can now start driving.

68.3 Quick-Start Relay at the SB-Board

You find the Quick-Start relay contacts right to the end of the safety chain left-bottom, if you have the unit landscape. On portrait mode, it would be left-top then.

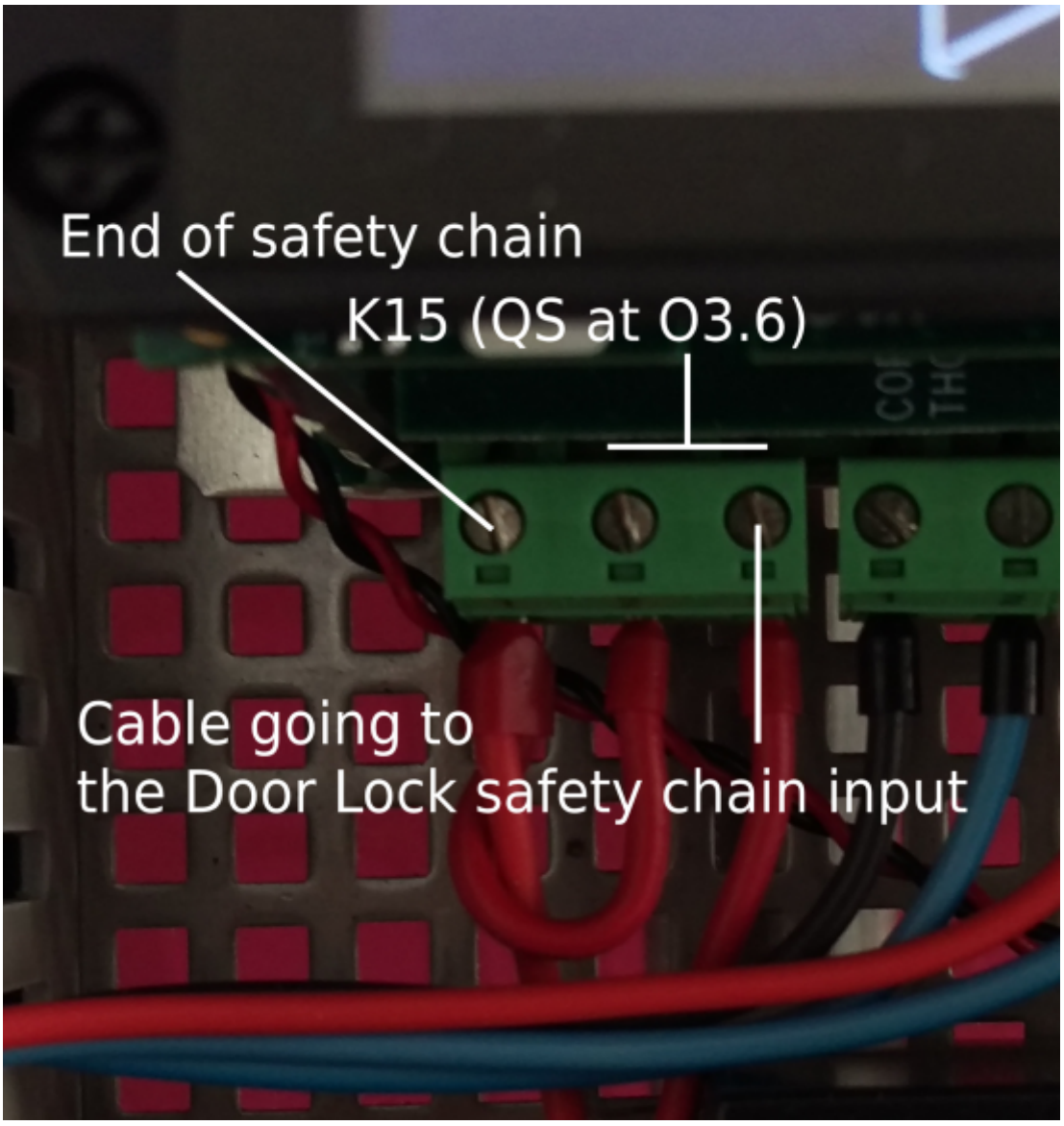


Figure 168: Quick-Start relay contacts

Be aware that these signals do operate with 230V AC, when adding the required extra wiring for the 'Quick Start' feature.

68.4 Outputs

- Output to be used for the O3.6 (K10) on board of the Thor unit.

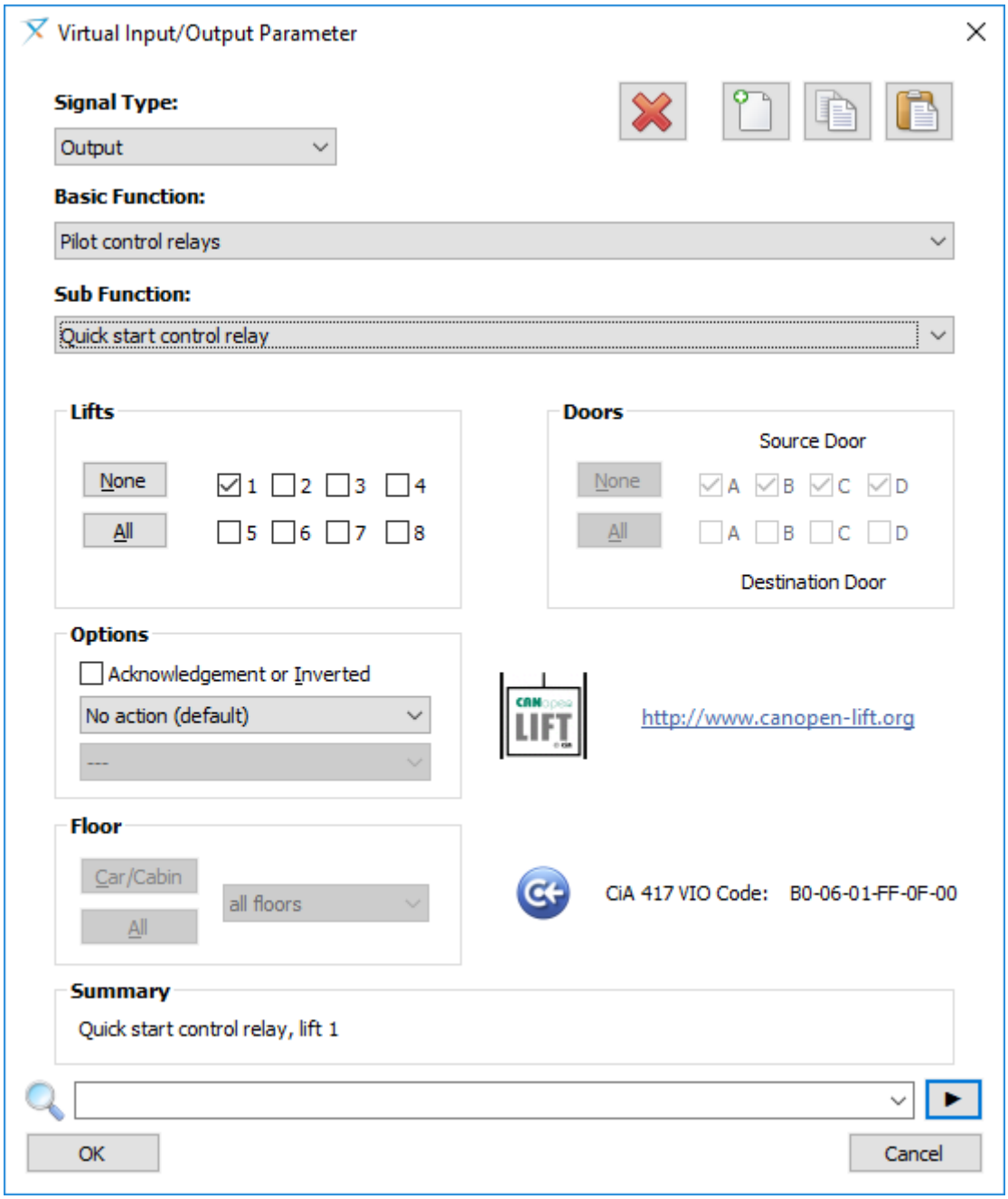


Figure 169: Output function to actuate the Quick-Start relay [Toolbox View]

68.5 Notes

Consult your drive's manual, if it supports Quick-Start operation and if there are special requirements or prerequisites.

This feature may increase the overall Energy consumption of your lift installation - but if used carefully, can decrease the transportation time for the passengers and may eliminate that disturbing second after the doors have closed/locked and the lift is starting.

69 Drop Protection/Anti Slip

The 'Drop Protection' or 'Anti Slip' device is often implemented via a solenoid unit operating a pinning rod that, once engaged, locks the over-speed governor and so activates the safety gear, preventing any further movement of the car/cabin in both directions, see chapter 53 'Support of Drop Protection Systems'.

69.1 Theory of Operation

A typical operation is that the solenoid is energized before the lift starts and turned off with a little delay after the lift has stopped.

To monitor the actual state of the solenoid the lift controller requires a feedback contact that reflects the mechanical position of the solenoid. A supervision time can be adjusted to define when the system will throw an error, if the solenoid does mechanically not follow the output signal used to control its position.

You find the options for turning the Drop Protection Feature 'on/off' and setting the supervision and delay times in the menu under 'Settings Menu' → 'More' → 'Drive Unit' → 'More' → 'Drop Protection'.

69.2 Inputs/Outputs

The output to operate the solenoid and the feedback input signal can be found under the 'Status signals' basic function.

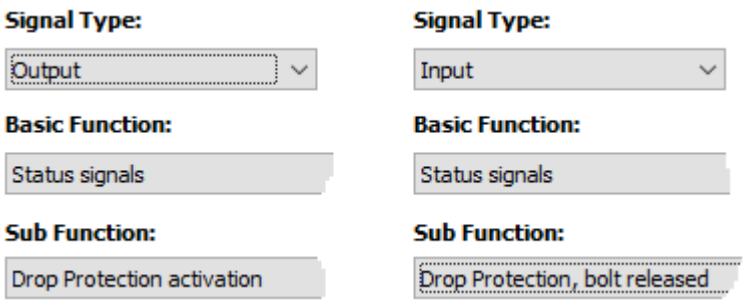


Figure 170: Drop Protection/Anti Slip signals

70 Re-leveling

Re-leveling is usually an operation that is automatically initiated by the lift after the car/cabin has stopped to keep the car in the level zone. When boarding/loading or deboarding/unloading the car, the actual position of the cabin might change a bit up/down and create a step large enough to let a passenger stumble. In order to keep the car flush on level, the lift may re-level the car automatically. This is vital especially on hydraulic lifts because of the oil in the cylinder slowly floating back to the oil-tank.

70.1 Basic of Operation

Usually the re-leveling operation can be done while the doors are open. So the safety circuit module (SZ) is in charge to bridge the door safety chain for powering up the drive in order to re-level the cabin. Anyhow the lift controller provides an option to do re-leveling with closed doors only, without featuring the SZ, if required.

The drive will feature the VN velocity to re-level. The velocity for re-leveling shall not exceed 0.3 m/s. A typical value is 0.1 m/s. If the drive unit does not support VN, the creeping velocity V0 would be used instead.

To define the gap that would require re-leveling, a re-leveling zone above and below the actual floor position can be setup in millimeters.

You find the values for the re-leveling zone - as well as the level zone - in the menu, under 'Settings Menu' → 'More' → 'Positioning Unit' → 'Distances & Parameter' → 'More' → 'Re-leveling zone below/above'.

Additionally and especially for hydraulic lifts you may want to activate an 'Extended re-leveling zone below' allowing the cabin to sink even further down, when the doors are closed. This might be used to reduce the attempts to re-level per hour.

Do not mix up the parameter for the 're-leveling' zone with the parameter defining the 'level zone'. The 'level zone' defines the maximum allowed tolerance when the lift stops at a floor level. This zone is usually smaller than the re-leveling zone, defining the gap when the lift shall start to re-level. You may have a look at the figure at 70.2.8.

70.2 Re-leveling options and parameter

You find all options and parameter regarding re-leveling in the menu under 'Settings Menu' → 'More' → 'Drive Unit' → 'More' → 'Re-leveling'.

70.2.1 Option 'Re-leveling on/off'

Simply allows to turn on/off re-leveling in an easy way.

70.2.2 Option 'Featuring a separate drive unit'

Especially on some older hydraulic systems, you may have a separate re-leveling unit for doing the fine-tuning of the car's position, using separate outputs. Very unusual today, but kept for backward compatibility. You can define if the unit shall be featured for both directions or only for up or down. The required output signals will be '*Drive unit signals → Re-leveling upward / downward*'. If using a separate hydraulic pump for doing the re-levelling, ensure to put the contactor of that pump within the contactor monitoring chain, to ensure that the lift controller can sense a hung contactor.

70.2.3 Parameter 'Re-leveling attempts per hour'

To limit the re-leveling operations and prevent an 'endless' loop, if the system fails to re-level or shifts the cabin too much, so that it is then again out of the re-leveling zone, a '*maximum attempts per hour*' value can and shall be setup.

70.2.4 Option 'Re-leveling with closed doors only'

In order to operate re-leveling without a SZ-module for bridging the door safety chain, this option is useful. It let the lift only re-level if the doors have been already closed.

70.2.5 Parameter 'Re-leveling Timeout'

In order to limit, for safety reasons, the time the lift attempts to re-level and ensure that the operation will be canceled, if re-leveling fails to operate, a generic timeout shall be defined. Typically 15 s is a value that covers even long re-leveling operations.

70.2.6 Parameter 'Re-leveling operation delay'

This delay defines the time-span between the lift detecting the cabin being out of the re-leveling zone and the moment it actually starts to re-level. This is useful to prevent the lift from doing re-leveling just because the cabin/car swings a bit, while passengers are boarding or deboarding the cabin.

70.2.7 Option 'Extended re-leveling zone below on/off'

In order to feature a wider re-leveling zone below the actual floor position, assuming the lift has closed the doors already, you can activate this option.

You find the value for the 'Extended re-leveling zone below' in the menu under 'Settings Menu' → 'More' → 'Positioning Unit' → 'Distances & Parameter' → 'More' → 'Extended re-leveling zone below'.

70.2.8 The distances around the floor level in a nutshell

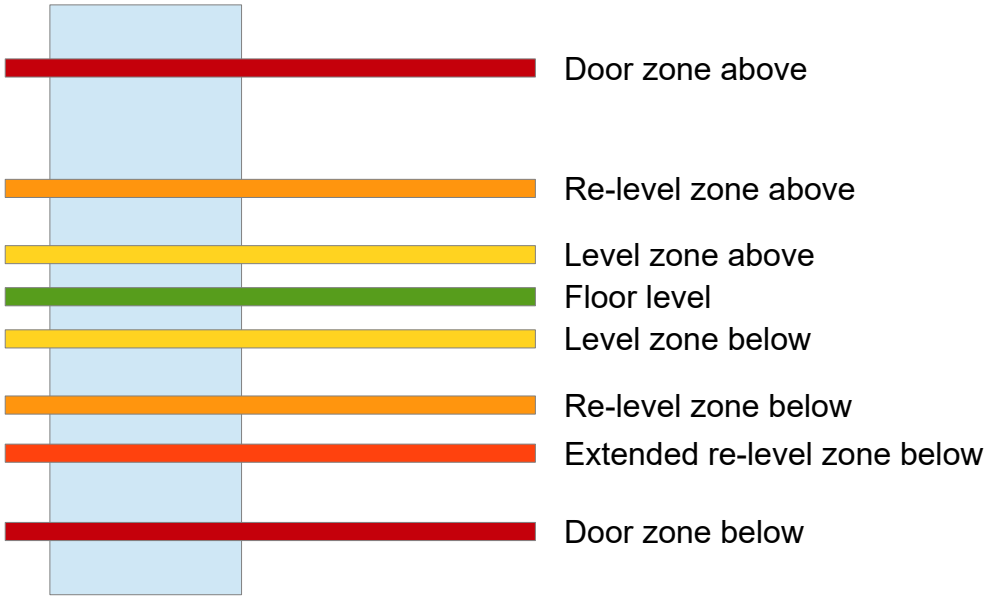


Figure 171: Distances & zones around the floor level

The figure above shows the distances & zones around the floor level. Here are some example values that shall give an idea:

- Door zone above/below 150 mm
- Re-leveling zone above/below 50 mm
- Extended re-leveling zone below only (usually for hydraulic lifts) 70 mm
- Level zone above/below 10 mm (regarding to the EN81-20)

The actual distance values might be different for a real lift installation.

71 Doors

The doors are the most vital part of a lift installation and usually the components that generates the most faults and troubles.

The mechanically and electrically implementation of doors are very different. We will have a look at the most common door types and how to setup THOR to deal with them.

Basically these door combination have been implemented in the lift application:

- Automatic landing doors and automatic car doors

  This is the typical setup for modern lifts. The door drive is at the car and moves the shaft door using a door coupler. Locking of the shaft doors is usually done using a hook lock. These doors have no need for a lock magnet. But the Thor lift controller does provide the magnet signal anyway. So if required, it can be used. Some older automatic lift door brands may feature a lock magnet.

Automatic landing & car doors can very easily be connected using a CANopen CiA 417 capable door controller unit. That means that the technician on side does not have to deal with door limit switch logic or the door engine signals.

We recommend that you always connect the light barrier signal directly to the lift controller or the car-top-IO-panel unit, that is connected to the lift controller (via the bus system). It is not recommended to connect the light barrier signal to the door machine. The reason is, that on Fire Alarm operation, the lift controller has to decide either to make use of the light barrier signal or to ignore it, because of smoke emission, regarding to EN81 regulation.

Automatic car doors can have either no limit switches, limit-switches for the 'opened' state or 'closed' state or both. Because of that, the THOR lift application give you the possibility to setup for every door those properties separately. Beside the limit switches, that define the door to be fully opened or closed, a time-span for the door opening/closing can be defined. If that time has expired and the door has no limit switches, it will define the door to be opened or closed. If having limit switches and they had been not operated within the given time, then a fault item will be added to the log-book. But the lift will usually stay operational.

Being on inspection/emergency electrical operation, the door machine will stop the doors without torque, making it possible to move them by hand as long as the lift does not start/drive. If it starts driving or is driving, the doors will be kept closed with torque. Emergency stop will stop the door operation as well.

- **Manual shaft doors and automatic car doors.**
  Even if manual doors become rare these days, there are regions where still plenty of them exist. Often lifts having swing doors, have been or will be retrofit with an automatic car door, making this variant quite common. Very typical for this door variant is, that the car doors will stay open, if the lift does park.

  Car light handling for swing doors...
  The car light is often not turned off completely, if the lift has swing doors, but reduced, so that a potential passenger can still see that the car is on the floor, through the little window, that those landing doors usually have. Anyhow you can select a time for closing the car doors automatically, even for that door type, on customers demand.

  Locking of Swing Doors...
  Normally if the lift will start, it waits for the manual/swing landing door being closed. Then it locks the landing door via the lock magnet and finally close the car doors. That means that a passenger at the landing can not re-open the door, once it is locked. Sometimes the customer demands that a passenger rushing to the landing door shall be able to re-open it. In that case the '*Door Lock Activation Prerequisite*' may be set from '*Automatic*' to '*Car door A*' or '*Car door B*' safety chain input. The lock magnet will then be turned on, not before the car door has closed, making the car door re-open, when the landing doors are re-opened.

- **Manual shaft doors and manual car doors (gates)**
  This door combination is quite rare these days but still exist in some industrial or historical environment. The lift controller rely on both doors being closed by the passengers. Locking of the landing door is usually done by closing the car door (gate) mechanically. Interesting for these doors is that you may want setup the 'door bell' on a different safety chain contacts, depending of the lift installation. This variant is also available with the use of the safety circuit, so that the passenger can open the manual cabin door (gate) when entering the zone.

71.1 Door Parameter

To open the 'Parameters & Options' of the doors, press the 'Favorites' hardware button and then enter the 'Settings Menu' → 'Doors'.

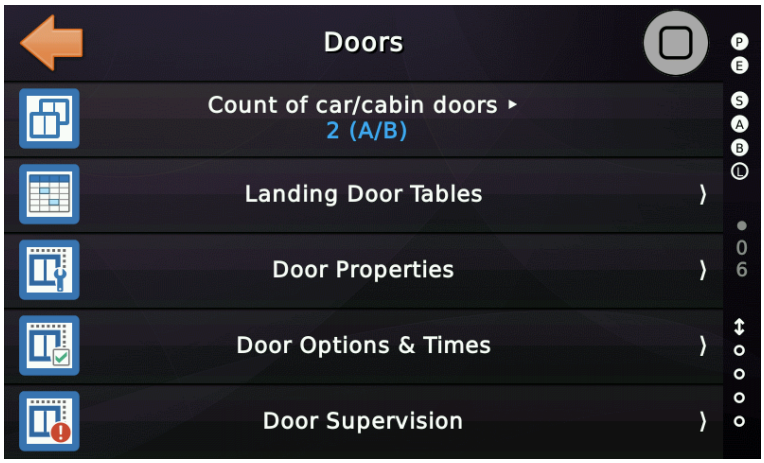


Figure 172: Door parameter

71.2 Count of car/cabin doors

This parameter describes how many doors the cabin/car has. The majority of lifts has just one door, some two and having three doors is very rare.

71.3 Landing Door Tables

The door table defines for each floor, which doors actually do exist. The set of doors on a floor is also called the '*door mask*' in the THOR lift application.

There are five tables available. Door table 1 is the default table, the lift is normally operating with. The door tables 2 ... 4 are optional door tables, to which the lift can switch via input signals, on demand. The last door table, called 'Swing Door Table' is a bit of a special thing. Imagine you have all automated doors, but on just one floor ending up in a yard, you have a big swing door. If being on that particular floor the car door has to react differently. It has to stay open, if being idle and the car light timer has to operate accordingly. For that case, you can select those exceptions using this special table.

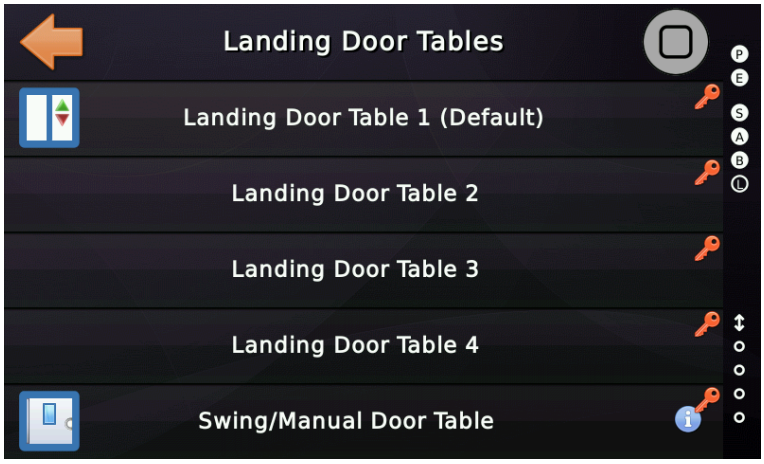


Figure 173: Door Tables

71.4 Door Properties

Door properties can usually be setup for each door (A/B/C/D) individually. They define settings & options that are depending on the actual door machine used, like having door limit switches or not.

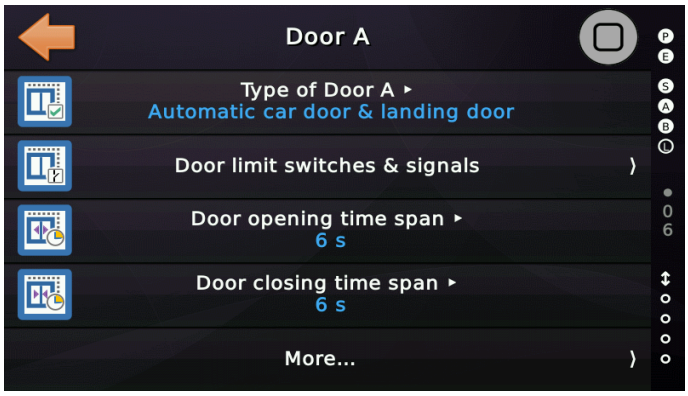


Figure 174: Door Properties

71.4.1 Type of Door X

This setting defines, if the door is an...

- Automatic car door & landing door
- Automatic car door & manual landing door
- Manual car door & manual landing door
- Manual landing door only
- Simulated automatic car door & landing door

The last possible selection '*Simulated automatic...*' is usually used, if the THOR lift application runs in training board mode on a desk, rather than a real lift installation.

71.4.2 Door limit switches

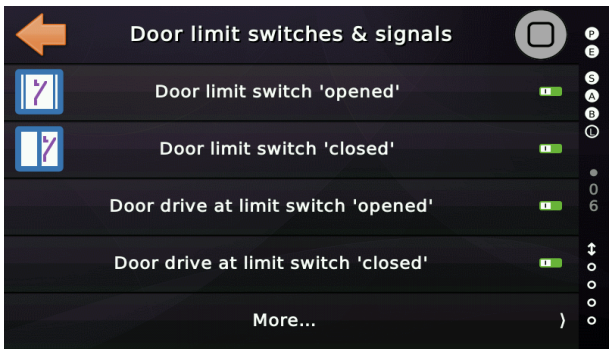


Figure 175: Door limit switch options

This is actually a menu branch to a sub-menu for the selected door, used to define, if the door has limit switches for the 'opened' and/or 'closed' state. Here you can also define, if the door drive (engine) shall be turned off, if having actuated the limit-switch or if it shall kept going in order to 'hold' the door closed or opened. Many door units require that the opening and closing signals remain switched on at the limit switch. It is also possible to turn the opening and closing signals delayed off, when reaching the limits.

71.5 Door Options & Times

These door options and timer parameter are shared by all car/cabin doors. Here you can setup, if the lift features '*Advance Door Opening*' among other settings.

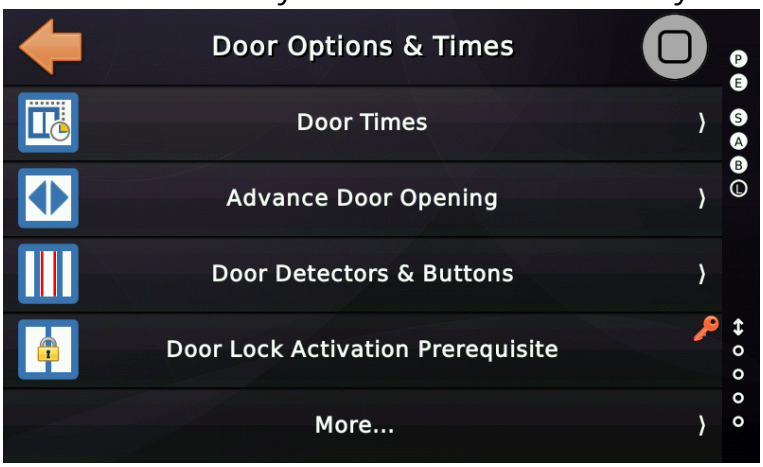


Figure 176: Door Options & Times

71.5.1 Door Timers

If the door shall throw a 'nudging' signal, if being blocked and trying to close in order to start driving, the time-span that defines when the lift starts 'nudging' can be setup here as well as a time-span for a warning signal, activated before the door actually starts nudging or simply starts closing. The term 'nudging' means that the door will close with reduced speed & force, having the light barrier disabled, pushing gently away what is in the way.

If using '*Nudging Operation*' double check that the door machine uses a lower force/torque for that operation, in order to prevent injuries of the passengers.

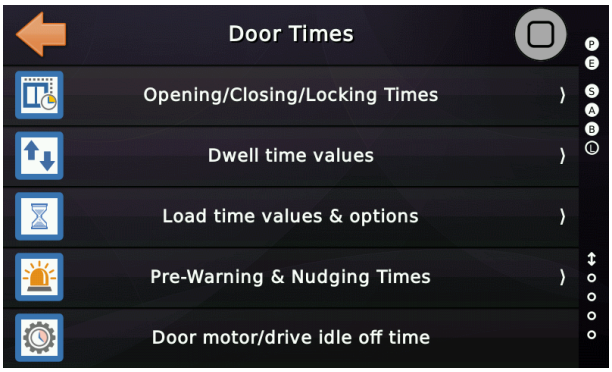


Figure 177: Door Timers

Figure 178: More Door Timers

▶ You can also define a 'pre-opening' warning signal/time, which is rarely used.

▶ If you have no limit switches or have defined that the door drive (engine) shall be kept going, if having reached the limit switch, you may want to setup an idle-time-span to turn off the door drive finally, in order to prevent over-heating or to save energy.

71.5.2 Door Detectors & Buttons

Using the parameter in that sub-menu let you select, when the door-close button shall be activated and how the motion detector shall behave.

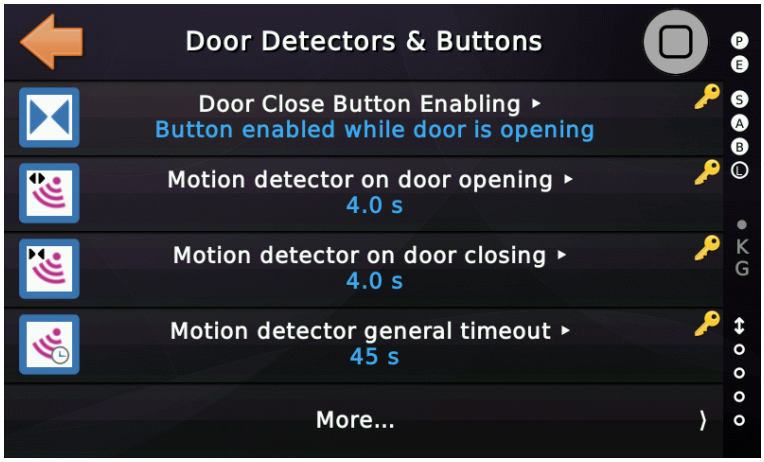


Figure 179: Door Detectors & Buttons

71.5.2.1 Light Curtain Input

The light curtain will reverse a closing door but by default it will not re-open a fully closed door. If you need the light curtain to re-open a fully closed door, you can activate the option '*Light curtain reopens a fully closed door*' under '*More...*'.

71.5.2.2 Door Close Button Enabling

Use this parameter to define the 'Door Close Button' being enabled after the door has fully opened or already when the door is opening.

71.5.2.3 Motion detector (enabling) on door opening

This defines the delay for enabling the motion detector when the door is opening.

71.5.2.4 Motion detector (disabling) on door closing

This defines the delay for disabling the motion detector when the door is closing.

71.5.2.5 Motion detector general timeout

This parameter defines the timeout used if the door detector is triggered again and again and blocks the lift on that floor.

71.6 Retiring Cam Magnet (Door Lock) Times

Often featured by manual/swing doors, cam lock magnets are necessary to unlock the doors on approaching and to lock them again before starting the lift. Depending on size and sluggishness, the time required can vary greatly from model and lift to lift.

Since some lifts have different doors installed on A, B and C sides and these require different locking/unlocking times, our control system is designed so that these times can be setup separately for each door.

You will find the door cam lock settings by pressing the hardware button 'Settings' and then go to 'Doors' → 'Door Times & Options' → 'Door Times' → 'Door A/B/C/D'.

71.6.1 Door locking time span

This parameter defines the time span [ms] the door/cam lock needs to lock the landing door mechanically.

71.6.2 Door unlocking time span

This parameter defines the time span [ms] the door/cam lock needs to unlock the landing door mechanically. If the door on opening hits the cam lock, you may increase this time in 250 ms steps.

71.7 Output signals

The output signal to control the retiring cam is usually configured onto a LXC or CLK (cabin I/O) unit. To activate the door's retiring cam lock, these function has to be used:

- 'Door controlling signals' → '**Retiring cam**', lift 1, **car/cabin**, all doors

  Do not confuse this signal 'Retiring cam' with 'Cabin/car door lock unit'. The latter signal is used for a separate locking system on the car/cabin door.

If selective signals are required for the locking magnets of door A and B or C, for example in conjunction with mutually interlocked doors, the same signal can be used, but only the one discrete door in the door mask is set, instead of all doors.

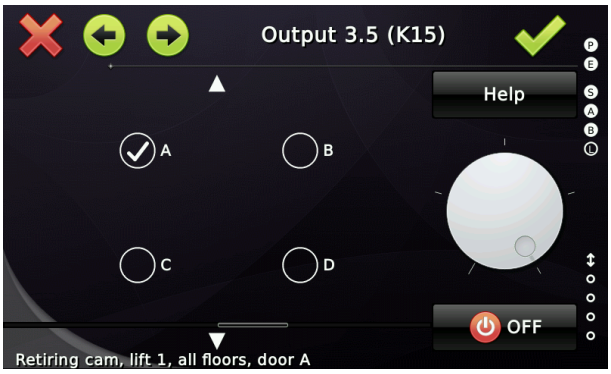


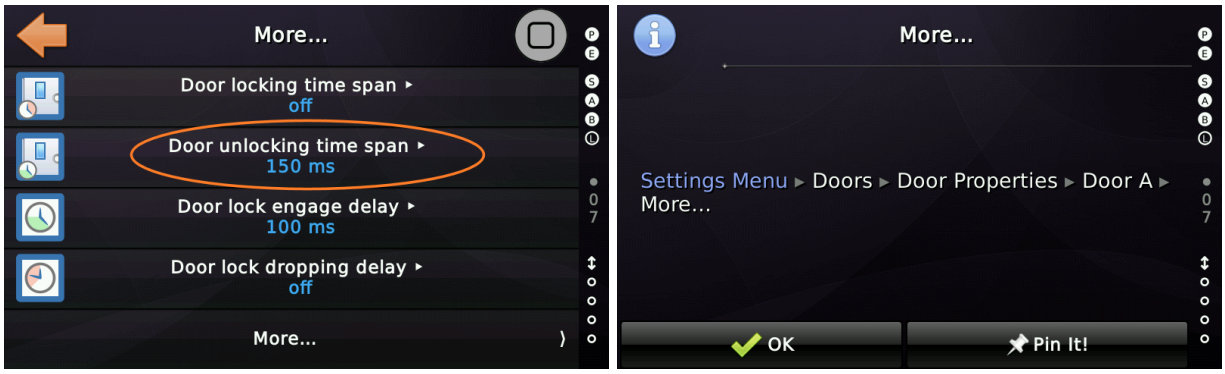
Figure 180: Retiring cam door mask

71.8 Special landing door unlocking devices

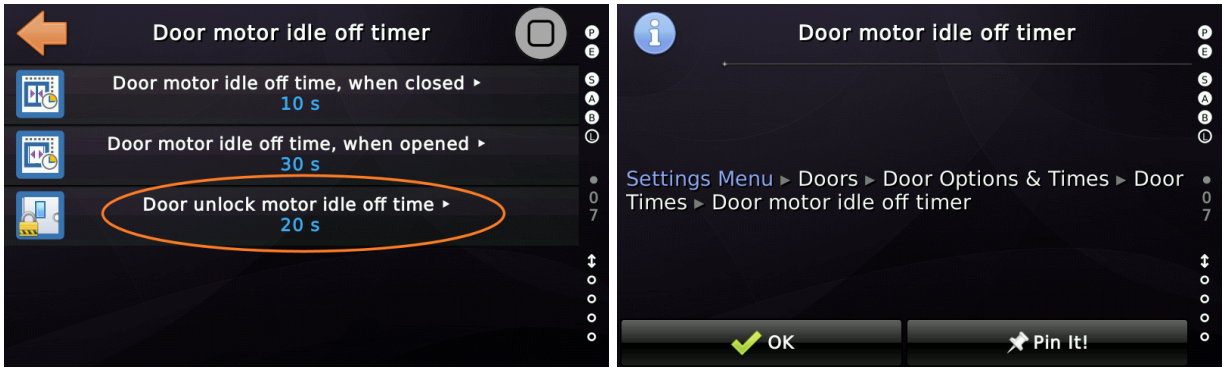
Some lifts might feature a swing door unlocking device, mounted at the landings. This device, that might use a geared motor or a pulling magnet, can be found on some home lift solutions. Do not mistake those with swing door openers, which are a device class of their own. If your lift solution is featuring a landing door unlocking device, you can feature this output for operating it:

Door controlling signals → Door unlock motor, lift 1, floors X, door Y

This signal is activated before a swing door opener is engaged. If the unit is requiring more time to actually mechanically unlock the swing door, you can make this time longer separately for each car door:



If that special swing door unlocking device is not having a 100% ED, you will be in need to drop power after a while, when the lift is idle, to prevent it from over heating. For this purpose, you can setup a idle-off timer here:



Normally after arrival all landing doors at a floor will be unlocked. If you need to have interlocked door operation, were only one door side at a time is unlocked, refer to chapter 71.13 Interlocked Door Operation.

71.9 Door Lock Activation Prerequisite

Use this parameter to select the safety chain input signal, that must be closed, in order to activate the door lock signal - even if the door does not have a door lock magnet. If this value is set to 'automatic', the program will select the appropriate signal depending on the door type.

Remember the example from the beginning of this chapter. You may have a swing door and the customer wants that a passenger rushing to the lift may re-open the landing door, while the car door is already closing, making the car door re-open then. Normally if having a swing door & automatic car door combination, once the landing door is closed, it will be locked and then the car door will start closing. If changing the door lock activation prerequisite parameter to 'Car Door A/B', the landing door will not be locked, before the car door has been closed.

71.10 Maximum door re-openings via landing calls

This parameter defines the maximum count of door re-openings, caused by a landing call on the very same floor and door side.

Especially if the lift is very busy, the passengers in the cabin/car face the situation, that another passenger at the landing re-opens the doors by pressing a landing call. If the car would have 'full load' it would simply store the landing call but not re-open the doors. If having not reached 'full load' the door would re-open. By using this parameter, you can limit how often a re-opening will occur this way.

71.11 Doors being not automatically closed

For very special lift installation, you may want to keep the doors open at a specific floor. If this is a requirement, the table 'Doors being not automatically closed' comes handy.

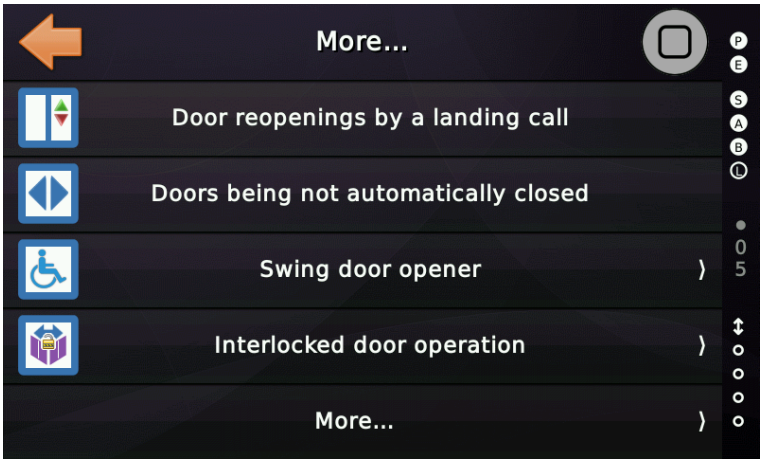


Figure 181: More Door Options

71.12 More door options

71.12.1 Keep retiring cam locked outside floor level

This option defines if the door's retiring cam shall be kept in the locked position if the lift has stopped not at the floor level but in the door zone. This might only be useful for some old manual door types (swing doors/gates).

71.12.2 Unlock the landing door after the car door has been fully opened

This option defines if the landing door lock magnet shall be engaged not before the car/cabin door has been fully opened. Usually the door lock would be engaged before the car doors do open.

71.12.3 Automatic car doors on swing door opening

This option defines if the automatic car/cabin doors shall open/re-open, if the manual landing door or swing door is opened by hand. As the lift controller has only one single landing door contact, all of the car doors may open then. As the car doors usually stay open after arrival, if having manual landing doors, this will usually not be an issue. But for some lift installations the customer may requests that the car doors being automatically closed, even that the landing doors are manually operated, especially when the car doors are mechanically locking the manual/swing doors.

71.12.4 Extra landing door light curtain & force limiter

Extra landing door light curtain and extra landing door force limit detector inputs are supported and might be used for goods lifts or automotive platform lift solutions. These might be used if the lift is equipped with independent power driven landing doors, that have their very own extra light curtains and extra force detector sensors.

An example would be setting up an input...

Door controlling signals → Extra landing door light curtain, lift 1, floor 2, door A

...if your power driven vertical landing door at floor 2 on door-A side would have its own light curtain indication.

71.12.5 Do not open doors automatically after arrival

This parameter defines if the doors shall stay shut closed, when the lift arrives at some floor. The doors are then in need to be opened manually, using the door open/close buttons in the car and at the landings.

71.12.6 Disable door open button, if all car calls are blocked

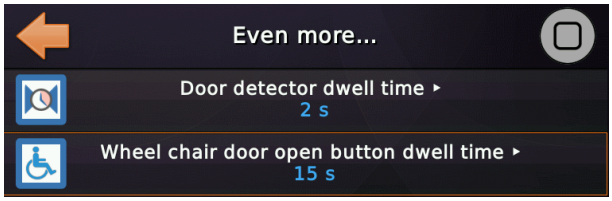
This parameter defines if the door open button shall be blocked anyway, if all the car calls on that very floor are disabled, even if that means that the passenger could not leave the car via any door. This option might be useful, if the lift is driving directly to apartments.

71.12.7 Keep retiring cam locked outside floor level

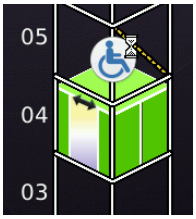
This parameter defines if the door's retiring cam shall be kept in the locked position if the lift has stopped not at the floor level but in the door zone. This might only be useful for some old manual door types (swing doors/gates).

71.12.8 Wheel chair door open button

To provide a longer dwell time for passengers, being in need of a wheel chair, a special input function '*Door controlling signals → Wheel chair door open button, lift 1, door X, car/cabin*' is provided by the lift controller. You can setup that longer dwell time under 'Settings Menu → Doors → Doors Options & Times → Door Times → Dwell time values → More... → Even more... → Wheel chair door open button dwell time'.

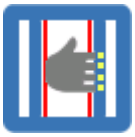


When the longer dwell time is in charge an output function is peaked high, that can be used to lit up a ring around that special door open button. The output function in question is '*Door controlling signals → Wheel chair door open button acknowledge*'. At the main screen of the lift controller you will have a little icon, indicating that the longer dwell time is in charge.



71.12.9 Finger protector timeout

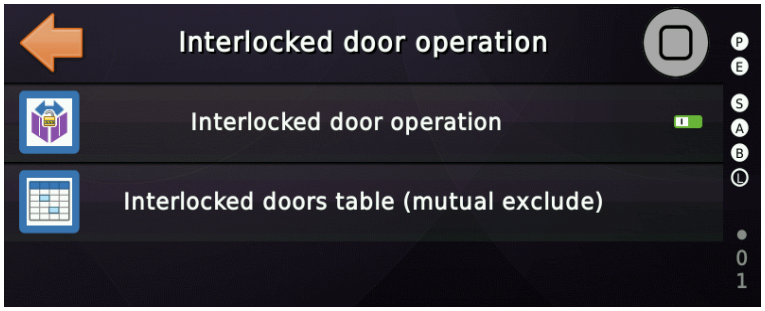
This parameter defines the timeout for a permanent active finger protector, before the door will start to re-close again automatically with reduced force (nudging). Usually modern CANopen doors provide a finger protector functionality, when opening the doors. Some doors can distinguish between an obstacle, like a small stone in the door dwell and a real finger in between the door wings. Some more simpler units, always indicate a finger, even if the door is stuck, caused by a small stone.



71.13 Interlocked Door Operation

This feature can be used, if the doors shall operate mutual exclude. That means that even the lift has several car/cabin doors, only one door shall be unlocked/opened at the very same time. Keep in mind that this requires the cam lock magnet to have 100% duty cycle, if the (swing) door has one. If using modern sliding doors, you usually have none. In that case, the doors are simply kept closed.

You will find the settings for interlocked door operation by pressing the hardware button 'Settings' and then go to 'Doors' → 'Door Times & Options' → 'More...' → 'Interlocked door operation'.



71.13.1 Interlocked doors table

This table holds the floors were the doors shall operate in interlocked (mutual exclude) operation mode. By default all floors in this table are set. Unset the floors, were the doors shall operate normally.

Figure 182: Table with floors, having interlocked doors.

If an '*Open door*' button is used on a door that cannot be opened at the moment, the other doors are closed and then the desired door is opened. The '*Door Open*' request is stored temporarily.

71.14 Load Time Operation

A '*Load Time*' is usually triggered via a key switch or a card reader from within the car/cabin. If the lift enters '*Load Time Operation*' mode it will leave a Team/Group and stays stationary with the doors being kept open, in order for the passenger to load the car. Depending on the used variant, you can cancel the running load time by pressing a car call at the destination floor or at the current floor. If using this variant, another raising peak of the input would re-trigger the running timer. Alternatively you can define, that the load timer operation shall be finalized with another raising peak of the load time input. That simply depends on the use-case. Anyway, you can define two independent load times. Usually you want to setup a short and a long timer.

You find the related parameters here under 'Settings Menu' → 'Doors' → 'Door Options & Times' → 'Door Times' → 'Load time values & options'.

71.14.1 Options

71.14.1.1 Load Time Activation & Deactivation

This parameter defines how the Load Time is activated & deactivated. Usually the Load Time is activated by an impulse and deactivated by entering a car call. Instead you might want the car calls rendered non-operational and the Load Time deactivated with another impulse of your card reader. Or you simply want to use a classic key switch with a static signal.

71.14.1.2 Cancel car calls on load time activation

This parameter defines if the pending car calls should be cancelled, if a load time operation has been activated.

71.14.1.3 Cancel landing calls on load time activation

This parameter defines if the pending landing calls should be canceled, if a load time operation has been activated.

71.14.1.4 Load Time Warning Blinker

This parameter defines that the load time acknowledge output shall blink, if the remaining load time falls under the given value. For example if you load time is 5 minutes and you setup this parameter to 30 seconds, the output will start to blink, if the remaining load time is less or equal to 30 seconds.

71.14.1.5 Continuously pressed open button activates load time

This parameter defines whether the continuously pressing of the door-open button should activate the load-time function. How long the door open button must be pressed for this can be defined with this parameter. This function can be helpful, if a load-time-function shall be added to an existing lift without having to install a loading button in the car panel.

71.15 Security Door Opening

This feature keep the doors closed, when arriving at a floor by means of a car call. Which doors shall be kept closed, can be defined in a dedicated door table. To open the door, the passenger is in need to first press the corresponding car call button again and then has an adjustable time span granted to open the door via the door-open button. In that time span, the door-open-button acknowledge signal is turned on.

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Much more...' → 'Further more...'. → 'Special Functions...' → 'Security Door Opening'

if you feature the door-open-button lights only for this purpose and you do not want the door-open button to light up normally, when the door is closing and the button can be pressed, you might consider to turn off the option 'Settings Menu' → 'Doors' → 'Door Options & Times' → 'Door Detectors & Buttons' → 'More...' → 'Door open/close button indicators (light)' then.

71.15.1 Security Door Opening Time

This time defines how long after pressing the car call on the current floor/landing, the door opening button is lit up and active and can be used to actually open the door.

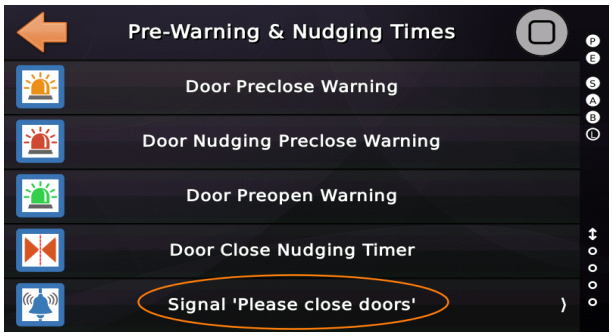
71.15.2 Security Door Opening Table

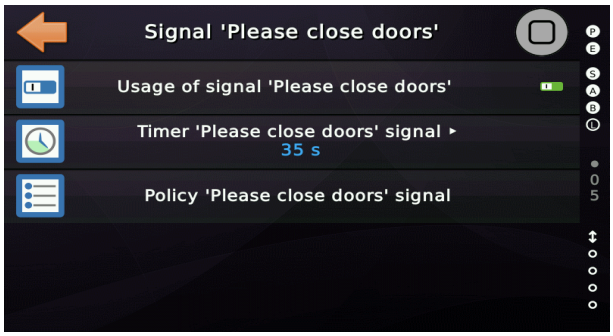
This table defines which landings are in need of a secure door opening. If a landing is marked in this table and the lift arrives for a call call, the doors will stay closed.

72 Signal 'Please Close Doors' for manual doors

If the lift features manual swing doors that do not automatically close or it features manual car doors (gates) that have to be closed by hand, a visual or acoustical signal is often used to notify the passenger to close the doors. Even if manual operated doors are not that common today anymore, heavy goods-lifts or older passenger lifts may still feature such classical door types.

You will find the corresponding parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'Doors' → 'Door Options & Times' → 'Door Timers' → 'Pre-Warning & Nudging Times'.





72.1 Times & Options

- Usage of signal 'Please close doors'
  This parameter defines if the lift shall generate the signal '*Please close doors*', usually used for manually operated doors.

- Timer 'Please close doors' signal
  This parameter defines the time the (swing/manual) door has to be open, before the '*Please close doors*' signal indicates to close the doors manually. This function is also called '*Doorbell*' on older lift installations.

- Policy 'Please close doors' signal
  This parameter defines if calls must be pending in to trigger the '*Please close doors*' signal if the timer has expired, to indicate to close the doors manually.

73 Extra Door Lock Supervision

The extra door lock supervision functionality is usually implemented using extra contacts that are mechanically triggered via the door lock system. They shall indicate if the door has been opened unattended. This might be useful in combination with a low pit/head solution or for implementing a kind of 'Anti-Surf' feature.

You will find the extra door lock settings by pressing the hardware button 'Settings' and then go to 'Doors' → 'Door Supervision' → 'Extra Door Supervision Signals'.

There you find the 'switch' to turn the feature on or off as well as a table that allows to define which doors will be included in the supervision procedure. For every door you will need a separate supervision input that has to be fed with the power of the supervision test output. You may use some kind of CANopen I/O board at the landing door for doing this in a smart way.

Figure 183: Extra Door Supervision Signal Parameter

If you chain the door supervision contacts together, rather than using a single input per door, just set the top and bottom dot in the table and define two inputs for the shaft head door supervision chain and the shaft pit door supervision chain.

All supervision inputs have to be powered with a special supervision test output signal, because the lift will, before every start, test all inputs by powering down/up the test output signal and check if all supervision inputs will react accordingly.

The test output has to be setup to 'all floors' while the supervision inputs have to be setup to the appropriate floor/door pair.

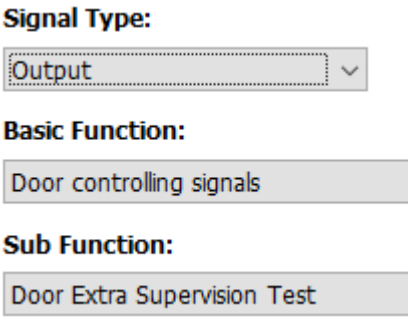
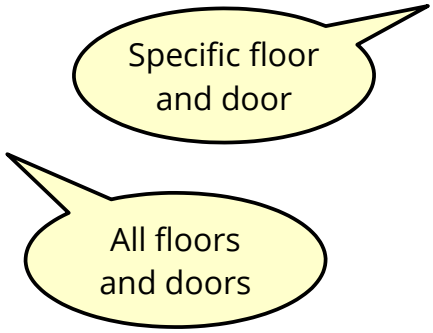


Figure 184: Extra Door Supervision Test Output



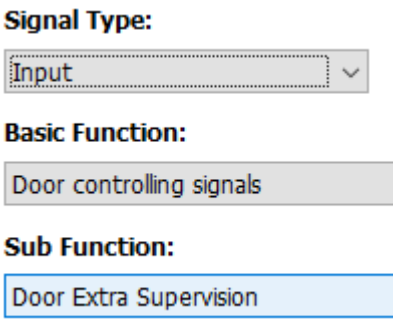


Figure 185: Extra Door Supervision Input

73.1 Indication

There are two signals, indicating that the extra door supervision has been tripped:

- Door controlling signals → Extra Door Supervision tripped

  This output will be raised and kept peaked high as long as the function has not been reset/unblocked.

- Door controlling signals → Extra Door Supervision warning siren

  This output will be raised but peaked low again after 10 minutes or if the technician is turning inspection/emergency electrical operation on.

73.2 Inspection Operation

Driving with inspection can be limited for the top and bottom end of the shaft in generic by using the parameter '*Settings Menu* → *More*... → Positioning Unit → *More...* → *Inspection top/bottom floor stop distance*'.

73.3 Emergency Electrical Operation

Driving with emergency electrical operation is normally not restricted. But in the case that the extra door supervision had been tripped and it can't be crossed out, that someone is in the critical area at the lower or upper end of the shaft (pit/head), these parameter can be used to limit the driveway 'Settings Menu → Doors → Door Supervision → Extra Door Supervision Signals → More... → Emergency Electrical Operation top/bottom distance, if door supervision has been tripped'.

74 Swing Door Opener

Old manual operated swing doors have the disadvantage that a handicapped person in a wheelchair will struggle to operate it. Electric swing door openers have often been or are retrofitted to such doors in order to solve the issue. But opening and closing swing doors, using those swing door openers, is relatively slow, which leads to undesirable waiting times for other lift users. This is why there are often additional buttons (elbow buttons) at the landing entrances or in the cabin/car to activate the swing door opener.

74.1 Options

74.1.1 Swing door opener delay time

This parameter defines when to turn on the swing door opener, after the door has been unlocked, typically after the lift has arrived.

74.1.2 Swing door opener runtime

This parameter defines the runtime of the swing door opener, required to open the swing door. Basically it defines how long the output, that activates the swing door opener, shall be activated as those units don't have a feedback signal, indicating when the swing door has been fully opened.

74.1.3 Swing door opener on arrival

This parameter defines if the swing door opener shall be triggered automatically, when the lift arrives at a floor.

74.1.4 Cancel swing door opener runtime by car call

This option defines if the swing door opener (if activated) shall be turned off, when any car/cabin call is pressed.

74.1.5 Trigger swing door opener by call button

This option defines if the swing door opener shall be activated, if a car or landing call is pressed on the current floor.

74.2 Input signals

In order to activate the swing door opener, these CANopen signals shall be used:

- 'Special Function' → 'Request door open', lift X, **car/cabin**, door X
  (Push button in the car/cabin.)
- 'Special Function' → 'Request door open', lift X, **floor X**, door X
  (Elbow push button at the landings.)

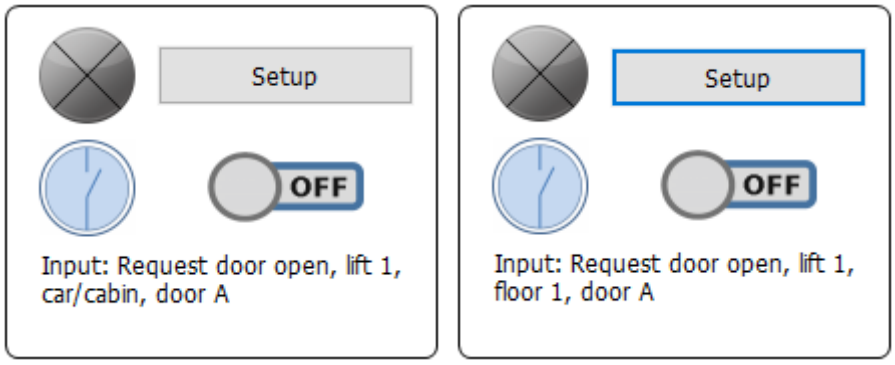


Figure 186: Toolbox: Sample input signals to trigger the swing door opener

74.3 Output signals

To activate the swing door opener, these functions can be used:

- 'Door controlling signals' → 'Swing door opener', lift X, **car/cabin**, door X
  (In the rare case that there is an opener in the car.)
- 'Door controlling signals' → 'Swing door opener', lift X, **floor X**, door X
  (Used for a typical swing door opener at the landing.)

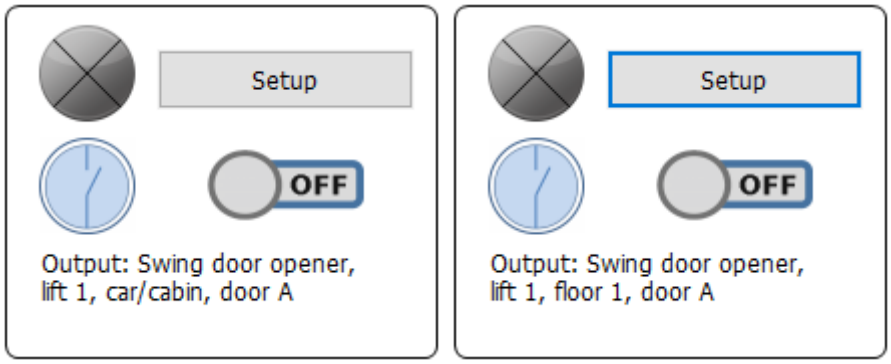


Figure 187: Toolbox: Sample output signals to activate the swing door opener

75 Safety Light Curtains

If the car/cabin is not equipped with car doors there is under some circumstances and depending on the region the lift is running, an option to use safety light curtains instead. Often this can be found on older lift installations having classic swing door solutions and no car door.

THOR allows for each door to activate the usage of a safety light curtain separately. You will find the settings by pressing the hardware button '*Settings*' and then go to '*Doors*' → '*Door Properties*' → '*Door X*' → '*More...*' → '*Safety light curtain usage*'.

75.1 Options

Usually if a safety light curtain is triggered while driving, the lift will enter an emergency stop operation. To enter normal operation again, the safety light curtain must be released again and usually a **car call** or a **swing door cycle** has to be done. In some rare cases, normal operation shall be entered without entering a car call or doing a swing door cycle first. If this is the case, you will find a special option under '*Settings*' → '*Controller/Piloting*' → '*Emergency Stop Handling*' → '*Emergency Stop Safety Light Curtain Recovery*' to define this exception.

75.2 Input signals

- Door controlling signals → Safety light curtain signal

  The status signal from the safety light curtain. Usually this is electrically high, if the light curtain is free/non interrupted.

- Door controlling signals → Safety light curtain control

  The control signal provided by the safety light curtain. Usually this acts inverted to the status signal. So if the status signal drops, this signal is risen and vice versa.

- Door controlling signals → Safety light curtain disable

  An optional input signal used to disable a safety light curtain for special transportation purposes. [seldom used]

75.3 Output signals

- Door controlling signals → Safety light curtain test signal

  This signal is used before the lift starts driving to check that the safety light curtain is still working. This signal is normally electrically high and will be dropped and risen again for the test procedure. If the signal is dropped the safety light curtain reacts as being interrupted by a passenger.

- Single fault indication → Light barrier unit fault

  This signal is risen, if there has been any faults/errors detected regarding to the light curtain system.

- *Door controlling signals → Safety light curtain tripped*

  This signal is turned on, when the safety light curtain test has failed or the curtain is interrupted while driving. In the second case, it will be kept on, until a new car call has been entered or a door cycle has been detected.

75.4 Variants

Typically, safety light curtains require a test procedure, before starting the lift, in which the lift controller pulses a test output and then interrogates the test input and light curtain status signals, which must react contrary. But since intrinsically safe models exist on the market, the light curtain variant actually used can be adjusted.

- Normal safety light curtain, requiring a test-sequence on startup
- Intrinsically safe safety light curtain, without a test-sequence on startup

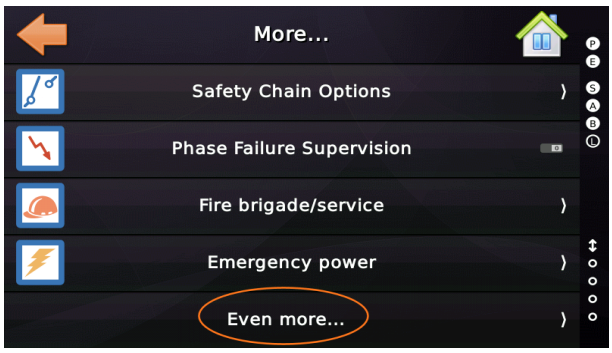
You will find the available variant by pressing the hardware button '*Settings*' and then go to '*Doors*' → '*Door Properties*' → '*Door X*' → '*More...*' → '*Safety light curtain usage*'.

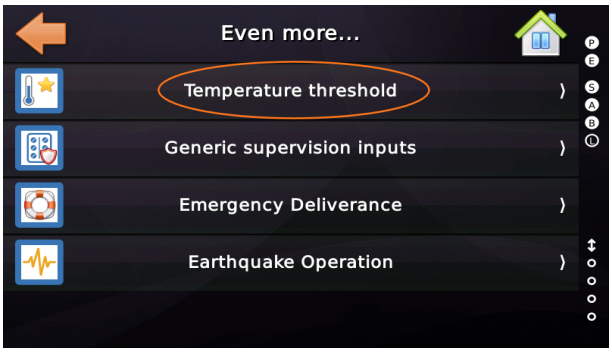
76 Temperatures

76.1 Temperature Thresholds Signals

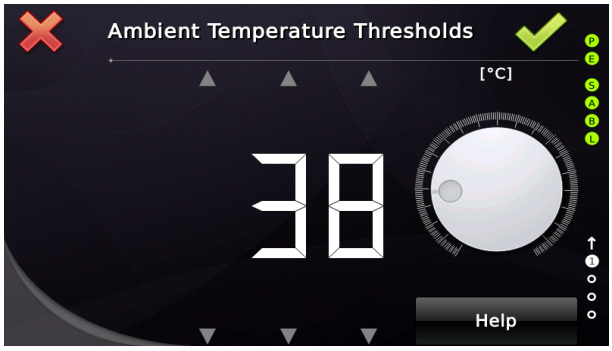
The system has four configurable temperature thresholds with corresponding virtual outputs, that can be used to operate fans for example. The output functions can be parametrized on any CANopen I/O-unit or the THOR board itself. You may use one of the on-board relays for that, like in the example given later on in this chapter.

You will find the temperature threshold settings by pressing the hardware button 'Settings' and then go to 'Controller/Piloting' → 'More' → 'Even more' → 'Temperature thresholds'.

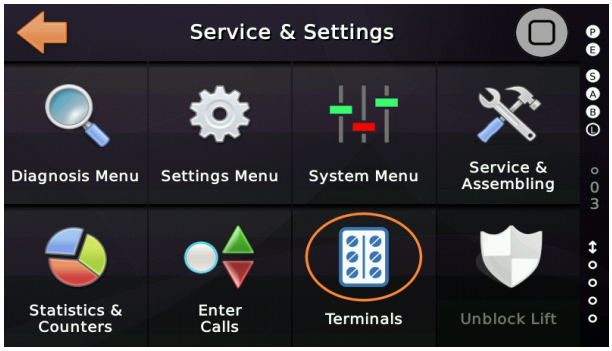


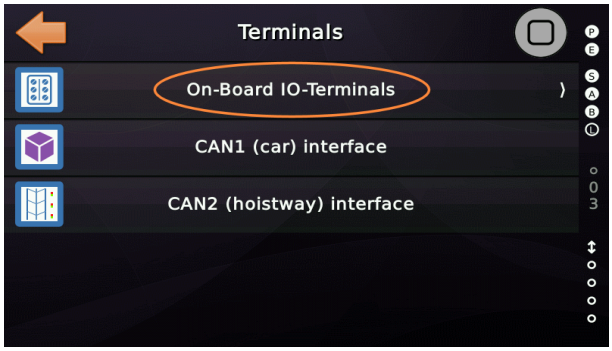


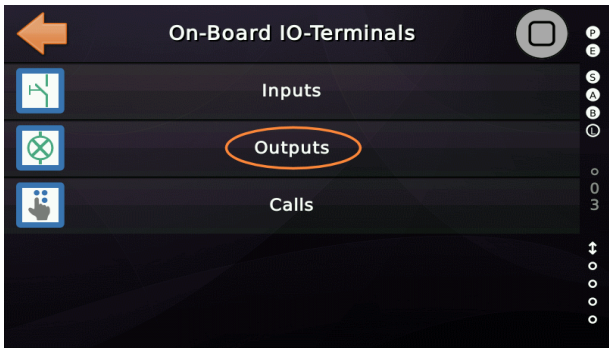
The temperature threshold outputs will be turned on, if the temperature exceeds the given value. In the example, the virtual output for the '*Temperature threshold 1*' will be turned on, if the on-board temperature sensor detects an ambient temperature over 38 degree Celsius.

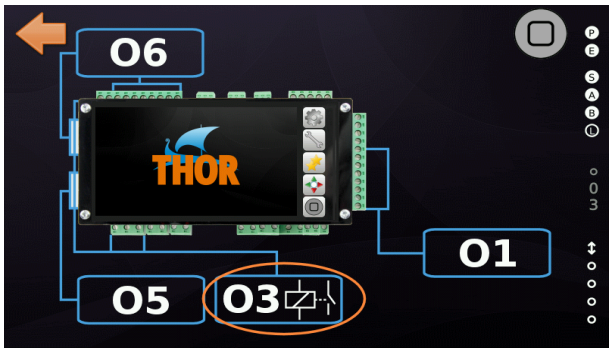


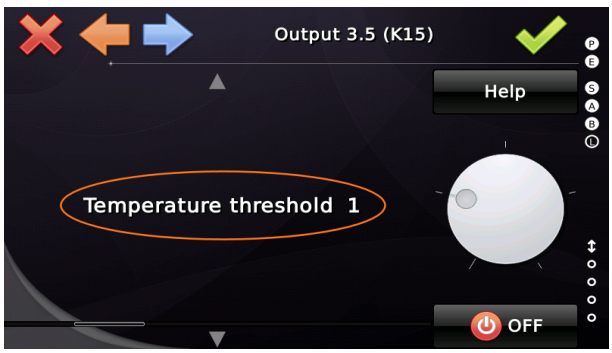
▶ To setup the corresponding output function for the '*Temperature threshold 1*', featuring the often unused relay K15, follow the given example.











76.2 Ambient Temperature Supervision

The lift controller is not allowed to operate if the ambient temperature is too low, so that the risk of condensation of vapor on the PCB is possible.

The lift controller is not allowed to operate if the ambient temperature is too high, so that there is a risk of failure of electronic components.

Also the EN81-20 give strict rules for the ambient temperature in the well and machinery space. Regarding to this regulation it shall be between +5°C and +40°C.

You will find the ambient temperature minimum (lowest) and maximum (highest) settings by pressing the hardware button 'Favorites' and then go to 'System Menu' → 'System' → 'More' → 'Ambient Temperatures'.

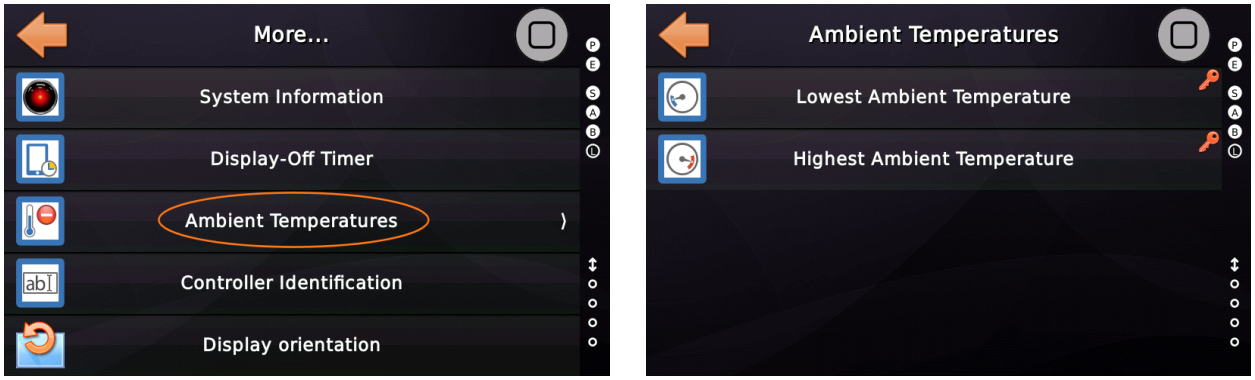


Figure 188: Lowest/highest allowed ambient temperature settings

Keep in mind that the temperature sensor is on-board of the THOR unit and therefore may detect a somewhat higher temperature, because of the unit being placed in a closed controller cabinet.

77 Optional Inspection Barrier Supervision

In order to monitor the position of barriers or pillars, typically on the car roof or in the well pit, used for low pit/head solutions, you may need some extra supervision inputs, depending on your region and regulations your lift is working in.

These input signals pairs have to operate contrariwise. If they are not in the correct position in order to operate the lift in normal or inspection mode, they will stop the lift immediately. If the correct position is not recovered within about two seconds, the lift will get blocked and has to be unblocked manually.

THOR provides two pairs of signals. One pair (two signals) for the Barrier 1, typically used in the pit and another pair for the Barrier 2, typically used on the car roof.

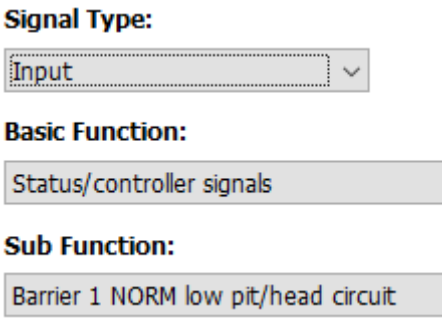


Figure 189: Barrier 1 Normal Position Signal

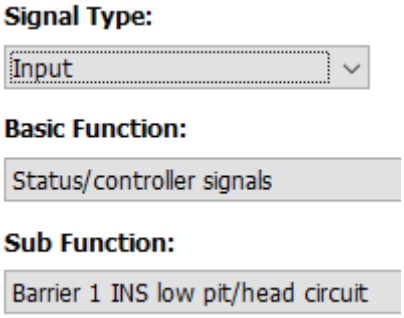


Figure 190: Barrier 1 Inspection Position Signal

You will find the required settings by pressing the hardware button 'Settings Menu' and then go to 'Controller Piloting' → 'More' → 'Even more...' → 'Low Pit/Head Barrier Supervision'.

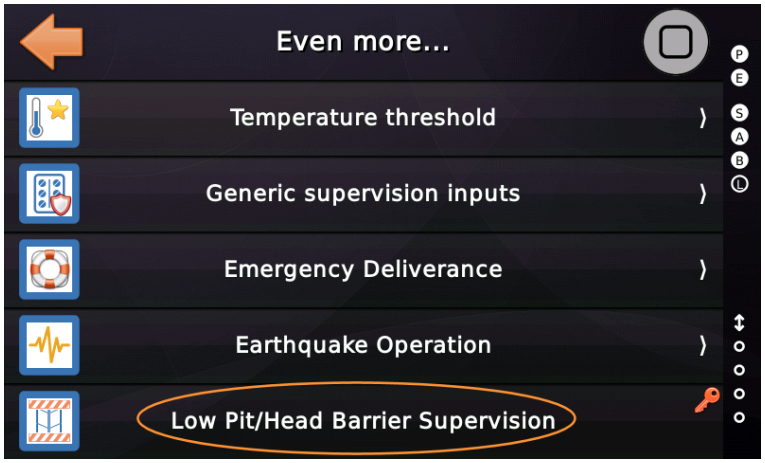
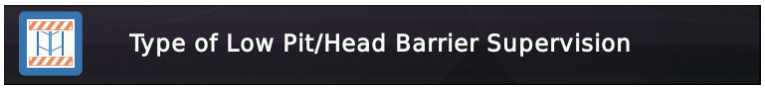


Figure 191: Optional Low Pit/Head Feature

77.1 Type of Low Pit/Head Barrier Supervision



- Low Pit & Head Supervision

  There are mechanical barriers in the shaft pit and the shaft head, in order to limit the driveway.

- Low Pit Supervision only

  There is a mechanical barrier in the shaft pit only, in order to prevent the lift in inspection mode, to drive too far down, so that the required space in the pit would be not sufficient.

- Low Head Supervision only

  A *mechanical barrier in the shaft head only, in order to prevent the lift, in inspection mode to drive too far up, so that the required head room would be not sufficient.*

- Car Fence (Inspection panel on the car top only)

  There is a mechanical solution on the car top only, to prevent the lift from driving too far up, so that a person on the car top, could be injured as the required head room would be not sufficient.

Note:

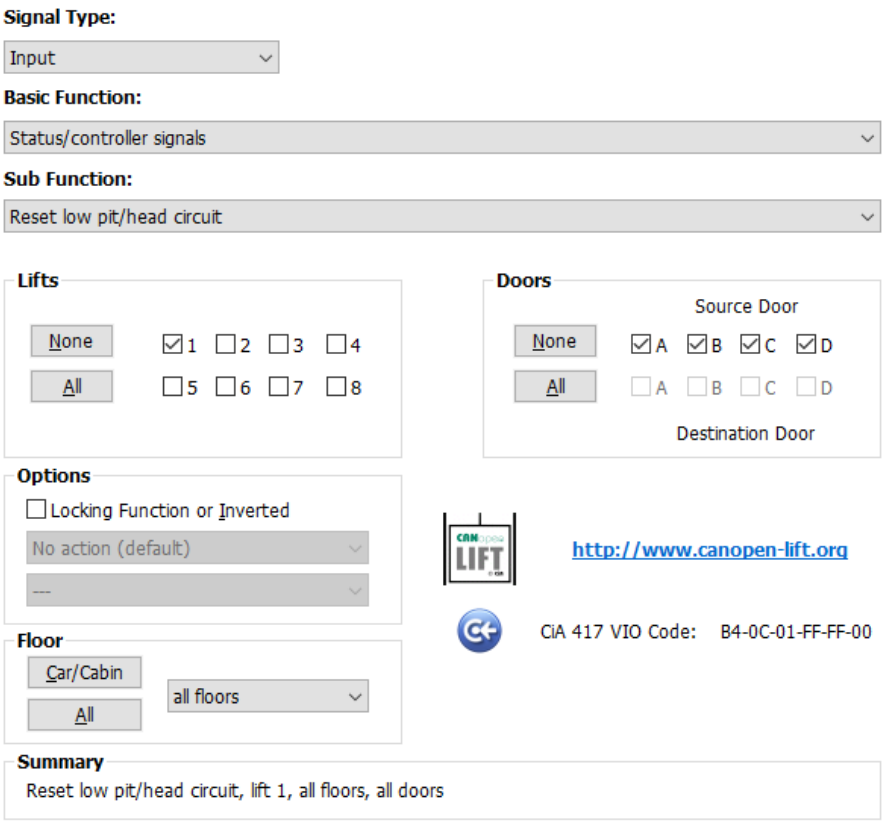
If this type of barrier is featured, it is still possible with the inspection control in the **pit** to drive the lift upward **without** the car fence being the 'Inspection position'.

Normally driving with the emergency electrical operation is not limited at all. Only if the Extra Door Lock Supervision indicates an unattended access to the shaft, driving with the emergency electrical operation into the safe area at top and bottom, can be limited as well. See the chapter 'Extra Door Lock Supervision' for details.

78 Reset low pit/head circuit

There are quite a few different ways to implement an EN81-21 solution for a so called '*Low Pit/Head Solution*'. One thing that those solutions have in common is, that they need to be reset manually by the technician to turn the lift back to normal operation.

The EN81-21 defines some prerequisites that have to be fulfilled for turning the lift back to normal. One prerequisite is that the safety chain has to be '*completely*' closed in order to reset the supervision circuit. To help with that, the lift controller has an input signal, typically parameterized on an I/O component like this:



If the signal has been triggered (impulse >= 250 ms), the lift controller will command all doors to close and lock in order to produce a '*completely closed*' safety chain, which the supervision circuit requires in order to unblock. Unblocking the supervision circuit is the prerequisite for the lift controller to unblock its own operation as well.

▶ The lift controller will only execute the command, if the safety chain signal 'Emergency Stop' is powered. Check the 'E' symbol at Thor's desktop on the right side.

▶ The lift controller will detect a 'hung' reset signal, as demanded by the EN81-21 if the signal is turned on continuously for more than 10 seconds.

79 Pawl Device Support

A pawl device is a safety unit which can be combined with hydraulic and traction driven lifts. A pawl device has two main functions:

- It stops the car from dropping due to a failure of the traction or hydraulic system or because of simply being overloaded. Especially in combination with lifts that are loaded/unloaded using fork trucks, this units provide extra safety.
- It keeps the car flush on level while loading payload into the car.

In order to use the pawl device, the lift controller has to be equipped with a safety circuit for door chain bridging. This circuit is used while lifting or lowering the car on start from a floor or at arrival at a floor.

79.1 Pawl Device Parameter

Because of the wide variety of pawl devices, a couple of parameter and options are available. Check the documentation for the pawl device that you want to use.

To open the pawl device parameters press the hardware button 'Favorites' and then go to 'Settings Menu' → 'More' → 'Pawl Device'.

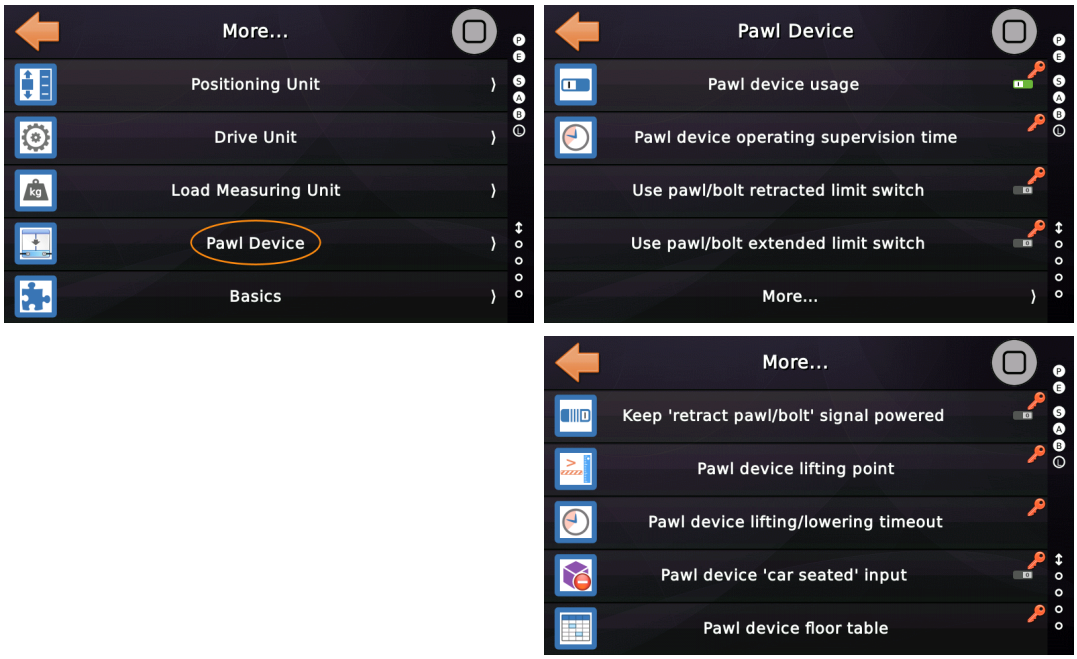


Figure 192: Pawl Device Parameter

79.1.1 Pawl device usage

This object defines if the lift installation is featuring a pawl device unit. A pawl device is a mechanical locking device for seating the car safely after having stopped in a floor, to prevent the cabin from falling. It is often used with hydraulic drives but can also be combined with traction lifts.

79.1.2 Pawl device operating supervision time [ms]

This parameter defines the time span used, in order to detect a hung pawl device unit, that has not responded as requested.

79.1.3 Count of pawl device limit switch pairs

This parameter defines, if the pawl device has one or more pairs of limit switches. If the pawl device consists of several motors, you might are in need of several pairs.

79.1.4 Use pawl/bolt retracted limit switch / Afterrun time

This parameter defines if the pawl device features a limit switch, signaling that the pawl/bolt has been fully retracted, enabling the car/cabin to move downwards.
An afterrun time can be defined to keep triggering the mechanics for a short time, even if the limit switch has been actuated, ensuring the bolt being in the final position.

79.1.5 Use pawl/bolt extended limit switch / Afterrun time

This parameter defines if the pawl device features a limit switch, signaling that the pawl/bolt has been fully extended, blocking the car/cabin from moving downwards.
An afterrun time can be defined to keep triggering the mechanics for a short time, even if the limit switch has been actuated, ensuring the bolt being in the final position.

79.1.6 Keep 'retract pawl/bolt' signal powered

This defines if the pawl device needs to have the signal for retracting the pawl/bolt powered, even if having reached the 'unlocked' position, especially when driving.

79.1.7 Pawl device lifting point [mm]

This parameter holds the distance above the floor level used as an lifting/lowering point for the pawl device, when arriving in a floor or starting from a floor. This parameter might be zero for some mechanical solutions. In that case the additional option '*Lock pawl device only if being at floor level*' will be available.

79.1.8 Pawl device lifting/lowering timeout [s]

This parameter defines the time-out used for lowering or lifting the car, when approaching from or starting to another floor.

79.1.9 Pawl device 'car seated' input

This parameter defines if the pawl device provides a signal telling the lift controller that the car/cabin has properly seated. If such a signal is not provided by the pawl device, the lift will drive the car to floor level and stops then.

79.1.10 Pawl device floor table:

This parameter holds the floors that shall feature the pawl device in order to seat the car/cabin, if the lift arrives there. This table makes it possible to define exceptions for certain floors easily.

Figure 193: Table for defining the floors that feature the pawl device

79.1.11 Car lifting/lowering velocity

Use this parameter to define the velocity (V0..V4/VI/VN) that the drive shall feature, if lifting or lowering the car.

79.1.12 External re-pumping unit

Use this parameter to define if the pawl device is featuring an external hydraulic unit to re-pump oil pressure, while the car has been seated. Otherwise the main drive will be used with re-levelling velocity (VN) for keeping the pressure.

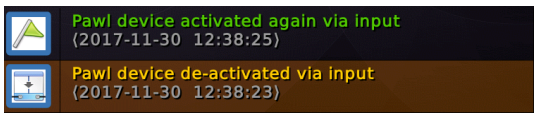
79.1.13 Lifting featuring a separate re-level unit

Activate this option, if you have setup an external re-levelling unit and want to feature that for lifting the car to the lifting point, before releasing the pawl device.

79.2 Disabling the pawl device temporarily

In order to disable the pawl device in certain situations an input function can be used.

Pawl Device → Disable pawl device



If the car is still seated when this signal is activated, it will on the next trip, lift the car, retract the pawl/bolt as normal, but then not seat the cabin/car again when arriving into the destination floor.

If there are certain floors that do not feature the pawl device at any time, it is better practice to feature the table described in chapter 79.1.10.

79.3 Re-pumping to keep oil pressure

If the pawl device is used with a hydraulic driven lift, the input signal function 'Pawl Device' → 'Pawl Device re-pumping' can be used to indicate to the lift controller that the oil pressure is running low after the car has been seated and needs to be increased by turning on the hydraulic oil pump for a short time span.

79.4 Pawl Device Status

To open the status of the 'Pawl Device' press the hardware button 'Favorites' and then go to 'Diagnosis Menu' → 'More' → 'Pawl Device'.

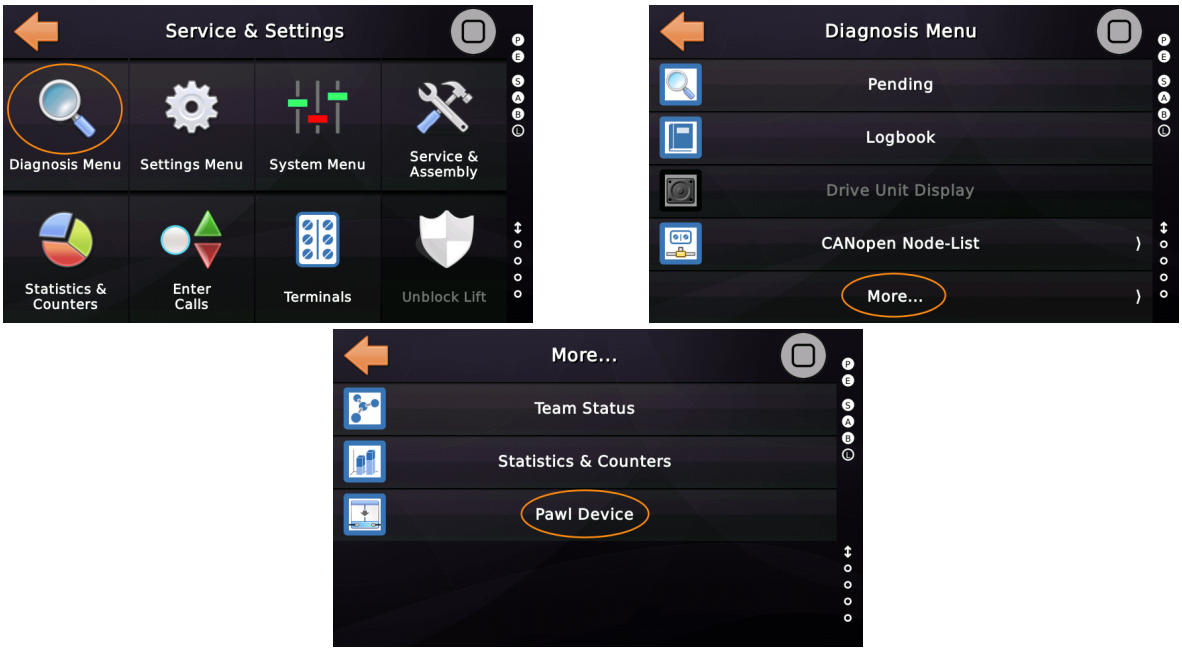


Figure 194: Path to the pawl device status

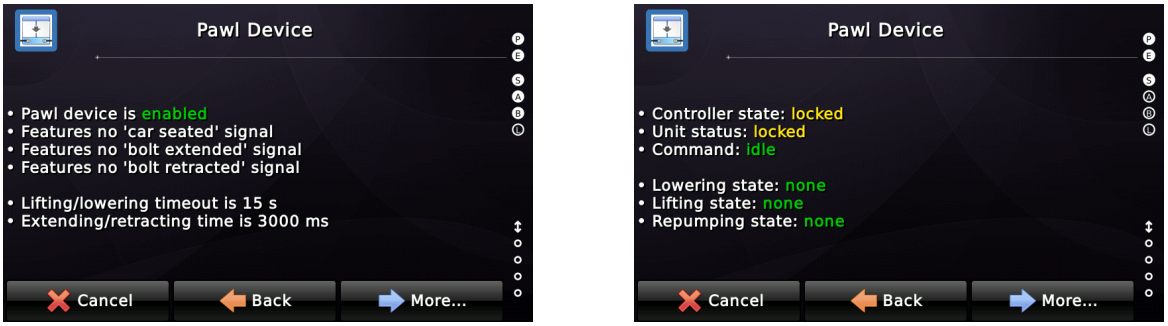


Figure 195: Pawl device status

79.5 Pawl Device Faults

79.5.1 Signal 'car seated' missing

A pawl device may support an optional signal, indicating that the car has been seated. If this option has been turned on, but the signal is not indicated, this fault message will be added to the log book. To open the pawl device parameters press the hardware button 'Favorites' and then go to 'Settings Menu' → 'More' → 'Pawl Device'.

79.5.2 Pawl device lifting failed

Lifting the car/cabin in order to release the pawl device has been failed. Check the drive lifting the car in time and if connected, the input signal for 'Car being seated' being dropped.

79.5.3 Pawl device lowering failed

Lowering the car/cabin in order to seat on the pawl device has been failed. Check the drive lowering the car in time and if connected, the input signal for 'Car being seated'.

79.5.4 Pawl device re-pumping failed

If the cabin has been seated using a pawl device and the hydraulic pressure drops, the system will fire up the pump to bring the oil pressure back to normal. This has failed due to a timeout reason.

79.5.5 Pawl/bolt retracted fault/timeout

The pawl device (bolt) did not operate properly and did not retract in the given time span. It might be mechanically locked or otherwise unable to move in the 'unlocked'/'released' position, so that the cabin/car could drive. If the device features a position switch to indicate the 'unlocked' position, please check that one as well.

79.5.6 Pawl/bolt extended fault/timeout

The pawl device (bolt) did not operate properly and did not extend in the given time span. It might be mechanically locked or otherwise unable to move in the 'locked'/'safe' position, so that the cabin/car can't drop. If the device features a position switch to indicate the 'locked' position, please check that one as well.

79.6 Pawl Device Signals

Usually a pawl device has a normally open contact that is connected to the safety chain of the lift. It shall be connected right before the door lock contact, and after the car doors.

If the pawl device is in the 'released' state, allowing the car to drive, the pawl device's safety chain contact shall be closed in order to allow the lift to operate without using the SZ unit.

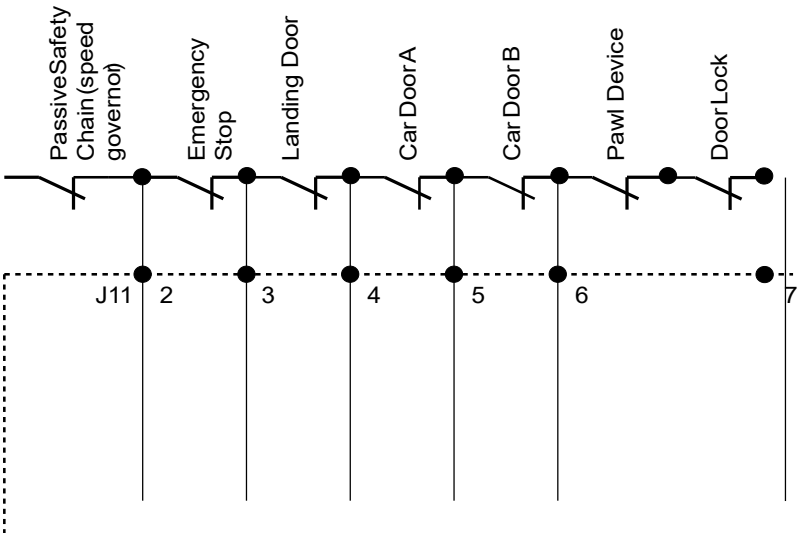
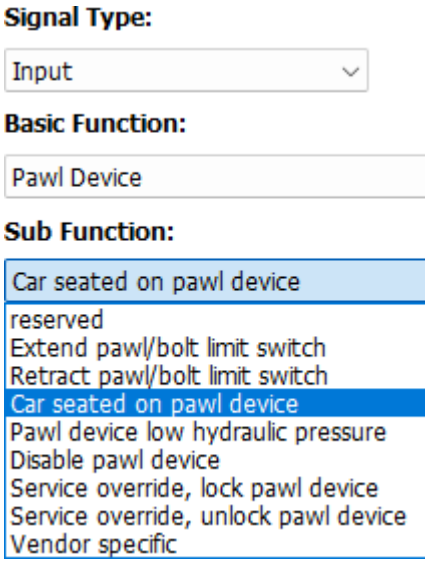
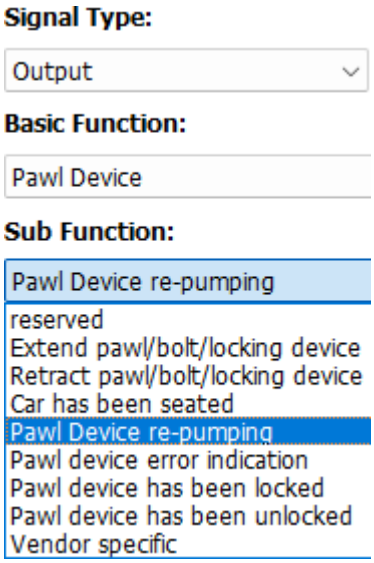


Figure 196: Pawl Device contact in the safety chain

All pawl device related input & output functions can be found in the basic function with the same name in the lift controller or the Toolbox.





▶ If the pawl device has position limit switches as well, it is good practice to connect them to the lift controller to make operating the unit more precise and give better support under error conditions. The '*Service Override*' signal are only usable in inspection/emergency electrical operation mode to control the pawl device manually.

80 Hydraulic Jack Re-Synchronization

If the lift is equipped with twin or triple hydraulic jacks (cylinders), then those jacks might be in need to re-synchronize after a certain run time. Otherwise, the cylinders may no longer extend evenly, so that one cylinder already reaches the mechanical end stop, before the others do.

To re-synchronize the cylinders, the lift will drive to the lowest floor and then creep lower, until it finally reaches the buffer. The car remains there for some time with open valves, until all cylinders are fully retracted again.

In order to be able to use this hydraulic lift function, it must first be activated in the settings menu of the lift controller. While performing the procedure, the low pressure input will be ignored momentarily as it always triggers, while the car is seating onto the buffer.

You will find the corresponding parameters by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More...' → 'Drive Unit' → 'More...' → 'Even more...' → 'Further more...' → 'Hydraulic jack resync function'.

80.1 Parameters & Options

80.1.1 Hydraulic jack resync function usage

This parameter defines, if the hydraulic jack (cylinder) re-synchronization shall be featured by the lift or not. If being turned on, the function can be triggered via an input, via the user interface (Maintenance Menu) or via a time planner function.

80.1.2 Maximum buffer distance from floor level

This parameter defines the maximum distance between the bottom floor level position and the pit buffer. This value should be defined gratefully as the car will anyway stop before, when having finally reached the buffer. This parameter is meant to stop the lift in the case of a mechanical fault.

80.1.3 Supervision time for the operation

This parameter defines the timeout for the hydraulic jacks (cylinder) re-synchronization. If this timeout has been expired, without the lift being able to reach the buffer, in order to resync the jacks, the lift will throw an error for the maintenance mechanics into the logbook and then drives back to the lowest floor level. The timeout starts, once the lift begins creeping to the buffer position.

80.2 Function Trigger

During normal operation, the resync function can be triggered by two ways: either by input or by using the time planner.

80.2.1 Input

If using an input, select Drive unit signals → Hydraulic jack resync trigger. When the input is activated, the lift will try to do the resync procedure once. The input must be re-activated in order for the lift to do the resync again. This prevents an endless loop in case the input gets frozen in the active state.

The input must be active for one second in a row, in order to trigger the function.

80.2.2 Time Planner

The time planner function can be defined in order to trigger the function automatically in a low traffic time span.

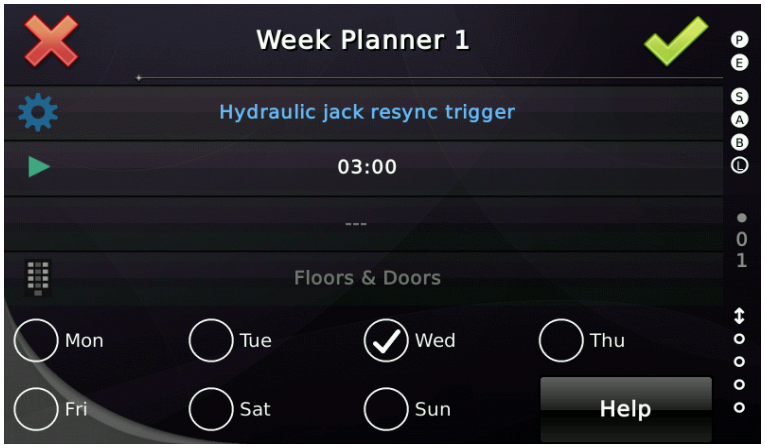


Figure 197: Time Planner used to trigger the hydraulic jack resync

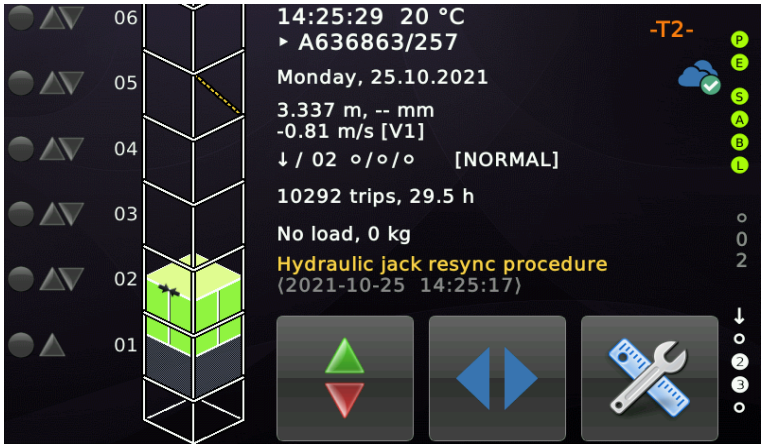
80.2.3 Manually Triggered Resync

During maintenance, the resync function can be immediately triggered by pressing the hardware button  '*Service & Assembly*' and then entering '*Maintenance*' → '*More...*' → '*Even more...*' → '*Much more...*' → '*Hydraulic jack resync trigger*'.

80.3 Indication

Execution of the function is indicated via a warning at the desktop and an output function, that can be used to trigger a physical output terminal, an icon or text message on a modern CANopen display solution.

The output function in question would be '*Drive unit signals*' → '*Hydraulic jack resync indication*'.

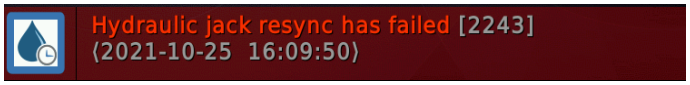


80.4 Logbook Record

The procedure of re-synchronizing the hydraulic jacks will be recorded in the logbook, like so:

Figure 198: Hydraulic Jack Re-sync logbook items

If the procedure has failed, a dedicated fault item will be thrown into the logbook, telling time & date of the event.



In the case of a timeout, when creeping to the resync position, the lift will drive back to floor level.

81 Support for Telescopic Toe Guards

81.1 Theory of Operation

This feature can be used, if the lift has to supervise a telescopic toe guard via an input function.

These special toe guards are usually used, if having a low pit situation, having not enough room for them in the lowest floor. Usually they are spring loaded and hold by an electromagnet. On a power drop they are pushed out by the spring to their full length.

When the power comes back, the lift has to push them in again, by driving below the lowest floor, so that the toe guard will touch the ground. The lift will stop, if having reached the parameterized stop point, usually some millimeters below floor level. At this point the telescopic toe guard should have been pushed in far enough, for the magnet to get a grip on the mechanism, holding it again in the pushed-in position.

To open the telescopic toe guard parameters press the hardware button 'Favorites' and then go to 'Settings Menu' → 'Cabin/Car' → 'More...' → 'Telescopic toe guard supervision'.

81.2 Options

81.2.1 Telescopic toe guard push-in distance

This option defines the distance to be driven below the lowest floor level, in order to push-in the telescopic toe guard completely. This value is given in millimeter, below the bottom floor level.

81.2.2 Telescopic toe guard velocity

This option determines the velocity at which the car travels to the lowest floor and then decelerates and retracts the telescopic toe guard.

81.3 Procedure

The lift will first travel at rated speed to the floor above the lowest landing and then travel to the lowest floor at the set reduced speed and then decelerate to catch the telescopic toe guard, until having reached the given point, defined via the '*Telescopic toe guard push-in distance*' parameter.

81.4 Input Function

- Status/controller signals → Telescopic toe guard supervision [NC], car/cabin

This input signal has to be 24V when the toe guard is in the pushed-in position and drops to 0V, if the toe guard has been pushed out to full length.

81.5 Output Functions

- Status/controller signals → Telescopic toe guard operation

81.6 Logbook

If the telescopic toe guard has been successfully pushed-in again, the log-book will look as follows.

In the event of an error, the procedure is finished with the information that the telescopic toe guard could not be pushed-in again. The lift will then remain 'out of order' on the bottom floor. Usually the car is brought back to the lowest floor level position by a re-levelling operation.

82 Platform Lifts

Platform lifts are usually not used for classic passenger transportation. They might be used for container transport on assembly lines or in any kind of production environment. An exception to this might be some home lift products at the market.

Such systems are often installed in accordance with the Machinery Directive instead of the EN81-20 regulations, being usually limited in velocity to 0.15 m/s or 0.3 m/s.

You find the related parameters here under 'Settings Menu' → 'More...' → 'Basics' → 'More...' → 'Platform lift mode'.

82.1 Supported Types of Platform Lifts

- Standard Platform Lift, requiring constant pressure for the call buttons to work.
- Home Lift brand »Swift Lift« - a special adaptation for this product series.
- Home Lift Solution with door circuit bridging on every door zone and constant pressure for the car calls. Landing calls will work normally being in the zone.

82.2 Standard Platform Lift / Construction Platforms

82.2.1 Car calls

If being used as a transport platform, rather than a lift solution, car calls are usually operated in dead-man's grip operating mode, requiring constant pressure in order to keep the cabin driving to the desired floor or level. Basically it is a 'half automated' operating mode, were the lift is doing the acceleration, braking, stopping automatically as long as the corresponding car calls is pressed.

82.2.2 Landing calls

The operation mode of the landing calls depends on the position of the car. There are basically three rules:

- If the lift is on floor level, (door zone) landing calls do operate normally (fully automated).
- If the lift is in-between the floors (outside the door zone), the landing calls do operate using dead-man's grip (constant pressure), just like the car calls.
- Pending car calls have always priority over landing calls and may even cancel an ongoing driving operation.

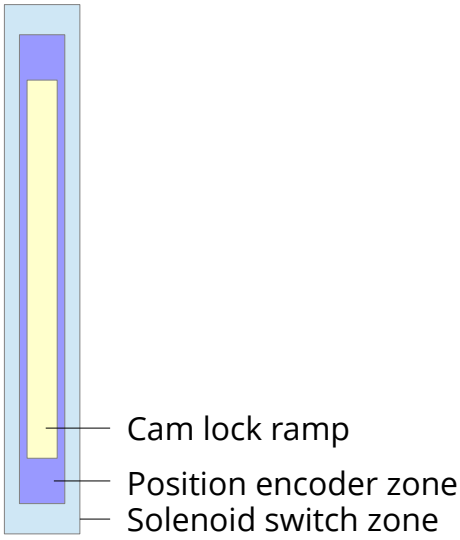
82.3 Home Lift Solution using door circuit bypass, if passing door zones

82.3.1 Calls

The car calls require constant pressure to operate. The landing calls are registered normally, unless the lift has stopped out of the door zone. In that case the landing calls require constant pressure as well to get the lift going. The landing calls can be operated in collective mode or in PB or APB operation mode.

82.3.2 Static Cam Lock Ramp

Since these lifts have static cam lock ramps, the safety circuit (SZ) has to be activated, when driving through or passing the door zones. We recommend setting up the magnetic/solenoid switch zone and absolute encoder zone so, that they '*enclose*' the static cam lock ramp.



82.4 Re-Leveling

The parameter '*Automatic re-levelling of the platform*' can be used to determine whether the lift is to re-level the cabin automatically or whether a call button must be kept pressed for this purpose.

This parameter is only in charge, if the platform type has been selected to be a '*Standard Platform Lift, requiring constant pressure for the call buttons to work*'.

83 Automobile Lifts

If the lift is mainly used for automobile or vehicle transportation, this operation mode can be used. There is an input signal indicating when the lift is exceptionally used for passenger transport and so the special positioning light barriers and the procedure of placing the vehicle shall be skipped.

83.1 Requirements

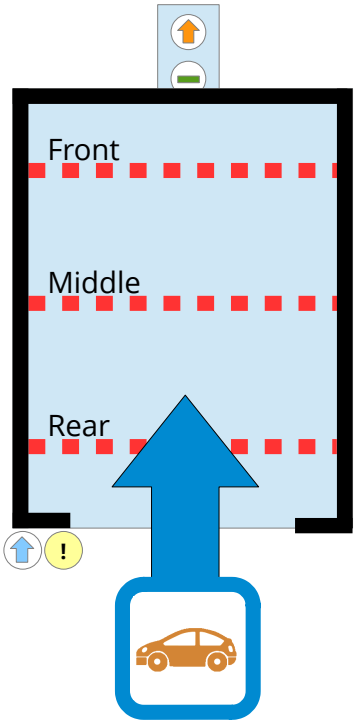
As only one vehicle can be transported at a time, it does not make sense to operate the lift in form of a collective controller. Therefore the lift turns automatically to APB operation mode, when being on Automobile operation. In that mode the landing calls will be processed in the time order and the next landing call will be proceed not before the cabin is empty again.

83.2 Input signals

- Status/controller signals → Automotive passenger/person transport

  This input signals indicates that the lift is exceptionally not used for vehicles but to transport one or more persons. In that case the positioning light barriers and indicators will be disabled. As there might be still more cars/vehicles waiting at the landings, the lift will drive pass the landings to the floor, indicated by the given car call(s).

The real automobile lift might have more than three positioning light barriers. In that case those light barriers will be bundled with external logic to three easy interpretative signals for the lift controller.



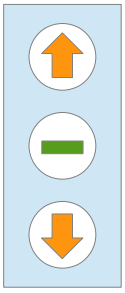
- Status/controller signals → Automobile lift light barrier 'front'
- Status/controller signals → Automobile lift light barrier 'middle'
- Status/controller signals → Automobile lift light barrier 'rear'

83.3 Output signals

- Status/controller signals → Automobile transport acknowledgment

  This indication signal is turned on as soon as the lift is in Automobile operation mode, waiting or transporting vehicles.

Traffic lights for car positioning



- Status/controller signals → Automobile Traffic Light 'Forward'
- Status/controller signals → Automobile Traffic Light 'Stop'
- Status/controller signals → Automobile Traffic Light 'Backward'

Keep in mind that the traffic light is always mechanically mounted on the opposite cabin side. That means if you have two doors, the door A traffic light will be mechanically mounted on the B side and vice versa. This does not apply to the 'Drive Vehicle Out' indication. **Do not set those outputs to 'all doors' by mistake!**

Status/controller signals → Automobile Traffic Light 'Warning'
This output signal is used for a 'warning' traffic at the landings, indicating to the waiting cars/vehicle, that a car is in the cabin or will leave the cabin. Anyhow it shall prevent the waiting cars to block the space in front of the cabin.

- Status/controller signals → Automotive passenger/person transport acknowledgment
  This is the acknowledge output signal, that indicates that the lift is exceptionally not used for vehicles but to transport one or more persons. See the corresponding input signals for details.

Status/controller signals → Automotive transport 'Drive Vehicle Out' indication
This output signal is turned on, when the vehicle has arrived the destination floor, driven via a cabin call. The signal is indicated, when the doors have been full opened to indicate to the driver, that he/she shall drive out the car.

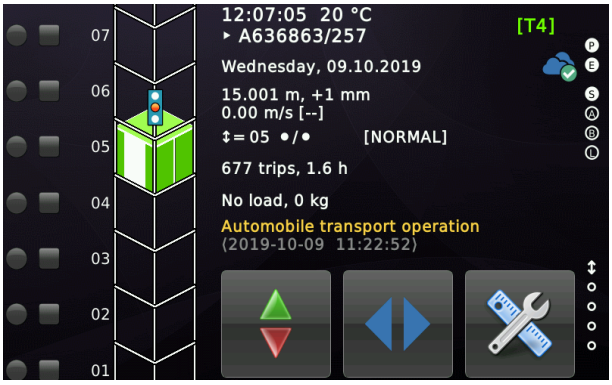
Status/controller signals → Automotive transport 'Drive Vehicle Into the Car'
This output signal is turned on to indicate to a waiting vehicle at the landing, that there is no vehicle left in the car.

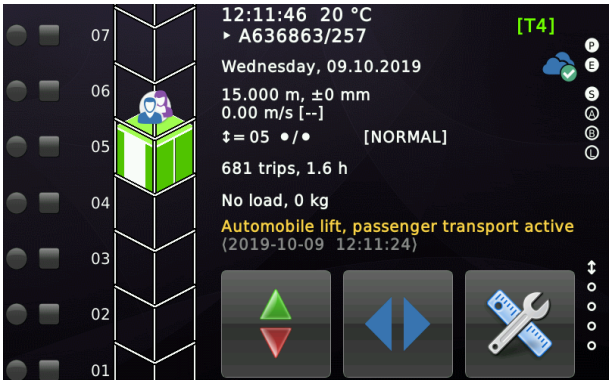
83.4 Logbook Items

Beside the activation of the Automobile lift operation, the logbook also records if the passenger/person transport had been activated.

83.5 Visualization at the Desktop

The state of the traffic lights used for positioning of the vehicle is shown above the cabin, including icons for passenger/person transport and the '*Driving Out*' indication.





84 Hoistway/Car Cleaning Operation

If the car or hoistway needs to be cleaned, this function can come handy. The feature is activated via an input, when the lift is in normal operation mode. You can have a dedicated key switch within the car or dedicated key switches at the landings.

The input function in question is:

Special function → Cleaning travel

84.1 Activating the Cleaning Operation at the Landings

If you have the key switch at the landing and the car is already at that very floor, it will cancel all pending calls and activate the feature right away. If the lift is somewhere else, it will dismiss the pending landing calls, process the pending car calls and finally arrive at the cleaning floor for starting the operation.

84.2 Activating the Cleaning Operation in the Car

If you have the key switch within the car, you can activate the feature at any floor.

84.3 Operation

If being activated the lift will be kept stationary and all pending calls will be cancelled. The doors will be kept open and can be operated with the 'Door open' and 'Door close' buttons in the car call panel.

You can however apply constant pressure to a car call button in order to drive the car to that very floor. If you lift your finger before the lift has arrived, the car will soft stop. This might be useful, if your car does not have car doors and the hoistway (tiles or glass) needs to be cleaned.

85 Helicopter Operation

The helicopter feature is usually used in hospital environments. There are two variants available, that are quite different.

Variant 1 is more complicated and split into two phases, with phase 1 being optional and keeping the lift 24h at a standby floor. In phase 2, the lift is called by means of a high priority landing call first and then driven to the helicopter floor.

Variant 2 is simpler and featuring the input '*Special function → Provide priority*' via CAN2, to simply call and keep one lift on demand out of the group to the helicopter floor for a given time. That time can be cancelled simply by using the input again, once the lift has arrived at the helicopter floor and the allocation time is running.

85.1 Phase 1 – Optional Helicopter Standby

If featuring the variant 1, this optional first phase can be used, to keep the lift at a standby floor, so that the medical rescue team is only in need to open the door with a high-priority landing call, without the lift being in need to drive to the floor, were the team is waiting.

The disadvantage is that the hospital will lose the transport capacity of a whole lift, if phase 1 is used. If using this feature in a group/team, the lift will automatically loose its status and leave the standby floor after standing in standby for 24 hours. This will make another team lift kicking in and take its place.

The team lift will only do that, if being able to '*sense*' another group/team lift, being operational and therefore able to kick in.

85.2 Phase 2 – Helicopter Allocation

The helicopter lift is called by a high priority landing call to the floor, were the medical rescue team is waiting, being ready to go straight to the helicopter allocation floor, usually the top floor of the lift or the roof stop.

When the lift has arrived at the helicopter allocation floor, with the rescue team onboard, the lift will start the allocation time, that can be setup. The default value is 15 minutes. While the allocation time is running, the lift will keep the doors open and will stay stationary without responding to landing calls. The lift is internally switched to Car Preference Mode, allowing only car calls to be entered and processed.

85.3 Parameter

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → 'Much more...' → 'Further more...' → 'Special Functions...' → 'Helicopter Feature'.

85.3.1 Helicopter standby floor

This parameter defines the floor, were the lift shall be standby in order for being called to the actual helicopter floor. This is the floor for phase 1. The floor were the medical staff will rush to the lift.

85.3.2 Helicopter allocation floor

This parameter defines the floor, being used in phase 2, were the lift shall wait for the helicopter's crew. Usually an allocation time is defined as a final timeout for this operation. This is usually the topmost floor.

85.3.3 High priority call helicopter allocation time

This object defines the dwell or allocation time used by the lift after having stopped because of a high priority landing call at the helicopter floor.

85.4 Events/Logbook

These events are shown in the list of currently pending items and are recorded in the logbook as well.

85.4.1 Helicopter Function Standby

The lift is waiting to be called to the helicopter floor. Usually the lift will first be called by a high priority landing call and then the medical staff will enter the lift and drive to the helicopter floor via a car call.

85.4.2 Helicopter Allocation Time

The allocation time is running, after the lift has arrived at the helicopter allocation floor, usually the topmost floor of the building or the roof stop. The lift is waiting here for the helicopter crew to handover the patient.

85.5 Outputs

These outputs can be used to indicate, if the lift is standby, still waiting for the medical rescue crew, at the dedicated standby floor or the lift already waiting at the helicopter allocation floor, for the rescue team to bring the patient into the car.

85.5.1 Phase 1 – Optional Helicopter Standby

Status/controller signals → Helicopter standby floor

85.5.2 Phase 2 – Helicopter Allocation

Status/controller signals → Helicopter floor/allocation

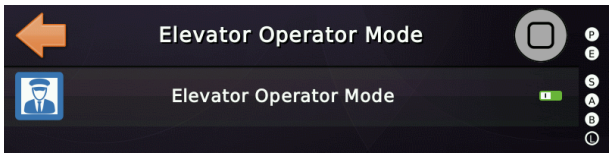
▶ Both signals are send through the bus system for the '*car*' and the '*current floor*'.

86 Lift Operator Mode

The lift can be turned to Elevator Operator mode, sometimes also called Lift Attended mode, were an assistant (lift boy/girl) is controlling the lift, instead of the passengers, entering their destinations themselves.

86.1 Parameter

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → 'Much more...' → 'Further more...' → 'Special Functions...' → 'Rarely used...' → 'Elevator Operator Mode'.



86.2 Inputs & Outputs

86.2.1 Inputs

- Special function → Attendant service

  This signal is used to activate the operation mode, usually via a key switch the car.

  You need to activate the usage of this operation mode via the dedicated parameter in the first place. Otherwise the lift will simply ignore the input.

- Special function → Lift attendant start button (START)

  This signal is usually driven by a button, operated by the lift attendant, used to start travelling, in order to catch a call in the given direction. You need to apply constant pressure to this button, until the doors have been closed and the lift starts driving. Otherwise the doors will reopen again.

- Special function → Lift attendant drive through button (EXPRESS)

  This signal is usually driven by a button, operated by the lift attendant, used to make the lift pass a pending call, when travelling.

- Status/controller signals → Lift attendant upward button
  Status/controller signals → Lift attendant downward button

  These *signals are usually driven by a button, operated by the lift attendant, used to*

indicate to the lift, that the next call shall be caught in up or down direction.

86.2.2 Outputs

- Special function acknowledgment → Attendant service acknowledge

  Acknowledge signal, indicating that the lift is operating in the Attendant (Elevator Operator) mode.

- Status/controller signals → Lift attendant upward indication
  Status/controller signals → Lift attendant downward indication

  These output signals indicate, which is the direction the lift will catch a call, when the lift attendant is pressing the START button.

86.3 Events/Logbook

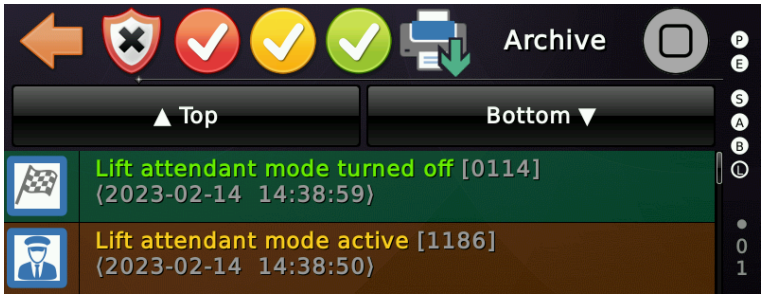
These events are shown in the list of currently pending items and are recorded in the logbook as well.

- Lift attendant mode active

  The Lift Attendant or Elevator Operator mode has been activated. The lift is now controlled via special buttons in the car panel by an assistant instead of the passengers.

- Lift attendant mode turned off

  The Lift Attendant or Elevator Operator mode has been turned off again. This is usually done by means of a key switch in the car.



87 Earthquake Operation Mode

The Earthquake operation mode will drive the lift to the dedicated floor and release the passengers. If no dedicated floor had been parameterized, the lift will drive to a floor above the middle of the hoistway, to make sure, that the counterweight is below the car, if the lift actually has one. If the dedicated floor can't be reached for some reason or all doors at that floor had been removed from the door table, the lift will automatically choose an alternate floor. When turning to Earthquake operation mode, blocked landings will be enabled again, to make sure, that the passengers can quickly escape the lift.

Energy Saving Functions are disabled, when the lift is in Earthquake operation mode. The car lighting will not be turned off, all displays stay operational. The hall lanterns and arrival indicators are rendered disabled.

87.1 Parameter

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → 'Much more...' → 'Earthquake Operation'.

87.1.1.1 Earthquake Escape Floor

This parameter is used to define an optional dedicated floor, that the lift shall drive to, in the case of an earthquake being detected. If you leave this parameter turned off, the lift will drive to the next floor in upward direction above the middle of the shaft, in order to make sure, that the counter weight will be below the car.

87.1.1.2 Behavior of the doors at the earthquake floor

This object defines if the doors shall stay open or close after a while, when the lift has reached the Earthquake floor.

87.1.1.3 Earthquake nominal velocity

Use this parameter to define the maximum velocity (V1..V4) that the lift shall use, if running in Earthquake mode, with respect to the mechanical limitations of the rails and rollers.

87.1.1.4 Earthquake fallback time

Use this parameter to define a fallback time to return the lift from Earthquake operation, if the sensor signal is not indicating an Earthquake anymore.

87.2 Inputs & Outputs

87.2.1 Inputs

- Special function → Earthquake detector

87.2.2 Outputs

- Special function acknowledgment → Earthquake detector acknowledge
  This signal indicates, that the lift has detected the Earthquake. The lift might not turn to Earthquake operation mode, if another operation mode has a higher priority or prevents that in another way.

- Lift status indication → Earthquake operation indication
  This signal can be used to drive a display within the car or at the landings. The signal will be turned on, when the lift actually has entered Earthquake operation mode.

- Lift status indication → Travel to the earthquake operation floor
  This signal is turned on, when the lifts wants to travel to the dedicated floor. It will be kept going as long as the lift is travelling and is finally turned off, when the lift stops.

- Lift status indication → Arrived at earthquake operation floor
  The signal is turned on, when the lift has arrived the dedicated floor.

87.3 Events/Logbook

These events are shown in the list of currently pending items and are recorded in the logbook as well.

- *Earthquake operation mode*
- *Driving to Earthquake floor*
- *Arrived at Earthquake floor*
- *Earthquake operation has been turned off*

88 Load Measuring and Traction Belt Monitoring

The load signalization, like No-Load, Full-Load and Overload can be done either by discrete inputs or by means of a CANopen Load Measuring unit. Those CANopen Load Measuring units transmit additionally the weight in [kg] or [%],depending of the type of unit and their measuring technique. Some of those units are also capable of detecting a slack rope by comparing discrete sensor data. Some are even capable of monitoring the steel cores of traction belts as well. Please check the data-sheet of your Load Measuring unit for its actual capabilities and details.

You find the related parameters here under 'Settings Menu' → 'More...' → 'Car load & Traction Cable measuring'. Some parameters will require SETUP others SERVICE privileges.

For example, a TARE can be carried out there to adjust the car load to zero.

The values for no-load, full load and overload listed in the "*Cabin load thresholds*" submenu are **not** compared by the lift controller with the display value. However, these threshold values can be read from the load measurement unit, edited and transferred back to it, e.g. when replacing the load meas. The load measurement itself decides on the signaling of no-load, full load and overload, regardless of whether it is a device with discrete classic outputs or one that is connected via the CANbus and sends these signals via its status word. The display value in [kg] or [%] is purely informative and is also stored in the "*Logbook*" event memory, for example.

In the diagnostics menu, it is also possible to open a dialogue, showing the individual load sensor values, if it is a load measuring unit that calculates the overall load value from several sensors, for example directly on the ropes. There is also a status dialogue for the optional rope/belt monitoring. You can find the menu branch under "Diagnostics Menu" → "More..." → "Even more..." → "Car load & Traction Cable measuring".

If the device also supports monitoring of the steel cores of the drive belts, this monitoring can be activated in the control system from version V1.38.12 in the submenu "*Traction belt/rope monitoring*". There you can also set which monitoring inputs are wired and which should redefine the reference value, e.g. after replacing the belts.

89 Time Planner

89.1 Week Planner

The week planner entries are used to turn on/off functions based on weekdays, start and stop time. You can define a time span where the start time is lower than the stop time, like 08:00...17:00 or the other way around like for turning off the arrival indicators over night from 17:00 to 08:00 on the next morning.

You will find the corresponding time planner menu items by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More...' → 'Basic' → 'More...' → 'Week Planner'.

In this example, we use the week planner to turn off the arrival indicator on Monday to Friday from 6PM to 7AM on the very next morning.

Figure 199: Time planner example

The time planner cover functions like:

- Arrival Indicator off
- Unlock car calls, locked via the table 'Car call disabling' before.
- Unlock landing calls, locked via the table 'Landing call disabling' before.
- Set parking floor
- Turn outputs on/off
- Standby Operation

It is possible in newer software versions to deactivate the first four Week Planner entries via input functions, that can be driven by a key switch for example.

90 Emergency Call Filtering

Regarding to the EN81-28 and other national lift regulations, the lift controller shall provide an output that can be used by the emergency call device (lift phone) to prevent unintentional emergency calls.

90.1 Output Function

The dedicated output function for this purpose is '*Misc outputs → Alarm Button Filter, all floors, all doors*'.

90.2 Theory of Operation

The filter output, when active, prevents an emergency call from being triggered. If the lift is in inspection/emergency electrical operation mode or a maintenance function had been activated, the filter output is generally switched off.

In normal operation, the filter output is activated when the lift is driving or having valid position encoder data, indicating the car to be in the door zone and having the manual swing door opened. In the case of automatic (power driven) doors however, not only the safety chain but the door '*opened*' limit switch must indicate as well, that at least one door has been mechanically fully opened, so that no passenger can remain trapped. Additionally the program checks the door table to ensure that the opened car door matches to an existing landing door.

91 Customizable buzzer output

Since acoustic signals are required for various purposes according to today's standards, the lift controller offers the option of using a single signal instead of the dedicated individual signals provided for this purpose. You can choose from a list of events, that shall trigger that buzzer output.

You will find the corresponding menu items by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to '*Cabin/Car*' → '*More...*' → '*Customizable buzzer signal*'.

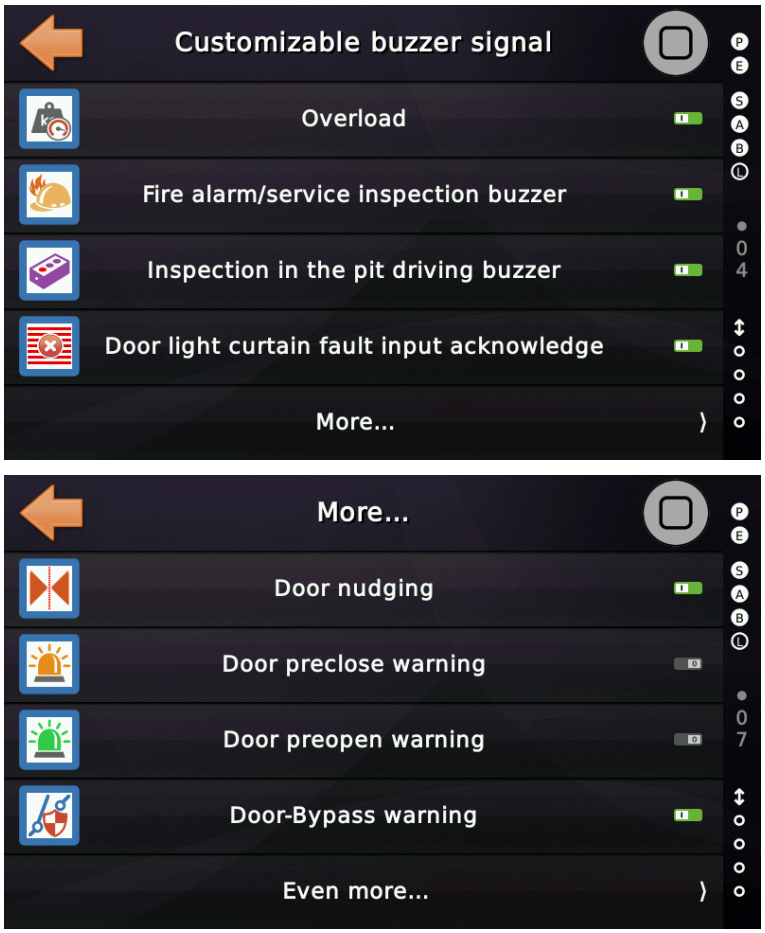


Figure 200: Customizable buzzer output

The associated output signal is '*Status/controller signals → Adaptable buzzer signal*'.

92 Generic Supervision Inputs

In order to implement monitoring functions for which no dedicated input function is available, the THOR control system supports 16 freely parameterizable monitoring inputs. By default, these inputs are low active. That means they have to be 24V when the '*normal*' or '*safe*' condition is signaled. However, the inputs can - like any other input - be inverted if necessary.

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → 'Generic Supervision Inputs'.

The following options are available to adapt these inputs to their use. These options can be freely and independently set for each of the 16 inputs.

Figure 201: Options for the Generic Supervision Inputs

92.1 Options/Parameter

92.1.1 Input delay

This parameter defines the input delay of the generic supervision input. This is used to delay the activation, if the signal changes its state.

92.1.2 Fault signalization

This parameter defines the fault signalization of the generic supervision input. This parameter defines, if the signal shall cause a 'fault', 'out of order' or 'blocking' event.

92.1.3 Inspection handling

This parameter defines if the generic supervision input shall be excluded being on inspection or emergency electrical operation.

Possible settings are:

- off – The lift will usually be able to drive with inspection/emergency electrical

operation, even if the generic supervision signal indicates a fault.

- preventing the fault being thrown, if INS/ERO was already in charge
- preventing the lift from being driven in inspection mode
- preventing the lift from being driven in inspection and emergency electrical operation (INS/ERO) mode

92.1.4 Disable relevelling

This parameter defines if the generic supervision input shall be disable the relevelling operation, if being indicated.

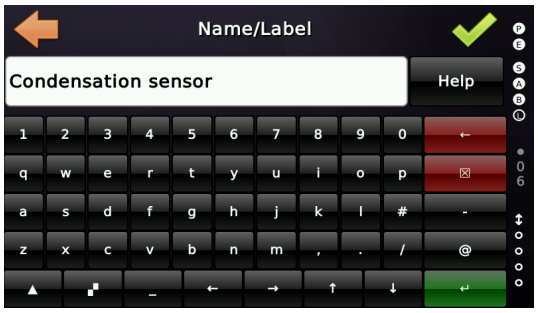
92.1.5 Energy saving policy

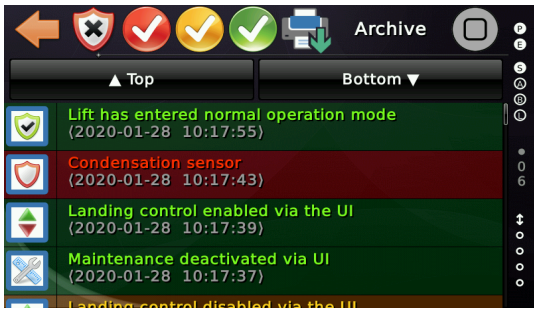
This parameter defines if the generic supervision input shall be excluded being on energy saving or standby operation.

92.1.6 Name/Label

This parameter defines an additional text or label, given for the generic supervision input, to make it less 'generic' for the technician or user.

This text is then written into the history when the supervision input has been tripped.





92.1.7 Destination Floor and Doors to open

This object defines if the generic supervision input shall be used to drive the lift to a dedicated destination floor. If so, the second parameter let you define if any door shall be opened and closed again.

92.1.8 Reopen doors via landing call

This parameter defines, if the lift door can be re-opened by means of pressing the landing call. The door can always be re-opened by a car call or the door open button.

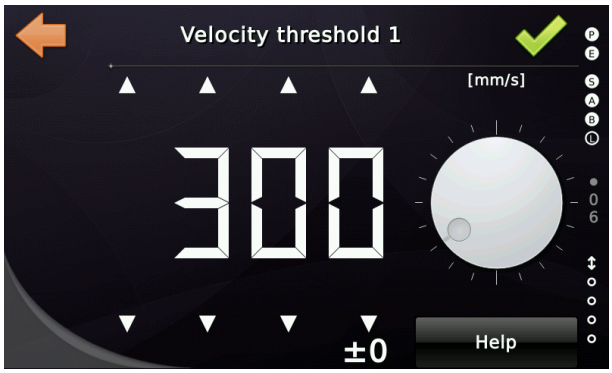
93 Velocity Thresholds

Velocity threshold values can be setup, to be used to trigger output signals, that then can operate deceleration supervision circuits, for example.

93.1 Theory of Operation

The output signals will be activated when the velocity has been fallen below the specified threshold, like v_real < v_threshold. A hysteresis of 15 mm/s is used to prevent the signal from '*flickering*' when the lift passes the switching point and the speed of the car oscillates slightly.

You find the related parameters here under 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → '...' → 'Temperature Thresholds'.



93.2 Outputs

The velocity thresholds are corresponding to the outputs signals with the same name:

- Velocity thresholds → Velocity threshold 1
- Velocity thresholds → Velocity threshold 2
- Velocity thresholds → Velocity threshold X

The output signals are switched on logically when the velocity of the car falls below the specified threshold, taking into account a small switching hysteresis.

94 Position Thresholds

Position threshold values can be setup, to be used to trigger output signals, that then can operate external circuits or indications, that are depending on the car position.

94.1 Theory of Operation

The output signals will be activated, when the position of the car has been raised to/above the specified lower position and has fallen under/to the specified upper position.

You find the related parameters here under 'Settings Menu' → 'More...' → 'Positioning Unit' → 'More...' → '...' → 'Positioning Thresholds'.

94.2 Outputs

The position thresholds are corresponding to the outputs signals with the same name:

- Position thresholds → Position threshold 1
- Position thresholds → Position threshold 2
- Position thresholds → Position threshold X

94.3 Indicate Position Thresholds only when calls are pending

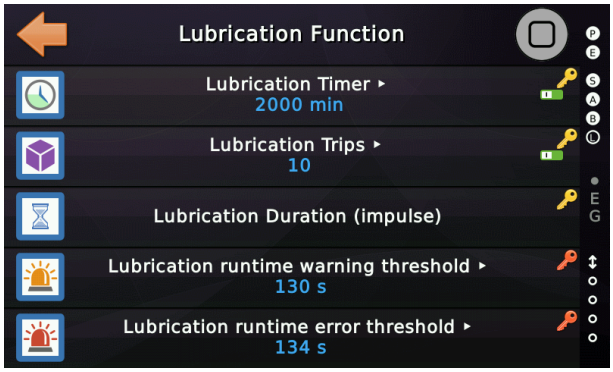
Use this object to define if the Position Thresholds shall only trip, if the lift is running with passenger calls pending. If the lift would do a service trip, like parking or hydraulic homing, the position thresholds would not be indicated then.

95 Oil-pump lubrication runtime supervision

Especially for lifts using a thread/nut based drive system – like car ramps or lifters – a supervision function has been implemented, that records the runtime of the oil-pump, providing lubricant to the thread/nut. The runtime is supposed to be proportional to the amount of lubricant being transported. By recording the runtime of the pump and having a warning and an error threshold, the system shall ensure that it will only be rendered operational as long as lubricant is available in the oil-bottle or oil-reservoir. A lubrication impulse can be triggered via the timer and/or the count of trips. If an impulse has been triggered, the timer will start again.

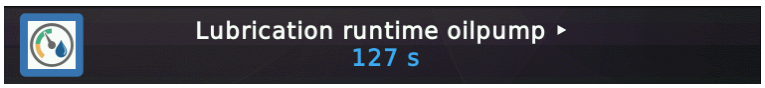
You find the settings regarding the lubrication timer in the Settings Menu, following:

'Settings Menu' → 'More' → 'Drive Unit' → 'More' → 'Even more' → Lubrication Function'



The current value of the runtime counter can be checked at the Maintenance menu:

'Service & Assembly' → 'Maintenance' → 'More' → 'Even more' → 'Lubrication Function'



Here you can reset the current run-timer value, if the oil reservoir has been refilled.

95.1 Warning Threshold

This parameter defines the time span of engaging the oil pump (lubrication) in seconds that need to have passed, before the lift controller throw a warning about the remaining oil in the oil reservoir to be low.

95.2 Error Threshold

This parameter defines the time span of engaging the oil pump in seconds that need to have passed, before the lift controller throw an error about the oil reservoir being empty. This will then actually turn the lift to Out Of Order operation mode.

96 Maintenance Intervals

You find the settings regarding the maintenance intervals in the Maintenance Menu, following:

'Service & Assembly' ▸ 'Maintenance' ▸ 'More...' ▸ 'Even more...' ▸ 'Maintenance Intervals'

96.1 Maintenance interval trip counter

This parameter defines the trip counter threshold to signal, that the lift installation requires maintenance. With this counter it is possible that the lift signals a maintenance requirement, when the specified number of trips has been reached.

96.2 Maintenance interval operation time meter

This parameter defines the operating hour meter threshold to signal, that the lift installation requires maintenance. With this counter it is possible that the lift signals a maintenance requirement, when the operating hours exceed the given value.

96.3 Maintenance interval Date & Time

This parameter defines the date and time that has to be reached, to indicate, that the lift installation requires maintenance. With this date and time being setup, it is possible that the lift signals a maintenance requirement, when the actual date and time has exceed the given value.

▸ To turn this interval off, enter '01.01.2999' as date.

96.4 Maintenance Interval Indication

The lift can indicate that a maintenance interval has been reached via:

- Output signal
  Status/controller signals → Maintenance interval indication
- CANopen/Cloud
  Object 0x501D "*Maintenance interval indication*"
- BACnet/IP
  BV-6 - Maintenance interval indication
- Logbook items telling which interval has been reached

97 Random Calls/Trips Operation

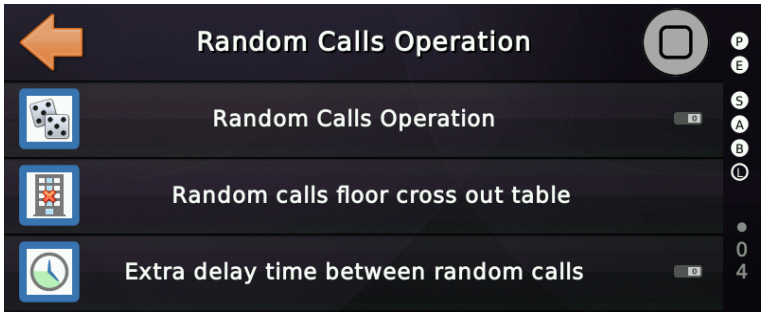
Random calls are often used to have the lift travel a few times after a repair or after a fault or issue has been fixed - simply to ensure that the lift works properly before it is handed over back to the customer. Random calls can also be combined with the '*Doors stay closed*' function, so that real passengers can be prevented from boarding.

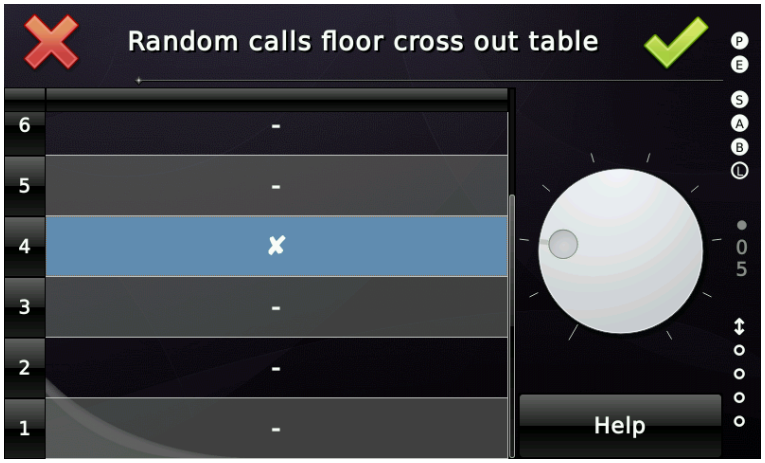
You will find the Random Calls operation and related options, here:

'Service & Assembly' ▸ 'Maintenance' ▸ 'Random Calls Operation'

Usually, the function for generating random calls generates car calls and landing calls. In the case of a group/team lift (like a duplex lift), other lifts will also react to these landing calls. However, if you turn off the landing control on the lift, that generates the random calls, only car calls will be generated.

If certain floors in a building are to be excluded from random trips, you can mark or cross out these floors in the dedicated table provided. If you want to slow down the random calls, you can add an extra delay, between registering random calls.





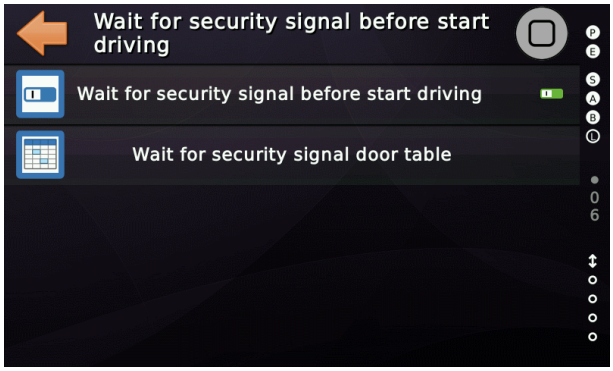
98 Wait for a Security Signal before start driving

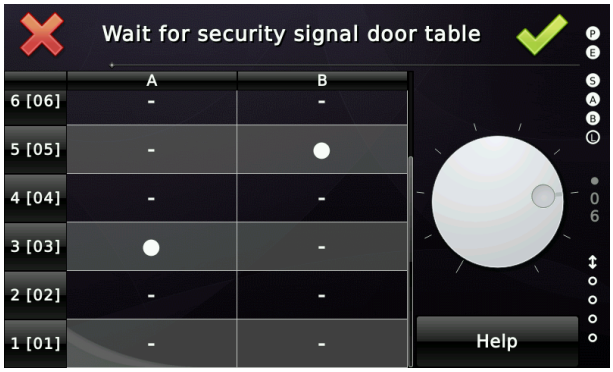
Using this feature it is possible to define, that the lift shall wait at certain floors for a security signal to peak up once. The signal in question is 'Special Function ▸ Security Run'.

You will find the dedicated settings regarding this feature in the Settings Menu, following:

'Settings Menu' → 'Controller/Piloting' → 'Times & Options' → 'More...' → 'Wait for security signal before start driving'.

The following table defines the floors and doors were the lift shall wait for the security signal to peak up, in order to start driving.





A dedicated warning and output function is activated, while the lift is waiting.

Output:

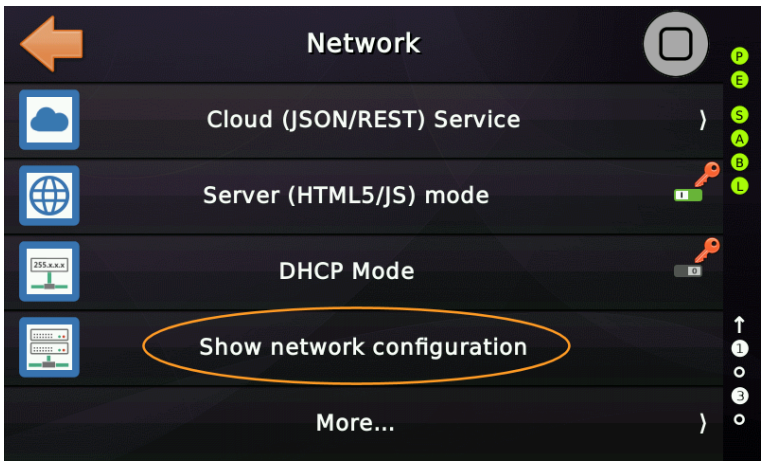
- Special Function Acknowledgment ▸ Security run acknowledge, lift x, all floors, all doors

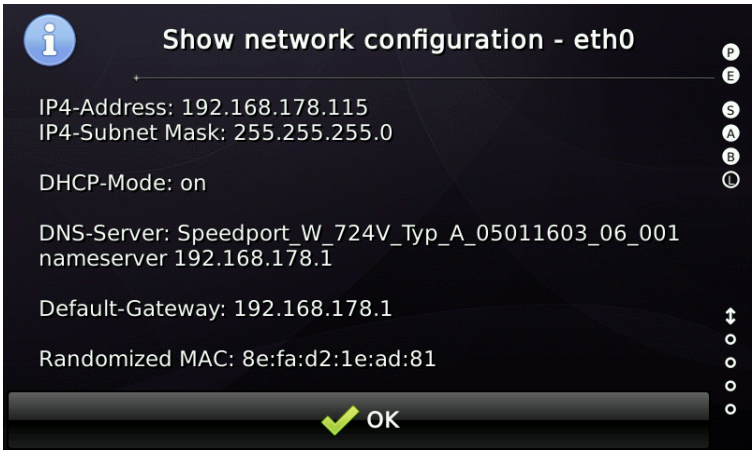
99 Network Connection

99.1 Network Interface

The main interface for connecting THOR to the outer world is the build-in RJ-45 100 MBit Ethernet connection.

The network settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' parameters'. Here you can easily check if THOR got an IP-address (lease) by using the button '*Show network configuration*'.



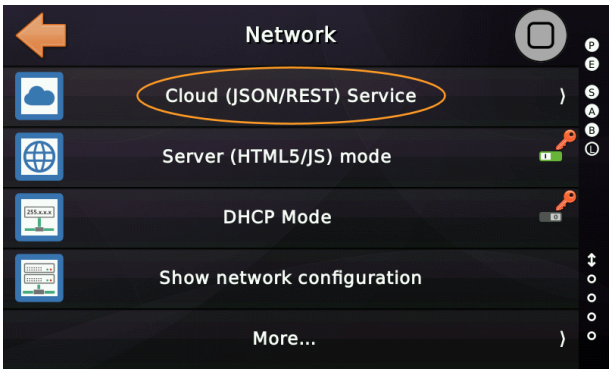


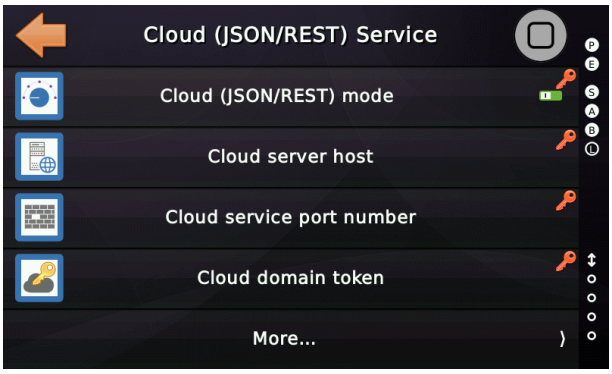
By default THOR is set to DHCP, which is fine if you want to connect THOR to your Emergency Lift Telephone or to your 3G/4G router.

If you want to adjust the network settings manually, you can disable DHCP and set the network parameters manually under '*More...*'. This can be useful in local networks if you want to work with static addresses.

99.2 Cloud Connection (Internet Connection)

THOR can be connected to any NeXt® Group compatible cloud solution. For this, the connection parameters can be set here. The service is **off** by factory default.

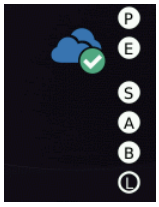




The connection parameter, such as the host name and the port number, as well as the domain token, shall be obtained from your cloud provider.

Be sure to set a SETUP password in the system before connecting the controller to the cloud provider you trust. The cloud account credentials shall be managed by an employee in the maintenance company. This person should also be responsible for changing those immediately if there is suspicion of misuse or if employees who know the credentials leave the company.

Ensure that Date & Time of the THOR unit is correct when connecting to the cloud server. Time & Date should not be of more than a couple of days. Otherwise the cloud server might refuse connection.



The connection status is indicated by a little '*Cloud*' icon on Thor's user interface desktop.

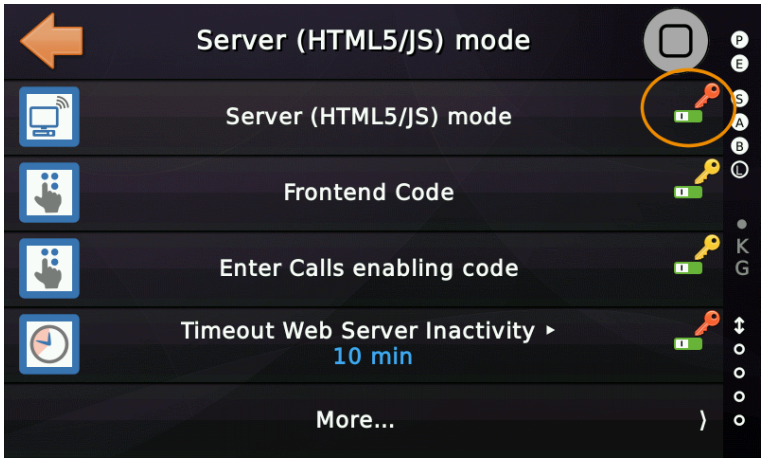
The icon might be red if there is no connection or yellow, if a connection is pending but not granted yet. That might be the case after a '*hard*' power cycle.

99.3 Build-in Web Server (Local Network)

In addition to connecting a controller to the cloud, it is also possible to **temporarily** access the THOR directly on site using a mobile phone by means of an **external** WiFi® router, that needs to be manually connected to the lift controller. The web server feature must be turned on for being used. It is **off** by default.

Thor does *not* have integrated BLT, WiFi® or cellular communication on board.

It is vital to encrypt this temporary network with WPA2-PSK and to protect access with a secure (8-digit) password.

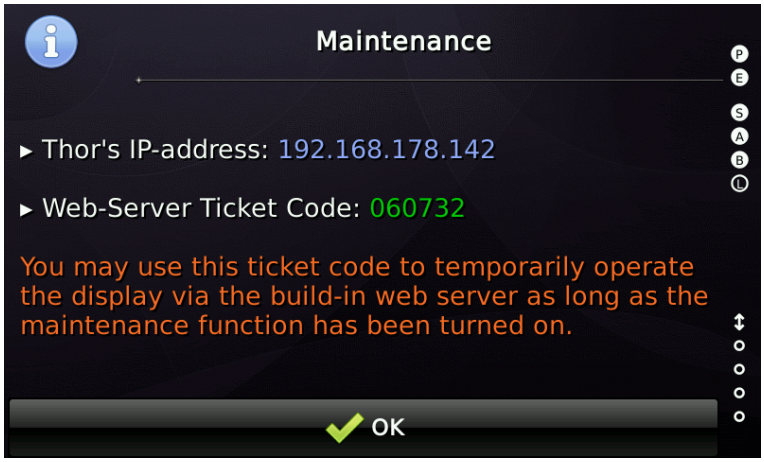


1.) To enter the web interface, you must enter the **Frontend Code**, that has been setup in the controller. This code shall not be the same for different lifts. Instead consider setting up '*your personal*' code, when working on the lift.

2.) If the maintenance operation has been activated on site, the technician also receives not only the IP address but also the random '**Ticket Code**' to access the display.

3.) After the set inactivity time has expired, the random Ticket Code for the display control expires and the parameterized Front-end Code must also be re-entered. To use it, all you need is a web browser on your phone. We recommend using the Opera® Mini web browser on mobile as it has a full screen mode.

We **do not** recommend connecting the lift controller permanently to a WiFi® in a building, even if it has been properly protected.



100 BACnet/IP

Building management systems (BMS) might feature a network of sensors and actors within the building, used to control climatic-systems, lighting and other active building automation components, such as lifts.

To connect THOR to a BACnet/IP system, the build-in BACnet server can be used.

When connecting to a building management network (SCADA), as is the case in hospitals for example, we recommend using a separate **VLAN** for connecting technology such as lifts, air conditioning, lighting, etc. A so-called VLAN is a virtual local area network, i.e. a logical sub-network of a physical local area network (LAN). The Virtual Local Area Network forms its own network segment and broadcast domain. We advise against connecting the lift controller to the same logical network as printers, office PCs and similar equipment, as their physical access points (network connections) are often easy to reach.

Although it is not possible to change parameters or access lift components via the BACnet interface, since calls can be made and door open/close requests can be sent, the availability of the system can be negatively affected.

100.1 Copyright of the used BACnet Stack

This application features the BACnet Protocol Stack implementation that is Copyright © 2012 Steve Karg <skarg@users.sourceforge.net> For more information about this high quality project, visit the BACnet Protocol Stack project web site. This BACnet protocol stack implementation is specifically designed for the embedded BACnet appliance, using a GPL with exception license (like eCos), which means that any changes to the core code that are distributed get to come back into the core code, but the BACnet library can be compiled and linked to proprietary code without the proprietary code becoming GPL.

http://bacnet.sourceforge.net

100.2 BACnet PICS

To include THOR into an existing BACnet network, the administrator might ask for a BACnet Protocol Implementation Conformance Statement (PICS). This includes a list of services supported by the unit.

100.2.1 Product Description

This product provides process data information about the lift controller and system. The supported *Data Link Layer* of choice is BACnet/IP.

100.2.2 Vendor Name and ID

- Thor Engineering GmbH
- Vendor-ID = 1231

100.2.3 BACnet Device Profile - Annex L

- BACnet Application Specific Controller (B-ASC)

100.2.4 Segmentation Capability

- None
- Maximum APDU Length is 1476 bytes

100.2.5 BACnet Building Blocks Supported (BIBB) - Annex K

- DS-RP-B, Data Sharing-ReadProperty-B
- DS-RPM-B, Data Sharing-ReadProperyMultiple-B
- DS-WP-B, Data Sharing-WriteProperty-B
- DS-WPM-B, Data Sharing-WriteProperyMultiple-B
- DS-COV-B, Data Sharing-COV-B
- DS-COVU-B, Data Sharing-COV-Unsolicited-B

100.2.6 Standard Object Types Supported

- Device – BV
- Binary values – BV
- Analogue values – AV

- Character Strings – CSV

100.2.7 Device Address Binding

- Static device address binding is **not** supported as it is only required for MS/TP solutions.
- Dynamic binding **is** supported. This is where the device uses the Who Is/I Am services to determine the physical network address needed to communicate with a given device, identified by its device ID.

100.2.8 Data Link Layer

- BACnet/IP

100.2.9 Character Sets Supported

- UTF-8 / ANSI X3.4

100.2.10 Network Options

- The BACnet/IP Broadcast Management Device (BBMD) feature is not included, as this application is a simple BACnet device, rather than a BACnet router.

100.3 How to activate the BACnet/IP Support

The BACnet settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' → 'More...' → 'Even more...'.

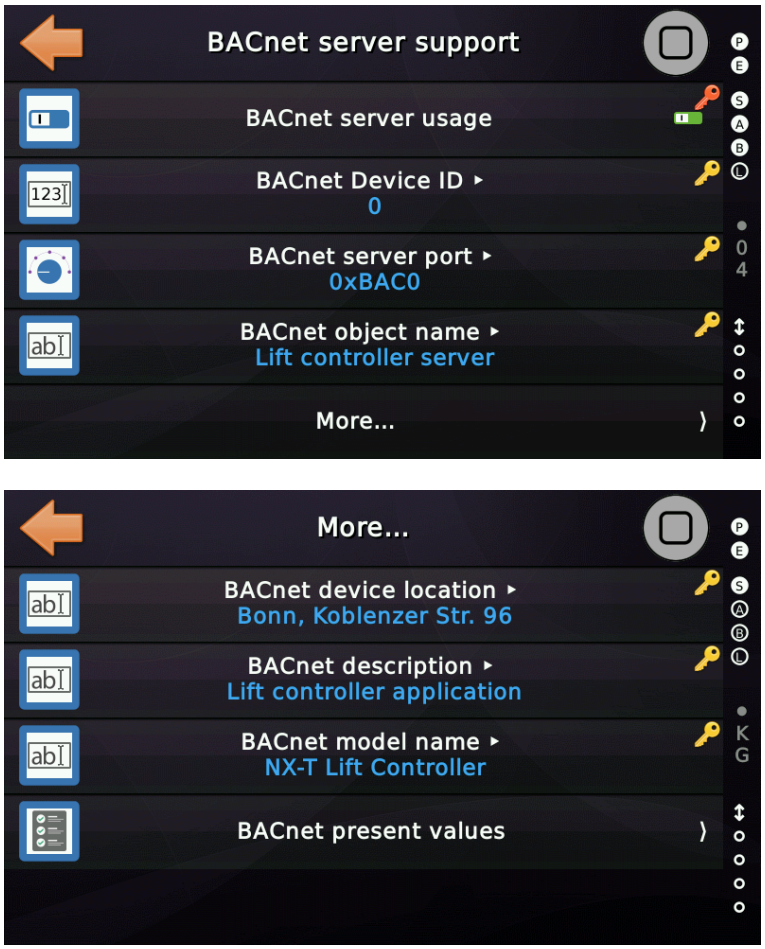


Figure 202: BACnet settings in THOR's user interface

100.4 BACnet Device ID

The Device Identifier (Device ID) is part of the Instance Number, which can be found in the '*Object Identifier Property*' of the Device. The Instance Number has to be uniquely on the entire interconnected BACnet network. The Device Id, which is the lower part of the Instance Number, can be setup locally by the BACnet administrator. For the THOR unit, this is done via THOR's graphical user interface. The value is stored non-volatile at the unit's internal memory.

Object Identifier	OBJECT_DEVICE:996
Instance	**996**
Type	**OBJECT_DEVICE**

By default THOR is using the last digits of the serial number to have a proposed/default Device Id, that will not conflict with other THOR units.

100.5 Process Data provided via BACnet

100.5.1 Analogue values

Object Type	Object Instance	Object Name	Object Description
AV	0	Trip counter	This object represents the internal trip counter of the lift controller.
AV	1	Operation Time Meter	This object represents the operating hour meter of the lift controller in 0.1 hours.
AV	2	Direction change counter	This object holds the internal counter, which counts how often the cabin has changed the driving direction.
AV	3	Leveling inaccuracies last maintenance	This object holds a counter reflecting how often the lift did not stop flush on level, since the last maintenance.
AV	4	Temperature of the controller	This object reflects the current lift controller temperature in degree Celsius.
AV	5	Average landing call waiting time	This object holds the average landing call waiting time in tenth of a seconds.
AV	6	Average travel time	This object holds the average travel time (passenger being in the cabin) in tenth of a seconds.
AV	7	Current car floor	This object holds the floor were the car currently is.
AV	8	Lift controller mode	This object contains the current mode of the lift controller, such as Normal operation, Fire Alarm, Fire Fighter or Emergency Power operation. 0..1 – System startup 2 – Normal operation 3 – Normal operational (emergency power) 4 – Transport of hazard goods 5 – Automatic Learning Trip 6 – Remote Off (Standby) 7 – Emergency power operation

			8 – Fire Alarm operation 9 – Rescue operation 10 – Fire Fighter Phase 1 11 – Fire Fighter Phase 2 12 – UCM-Test operation 13 – Limit Switch Test operation 14 – Speed governor test or Main Brake test 15 – Braking Distance assistant 16 – Power Fail 17 – Out of Service 18 – Inspection operation 19 – Emergency Electrical operation 20 – Emergency Evacuation (stutter brake) 21 – Blocking operation 22 – US ASME ACCESS Operation
AV	9	Current travel direction	This object holds the current direction the car is travelling. (1 - ⬆ / 2 - ⬇)
AV	10	Safety chain status bit mask	This object holds the current safety chain status as a bit mask, starting with BIT0 being the passive safety chain input.
AV	11	Trigger landing/car call	This object can be used to trigger/enter a call. The call is provided as a numerical value (tuple) containing the floor, door and call type. Bit0..7 - Floor Bit8..15 - Door mask Bit16..19 - Call type 1 - Car call 4 - Landing direction independent 8 - Upward landing call 10 - Downward landing call
AV	12	Position value	This object contains the position values measured by the car position units.
AV	13	Speed value	This object contains the speed (velocity) values measured (indirectly) by the car position units.
AV	14	Status Register	General status information in the form of an error code, which can be found in the

			appendix to this manual.
AV	15	Bottom Floor	The lowest floor that the lift can approach. Typically 1, this value can also be > 1 for group lifts if, for example, one lift cannot go into the basement or the parking garage.
AV	16	Top Floor	The top (upper) floor of the lift hoistway.
AV	17	Single fault indication	This value is actually a bit field, representing pending fault indicators. Bit 0 – Door fault Bit 1 – Drive fault Bit 2 – Weighing device fault Bit 3 – Positioning unit fault Bit 4 – Emergency call unit fault Bit 5 – Unattended car movement Bit 6 – Light power unit failure Bit 7 – Car illumination failure Bit 8 – Light barrier fault Bit 9 – Door open button failure Bit 10 – Stop accuracy failure Bit 11 – Unintended safety door opening Bit 12 – Safety circuit (door bridging) fault Bit 13 – Power supply failure
AV	18	Door A status	0 - Door is in an ambiguous state. 1 - Door is in emergency stop operation. 2 - Door stopped (with torque) at the current (intermediate) position. 3 - Door is opening. 4 - Door opened. 5 - Door is closing. 6 - Door is closed.
AV	19	Door B status	This object has the same structure as the object for door A.
AV	20	Door C status	This object has the same structure as the object for door A.
AV	21	Door D status	This object has the same structure as the object for door A.
AV	22	Car distance	This value tells the distance of the car from

		from floor level	the dedicated floor level in millimeters, when the car had stopped.
AV	23	Generic Input Terminals	This object is used to reflect the state of the first 16 generic input terminals. The first terminal is Bit 0 and the last Bit 15.
AV	24	Lift scenery	This object reflects the current lift scenery as an enumeration. 0 - normal operation 1 - parking operation 2 - car preference/independent mode (VIP) 3 - low priority landing/hall call operation 4 - high priority landing/hall call operation 5 - low priority car call operation 6 - high priority car call operation 7 - Guest call operation 8 - Helicopter standby operation 9 - Helicopter serving operation 10 - Chemical operation 11 - Circulating operation 12 - Peak up/down operation 13 - Automobile operation 14 - Remote Standby operation
AV	25	Trigger a door command	0 - none 1 - push door A open button 2 - push door A close button 3 - push door B open button 4 - push door B close button 5 - push door C open button 6 - push door C close button 7 - push door D open button 8 - push door D close button
AV	26	Block or unblock calls	This object can be used to block or unblock car or landing calls on floors on discrete door sides. That might be useful in managed building environments. Bit 0..7 - Floor Bit 8 - Door A

			Bit 9 - Door B Bit 10 - Door C Bit 11 - Door D Bit 12 - 0 - Landing calls / 1 - Car calls Bit 13 - reserved Bit 14 - 0 - Enable / 1 - Disable Bit 15 - reserved
AV	27	Trigger or cancel a standby operation	This object can be used to trigger or cancel a standby operation, optionally sending the lift to the dedicated recall floor. 0 – off 1 – standby
AV	28	Deactivate the landing control	Use this object to deactivate the landing control by setting the value to one. By setting the value back to zero, you will activate the landing control again. 0 – landing control active 1 – landing control deactivated
AV	29	Activate this function to keep the doors closed	Use this function to keep the doors closed, usually for maintenance purposes. The lift will still react on calls. Ensure not to trap a passenger by mistake, using this feature. 0 – off 1 – keep the doors closed
AV	30	Maintenance operation on/off	Use this function to turn on or off the maintenance operation mode. Being on maintenance a lot of faults will be not recorded to the history. 0 – off 1 – maintenance mode activated
AV	31	Car illumination overwrite trigger	This object can be used to trigger turning on or off the cabin illumination, if possible in the current operation mode.

			0 – automatic car light mode 1 – overwrite to turn the car light on again once 2 – overwrite to skip the timer and turn the car light off immediately once, if possible (doors closed, no passengers trapped)
AV	32	Car load situation	This object reflect the current car load situation. 0 – normal load 1 – no load 2 – full load 3 – overload 4 – slack rope (not always available) 5 – error 6 – high rope tension difference
AV	33	Time the lift has been broken down	This object reflects in minutes how long the lift is stationary being broken down or out or order.
AV	34	Cabin in between floors	0 – Car is in the door zone at some floor 1 – Car is above a floor 2 – Car is below a floor
AV	35	Door count	Count of car doors 1 – A 2 – A/B 3 – A/B/C 4 – A/B/C/D
AV	36	Trigger Emergency Power Operation	By writing the 'magic' value of 42 into the register, the lift will enter Emergency Power Operation mode, if that feature had been activated and parameterized in the lift controller and if the current operation mode actually allows the lift to enter Emergency Power mode. To check, if the lift has entered Emergency Power operation mode, the AV (8) 'Lift controller mode' can be read later on.

100.5.2 Character values (Strings)

Object Type	Object Instance	Object Name	Object Description
CSV	0	Lift Identification Number	This object holds the vendor/manufacturer specific lift identification as a string.
CSV	1	Controller Identification Number	This object holds the vendor/manufacturer specific controller identification number as a string.
CSV	2	Car call acknow-ledge (lamps)	This object reflects the pending car call acknowledges as a hex door mask per floor, separated by a semicolon. Example: “0;1;0;0;2;0;0;1;0;3;0” Bit-0 (1) – Door A Bit-1 (2) – Door B Bit-2 (4) – Door C Bit-3 (8) – Door D The string will always start at floor 1 even if the lift has a bottom floor of 3 for example. The string will end on top-floor of the lift.
CSV	3	Hall call acknow-ledge (lamps)	This object reflects the pending landing call acknowledges as a hex door mask per floor, separated by a semicolon. Upward landing call and downward landing calls are separated by a minus '-' sign with the upward calls first. Example: “0-0;0-0;2-0;0-0;0-0;0-1” Bit-0 (1) – Door A Bit-1 (2) – Door B Bit-2 (4) – Door C Bit-3 (8) – Door D The string will always start at floor 1 even if the lift has a bottom floor of 3 for example.

Object Type	Object Instance	Object Name	Object Description
			The string will end on top-floor of the lift.

100.5.3 Binary Values

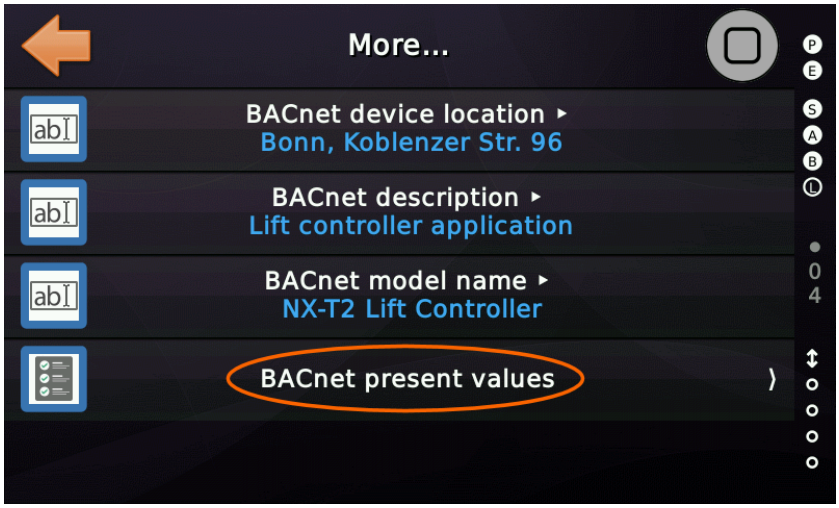
Object Type	Object Instance	Object Name	Object Description
BV	0	Maintenance Mode	This object holds the current maintenance mode. If the maintenance mode has been turned on, no faults will be recorded or forwarded to any kind of data gateway.
BV	1	Keep doors closed operation	This object reflects if the doors are being commanded to stay closed, usually in combination with some kind of maintenance work, being in progress.
BV	2	Status landing control off	This object is a bit mask and reflects if the landing control has been turned off via several sources.
BV	3	Collective fault indicator	The collective fault indicator can be used as a simplified way of detecting a lift not being in service anymore. It is activated with a short delay when the lift has switched to one of the operating modes that prevent its use by passengers.
BV	4	The lift has reached the recall floor.	Indicates that the lift has arrived at the recall floor. The lift can be recalled to a floor by means of a pending fire alarm, fire service, standby or evacuation operation.
BV	5	Lift parking indication	If no passenger calls are pending, the lift may enter the parking operation mode. That usually means the lift will drive to a specific floor or zone.
BV	6	Maintenance interval indication	If one of the maintenance intervals (trip counter, operating hour meter or date and time) has been expired, the maintenance interval signal, indicates that the lift installation is in need of maintenance.

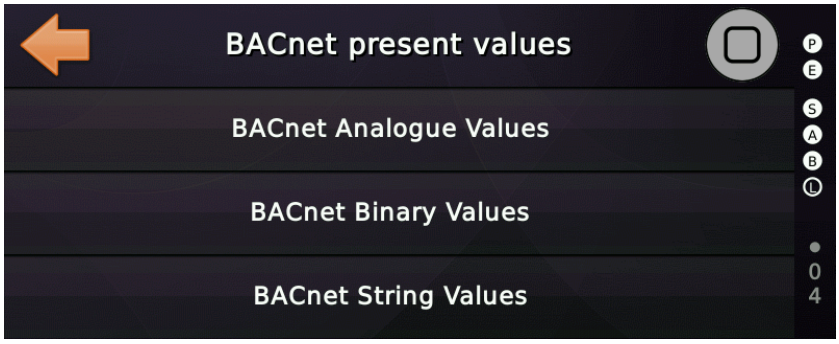
Object Type	Object Instance	Object Name	Object Description
BV	7	Car in door zone	This indication reflects, if the car/cabin is currently in a door zone or not.
BV	8	Car illumination	This indicates the state of the car illumination being turned on or off.
BV	9	Lift Telephone	This reflects the state of the lift phone readiness signal, if being connected to the lift controller.
BV	10	Engineer on site	Indicates, that the engineer or technician on site has turned on some inspection, testing, rescue or maintenance function via an input or the user interface. 0 – off / 1 – on
BV	11..26	Generic purpose output terminal 1..16	These generic purpose outputs can be operated via the corresponding BACnet registers and will be output by the lift controller to its physical terminals or via the CANopen bus system to any other I/O panel unit, for example *Field-bus based outputs → Field-bus based output 1, lift 1, all floors, all doors.*

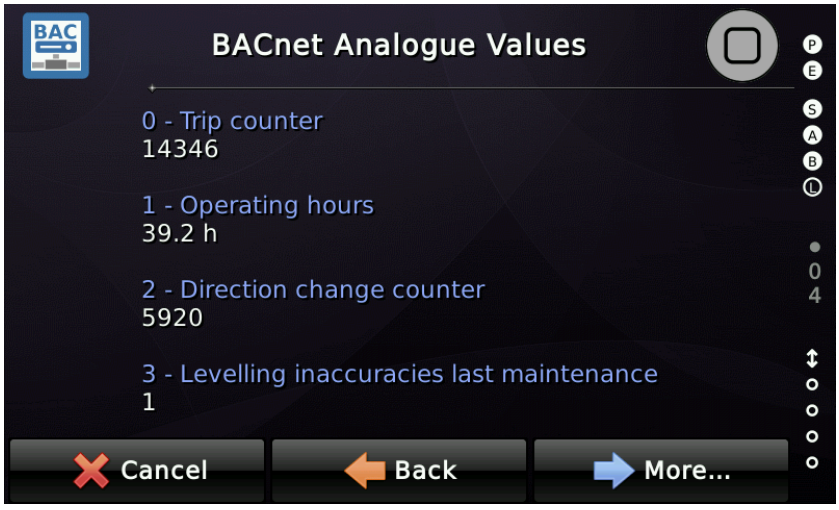
100.5.4 BACnet Object View

In order to be able to view the current object values at runtime, three suitable dialogues have been created. These dialogues display the present values of the analog, binary, and string objects.

The BACnet settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' → 'More...' → 'Even more...' → 'BACnet Server' → 'More...' → 'BACnet present values'.







101 MODbus/TCP

A Modbus/TCP server has been implemented for the connection to a building management system. The connection is using an Ethernet interface (LAN). The protocol used is TCP at the standard port 502.

When connecting to a building management network (SCADA), as is the case in hospitals for example, we recommend using a separate **VLAN** for connecting technology such as lifts, air conditioning, lighting, etc. A so-called VLAN is a virtual local area network, i.e. a logical sub-network of a physical local area network (LAN). The Virtual Local Area Network forms its own network segment and broadcast domain.

We advise against connecting the lift controller to the same logical network as printers, office PCs and similar equipment, as their physical access points (network connections) are often easy to reach.

Although it is not possible to change parameters or access lift components via the MODbus interface, since calls can be made and door open/close requests can be sent, the availability of the system can be negatively affected.

101.1 Copyright of the used MODbus Stack

https://sourceforge.net/projects/freemodbus.berlios

101.2 How to activate the MODbus/TCP Support

The MODbus settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' → 'More...' → 'Even more...'.

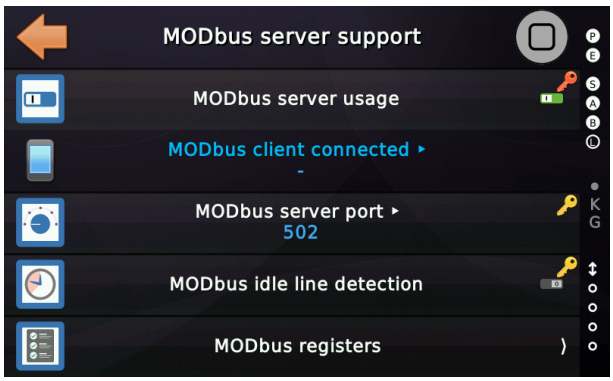


Figure 203: MODbus settings in THOR's user interface

101.3 Process Data provided via MODbus

It is recommended to setup a communication timeout for the MODbus port in the THOR unit. So, that an open MODbus connection that will be idle for the given time span can then be closed safely by the lift controller. This is important to detect '*dead network sockets*'. The MODbus client is then in need to poll some MODbus register from the lift controller on a regular basis, like every minute to make sure the timeout will not expire.

101.3.1 Read Discrete Inputs (readable, FC=0x02, ADDR=reg-10001)

Register	Objekt Name	Objekt Beschreibung
10001 (addr=0)	Standby Status	This object reflects if the Standby Mode has been activated by any source, like key switch, user interface or field bus. The indication will be risen in the moment, the lift starts to drive to the dedicated standby floor and will be kept peaked high, until the function has been turned off again.
10002	Collective fault indicator	The collective fault indicator can be used as a simplified way of detecting a lift not being in service anymore.
10003	Operating Indicator	0 – Controller inactive / 1 – Controller active
10004	Lift remote off/on	0 – off (Remote off) / 1 – on (Lift on)

101.3.2 Write Single Coil (writable, FC=0x05, ADDR=reg-1)

Coil	Object Name	Object Description
1 (addr=0)	Trigger or cancel a standby operation	This object can be used to trigger or cancel a standby operation, optionally sending the lift to the dedicated recall floor.
2 (addr=1)	Turn lift on/off	0 – Lit off 1 – Lift on

101.3.3 Input registers (readable, function code FC=0x04, ADDR=reg-30001)

Register Address	Value Range	Object Name	Object Description
30001 (addr=0)	0..65535	Trip counter divided by 100	This object represents the internal trip counter of the lift controller, divided by 100 to make it fit into a MODbus register.
30002	0..65535	reserved	Not used yet. Reserved for further use.
30003	0..65535	Operation Time Meter	This object represents the operating hour meter of the lift controller in full hours.
30004	0..65535	Direction change counter divided by 100	This object holds the internal counter, which indicates how often the cabin has changed the driving direction, divided by 100 to make it fit into a MODbus register.
30005	0..65535	Leveling inaccuracies last maintenance	This object holds a counter reflecting how often the lift did not stop flush on level, since the last maintenance.
30006	-100..100	Temperature of the controller	This signed object reflects the current lift controller temperature in degree Celsius.
30007	0..9999	Average landing call waiting time	This object holds the average landing call waiting time in tenth of a seconds (1/10 s).
30008	0..9999	Average travel time	This object holds the average travel time (passenger being in the cabin) in tenth of a seconds (1/10 s).
30009	1..127	Current car floor	This object holds the floor were the car currently is.
30010	0..99	Lift controller mode	This object contains the current mode of the lift controller, such as Normal

			operation, Fire Alarm, Fire Fighter or Emergency Power operation. 0..1 – System startup 2 – Normal operation 3 – Normal operational (emergency power) 4 – Transport of hazard goods 5 – Automatic Learning Trip 6 – Remote Off (Standby) 7 – Emergency power operation 8 – Fire Alarm operation 9 – Rescue operation 10 – Fire Fighter Phase 1 11 – Fire Fighter Phase 2 12 – UCM-Test operation 13 – Limit Switch Test operation 14 – Speed governor test or Main Brake test 15 – Braking Distance assistant 16 – Power Fail 17 – Out of Service 18 – Inspection operation 19 – Emergency Electrical operation 20 – Emergency Evacuation (stutter brake) 21 – Blocking operation 22 – US ASME ACCESS Operation
30011	0..2	Current travel direction	This object holds the current direction the car is travelling (0 – none, 1 – up, 2 - down).
30012	0..63 (Bit 0..5)	Safety chain status bit mask	This object holds the current safety chain status as a bit mask, starting with BIT0 being the passive safety chain input.
30013	0..65535	Position value	This object contains the position value [mm] measured by the car position units.
30014	0..9999	Speed value	This object contains the speed (velocity) values measured (indirectly) by the car position units. The value is given in mm/s.
30015	0..9999	Status Register	General status information in the form of an error code, which can be found in the appendix to this manual.
30016	1..8	Bottom Floor	The lowest floor that the lift can approach.

			Typically 1, this value can also be > 1 for group lifts if, for example, one lift cannot go into the basement or the parking garage.
30017	1..127	Top Floor	The top (upper) floor of the lift hoistway.
30018	0..1	Maintenance Mode	This object holds the current maintenance mode. If the maintenance mode has been turned on, no faults will be recorded or forwarded to any kind of data gateway.
30019	0..1	Keep doors closed operation	This object reflects if the doors are being commanded to stay closed, usually in combination with some kind of maintenance work, being in progress.
30020	0..1	Status landing control off	This object reflects if the landing control has been turned off.
30021	0..1	Collective fault indicator	The collective fault indicator can be used as a simplified way of detecting a lift not being in service anymore.
30022	0..1	The lift has reached the recall floor.	Indicates that the lift has arrived at the recall floor. The lift can be recalled to a specific floor by means of a pending fire alarm, fire service, standby or evacuation operation.
30023	0..1	Lift parking indication	If no passenger calls are pending, the lift may enter the parking operation mode. That usually means the lift will drive to a specific floor or zone.
30024	0..1	Maintenance interval indication	If one of the maintenance intervals (trip counter, or operating hour meter or date and time) has been expired, the maintenance interval signal, indicates that the lift installation is in need of maintenance. 0 – none 1 – Maintenance required 2/3 – Maintenance required, Out of Order
30025	0..65535	Installation number	The lower 16 bits of the serial number, that can be used as a unique identification

			number for this lift controller.
30026	0..65535	Single fault indication	This value is actually a bit field, representing pending fault indicators. Bit 0 – Door fault Bit 1 – Drive fault Bit 2 – Weighing device fault Bit 3 – Positioning unit fault Bit 4 – Emergency call unit fault Bit 5 – Unattended car movement Bit 6 – Light power unit failure Bit 7 – Car illumination failure Bit 8 – Light barrier fault Bit 9 – Door open button failure Bit 10 – Stop accuracy failure Bit 11 – Unintended safety door opening Bit 12 – Safety circuit (SZ) fault Bit 13 – Power supply failure
30027	0..6	Door A status	0 - Door is in an ambiguous state. 1 - Door is in emergency stop operation. 2 - Door stopped (with torque) at the current (intermediate) position. 3 - Door is opening. 4 - Door opened. 5 - Door is closing. 6 - Door is closed.
30028	0..6	Door B status	See door A status.
30029	0..6	Door C status	See door A status.
30030	0..6	Door D status	See door A status.
30031	0..65535	Car distance from floor level	This value tells the distance of the car from the dedicated floor level in millimeters, when the car had stopped.
30032	0..65535	Generic Input Terminals	This object is used to reflect the state of the first 16 generic input terminals.
30033	0/1	Car in door zone	This object indicates, if the car/cabin is in the door zone of a floor or not.
30034	0/1	Car illumination	This indicates the state of the car

			illumination being turned on or off.
30035	0/1	Lift Telephone	This reflects the state of the lift phone readiness signal, if being connected to the lift controller.
30036	0..65535	Lift scenery	This object reflects the current lift scenery as an enumeration. 0 - normal operation 1 - parking operation 2 - car preference/independent mode (VIP) 3 - low priority landing/hall call operation 4 - high priority landing/hall call operation 5 - low priority car call operation 6 - high priority car call operation 7 - Guest call operation 8 - Helicopter standby operation 9 - Helicopter serving operation 10 - Gas (Chemical) operation 11 - Circulating operation 12 - Peak up/down operation 13 - Automobile operation 14 – Remote Standby operation
30037	0..6	Car Load Situation	This object reflect the current car load situation. 0 – normal load 1 – no load 2 – full load 3 – overload 4 – slack rope (not always available) 5 – error 6 – high rope tension difference
30038	0/1	Engineer on site	Indicates, that the engineer or technician on site has turned on some inspection, testing, rescue or maintenance function via an input or the user interface. 0 – off / 1 – on
30039	0..65535	Time the lift has been broken down	This object reflects in minutes how long the lift is already stationary being broken down or out or order, waiting to be fixed.

30040	0..2	Cabin in between floors	0 – Car is in the door zone at some floor 1 – Car is above a floor 2 – Car is below a floor
30041	1..4	Door count	Count of car doors 1 – A 2 – A/B 3 – A/B/C 4 – A/B/C/D
30042	0/1	Maintenance Status	This object reflects if the Maintenance Mode has been activated by any source, like a key switch, user interface or field bus.
30043	0/1	Standby Status	This object reflects if the Standby Mode has been activated by any source, like key switch, user interface or field bus. The indication will be risen in the moment, the lift starts to drive to the dedicated standby floor and will be kept peaked high, until the function has been turned off again.
30044	0/1	Calls Blocked Status	This object reflects if some calls are still blocked/disabled by means of the dedicated table, electrical input or via the field bus system.
30045	0/1	Keep doors closed status	This object reflects if the Keep Doors Closed Mode has been activated by any source, like key switch, user interface or field bus.
30046 ... 30059 30060/1	0/1 reserved	Single Fault Indication	- Door fault - Drive unit fault - Load measuring fault - Position unit fault - Emergency call unit fault - Unintended car movement [UCM] - Light power supply - Car light fault - Light barrier unit fault - 'Door open' button fault - Stopping accuracy fault - Unintended safety contact door fault - Protective Circuit (SZ) fault

			- Mains power failure
30062	0..65535	Pending Car calls	Every bit indicates a car call for floor 1..16.
30063	0..65535	Pending Car calls	Every bit indicates a car call for floor 17..32.
30064	0..65535	Pending Up calls	Every bit indicates an upward landing call for floor 1..16.
30065	0..65535	Pending Up calls	Every bit indicates an upward landing call for floor 17..32.
30066	0..65535	Pending Down calls	Every bit indicates a downward landing call for floor 1..16.
30067	0..65535	Pending Down calls	Every bit indicates a downward landing call for floor 17..32.
30068	0..65535	Blocked Car calls	Every bit indicates a blocked car call for floor 1..16.
30069	0..65535	Blocked Car calls	Every bit indicates a blocked car call for floor 16..32.
30070	0..65535	Blocked Hall calls	Every bit indicates a blocked hall call for floor 1..16.
30071	0..65535	Blocked Hall calls	Every bit indicates a blocked hall call for floor 16..32.
30072	0/1	Operating Indicator	0 – Controller inactive 1 – Controller active
30073	0/1	Lift on/off	0 – Lift off (automatic/manual) 1 – Lift on
30074	0/1	Acknowledge of special mode, preventing door opening by landing calls	0 – Landing calls work as usual. 1 – Landing calls can be registered but the door will not open.
30075	0/1	Landing call is pending but door opening has been prevented by dedicated input	0 – No landing call or door opening is not prevented by dedicated input. 1 – A landing call is currently pending but the door opening is inhibit by means of the input '*Door controlling signals → Prevent door opening by landing call*'.

101.3.4 Holding Registers (writable, function code 0x06, ADDR=reg-40001)

Register Address	Value Range	Object Name	Object Description
40001 (addr=0)	0..65535	Trigger a call	This object let you enter a call to a floor and door. The lower 8 bits are the floor. Bit 0..7 – Floor Bit 8..11 – Doors (A..D) Bit 12..15 – Call type 1 – normal car call 2 – low priority car call 3 – high priority car call 4 – landing call (no direction) 5 – landing call extra (no direction) 6 – landing call low priority 7 – landing call high priority 8 – landing upward call 9 – landing upward call extra 10 – landing downward call 11 – landing downward call extra
40002	0..1	Unlock Date & Time	This object must be described with '1' so that the date and time can be set. The objects are locked again automatically after 10 minutes.
40003	0..65535	Date	Date in the form of '1123' for the 23rd of November.
40004	0..65535	Time	Time in the form of '1443' for 14:43 o'clock.
40005	0..8	Trigger a door command	0 – none 1 – push door A open button 2 – push door A close button 3 – push door B open button 4 – push door B close button 5 – push door C open button 6 – push door C close button 7 – push door D open button 8 – push door D close button
40006	0..65535	Block or unblock calls	This object can be used to block or unblock car or landing calls on floors on discrete

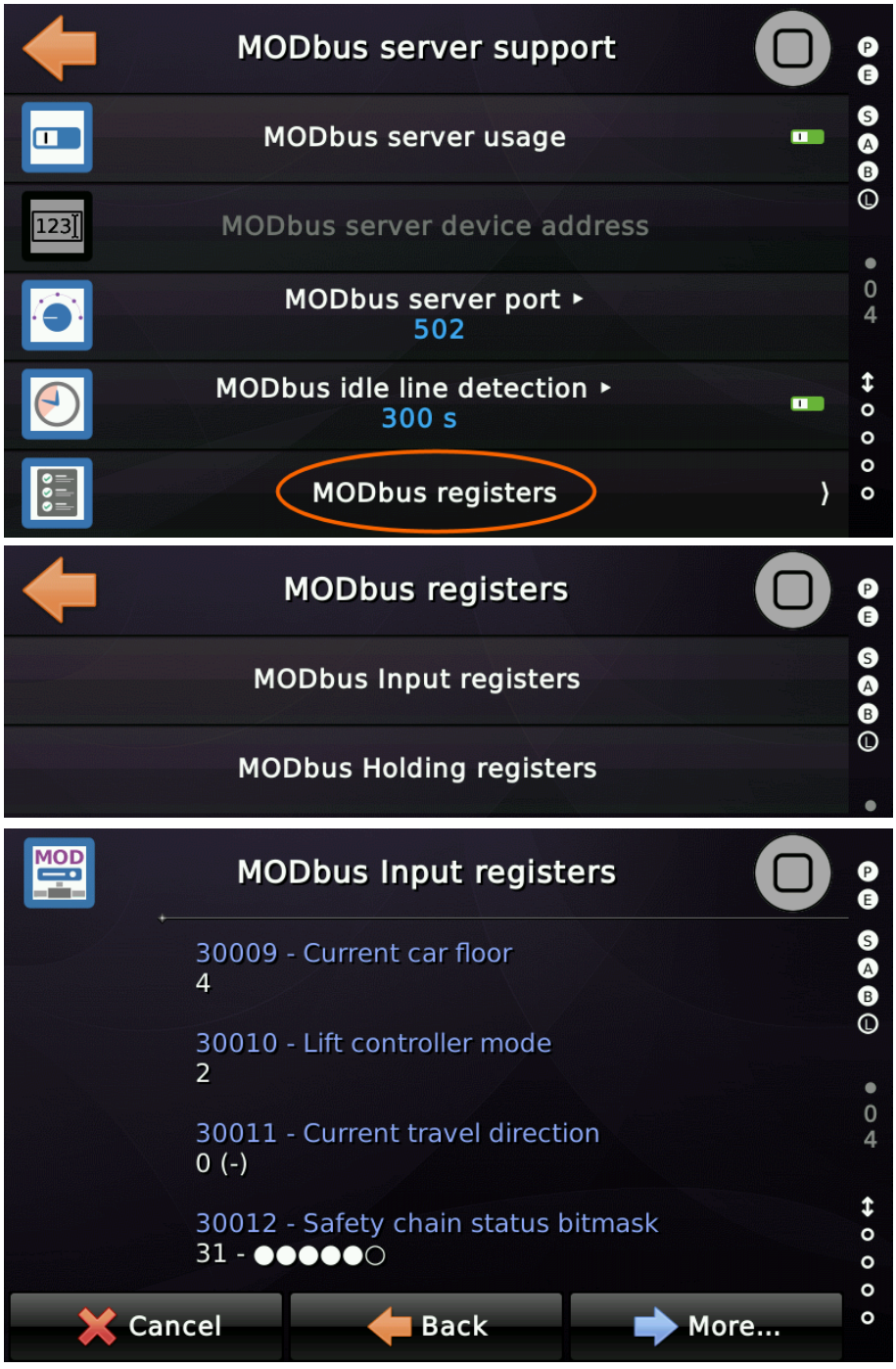
			door sides. That might be useful in managed building environments. Bit 0..7 - Floor Bit 8 - Door A Bit 9 - Door B Bit 10 - Door C Bit 11 - Door D Bit 12 - 0 - Landing calls / 1 - Car calls Bit 13 - reserved Bit 14 - 0 - Enable / 1 - Disable Bit 15 - reserved
40007	0/1	Trigger or cancel a standby operation	This object can be used to trigger or cancel a standby operation, optionally sending the lift to the dedicated recall floor. 0 – off 1 – standby
40008	0/1	Deactivate the landing control	Use this object to deactivate the landing control by setting the value to one. By setting the value back to zero, you will activate the landing control again. 0 – landing control active 1 – landing control deactivated
40009	0/1	Activate this function to keep the doors closed	Use this function to keep the doors closed, usually for maintenance purposes. The lift will still react on calls. Ensure not to trap a passenger by mistake, using this feature. 0 – off 1 – keep the doors closed
40010	0/1	Maintenance operation on/off	Use this function to turn on or off the maintenance operation mode. Being on maintenance a lot of faults will be not recorded to the history. 0 – off 1 – maintenance mode activated
40011	0..2	Car illumination overwrite trigger	This object can be used to trigger turning on or off the cabin illumination, if possible in the current operation mode.

			0 – automatic car light mode 1 – overwrite to turn the car light on again once 2 – overwrite to skip the timer and turn the car light off immediately once, if possible (doors closed, no passengers trapped)
40012	2022.. ..2199	Year	Year in the form of 2022 for example. You need to unlock this register for writing by means of using 40002 'Unlock Date & Time'.
40013	0/42	Trigger Emergency Power Testing Operation	By writing the 'magic' value of 42 into the register, the lift will enter Emergency Power Operation mode, if that feature had been activated and parameterized in the lift controller and if the current operation mode actually allows the lift to enter Emergency Power mode. To check, if the lift has entered Emergency Power operation mode, the input register 30010 '*Lift controller mode*' can be read later on.
40014.. 40029	0/1	Field-bus based outputs	These generic purpose outputs can be operated via the corresponding MODbus registers and will be output by the lift controller to its physical terminals or via the CANopen bus system to any other I/O panel unit, for example *Field-bus based outputs → Field-bus based output 1, lift 1, all floors, all doors.*
40030	0/1	Activate special mode to prevent door opening by landing call	0 – Special mode is off. 1 – Turn on a special mode, were a landing call can be registered but the doors will be kept closed. An output indicates that a landing call is waiting with a timeout of 30 seconds. That output can be used by a PLC to activate a camera system.

101.3.5 Register Overview

To make it possible to look into the present register values at runtime, two dedicated dialogues have been created. One is showing the current values of the input registers and one is showing the values of the holding registers.

The MODbus register view can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' → 'More...' → 'Even more...' → 'MODbus server support' → 'MODbus registers'.



102 MQTT Interface

MQTT means "*Message Queuing Telemetry Transport*". It is an open messaging protocol. It is usually used for M2M (*machine-to-machine communication*), such as in the "*Internet of Things*".

102.1 How to activate the MQTT Support

The MQTT support settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'Network' → 'More...' → 'Even more...' → 'Much more...' → 'MQTT Support'.

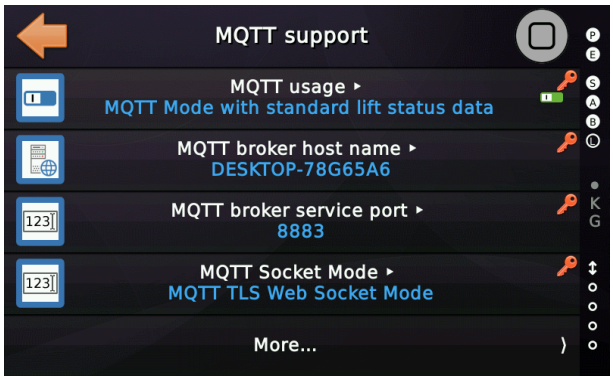


Figure 204: MQTT settings in THOR's user interface

102.2 Parameter

102.2.1 MQTT Publish Path

This is a string/path, like in a file system, that defines were to publish the topics, that the lift controller provides. The published topics contain process data about the lift, like '`current_floor`' or '`collective_fault`' and others. See the '*Publish*' list below.

102.2.2 MQTT Subscribe Path

This is a string/path, like in a file system, that defines were to subscribe for topics, that the lift controller is interested in. The lift controller can subscribe for calls or door commands, like '`enter_call`' or '`door_command`' and such. See the '*Subscribe*' list below.

102.2.3 MQTT broker host name

This option defines the network name of the MQTT Broker (Server). The lift controller will try to connect to that very host via network in order to publish topics and subscribe for topics, like entering calls.

102.2.4 MQTT broker service port

This option defines the service port of the MQTT Broker (Server). Typical ports can be found here:

- Standard MQTT Port (1883). This port is used for non-encrypted MQTT connections. Non-encrypted connections should only be used locally, when the network itself is safe and protected, like in a Factory or Hospital environment.

- MQTT over non-encrypted WebSocket (8080). Used if MQTT is transmitted via a WebSocket. Non-encrypted connections should only be used locally, when the network itself is safe and protected, like in a Factory or a Hospital or such.

- MQTT over SSL/TLS WebSocket (8883). Used if MQTT is transmitted via a WebSocket and is featuring a secure socket connection, with encryption and a certificate handshake. This is the preferred connection mode for MQTT. When using SSL/TLS, the root certificate, that had been used to issue the server certificate must be installed on the lift controller.

102.2.5 MQTT Client Identifier

This option defines the client identifier (name) of the lift controller. The ID is a string of up to 23 characters, that is used to identify an MQTT client. Each ID must be unique, so that only one connection is established to one client at a time.

102.2.6 MQTT User Name

Some brokers want a user name for login. This option defines the user name, used when connecting to the broker.

102.2.7 MQTT Password

Some brokers want a password for login. This option defines the password, used when connecting to the broker. This MQTT password is transmitted non-encrypted and is therefore only limited secure.

102.2.8 MQTT Protocol Name

This option defines the protocol name, used when connecting to the broker. Typically the name is a short string 'MQTT' in capital letters. The name may vary, depending on the broker (server) settings. If the protocol name is incorrect the broker (server) may disconnect the client.

102.2.9 MQTT Will Topic and Message

This option defines the topic name and content of the '*last will message*' of the lift controller, that is forwarded to other clients, when the connection is interrupted. Therefore, these recipients can take actions, such as sending users notifications.

102.2.10 MQTT QoS Level

This option defines the quality of protocol level [0..2]. A level of zero (*At-most-once delivery*) needs the lowest bandwidth but is less secure. A level of one (*At-lest-once delivery*) is usually good enough and features a single <acknowledge> message for every message published. A level of two (*Exactly-once delivery*) features a double handshake to make sure, the message is delivered just once.

▸ For lift related process data a QoS Level of 1 is just the right choice.

102.2.11 MQTT Socket Mode

This option defines if a classic MQTT-stream-socket mode, a web-socket-MQTT mode or an encrypted and secure TLS-web-socket-MQTT mode shall be used for connecting to the broker (server).

▸ The secure socket is the preferred connection mode, when connecting via the Internet. If you run the system in a factory or hospital environment, were a secure network is used for technical facilities, like lifts, you might go for the simple connection mode.

102.2.12 MQTT Connection Status

The connection status can be found on the last page of the MQTT settings. In this example, an encrypted TLS WebSocket is used to connect to a Broker, featuring QoS Level 1.

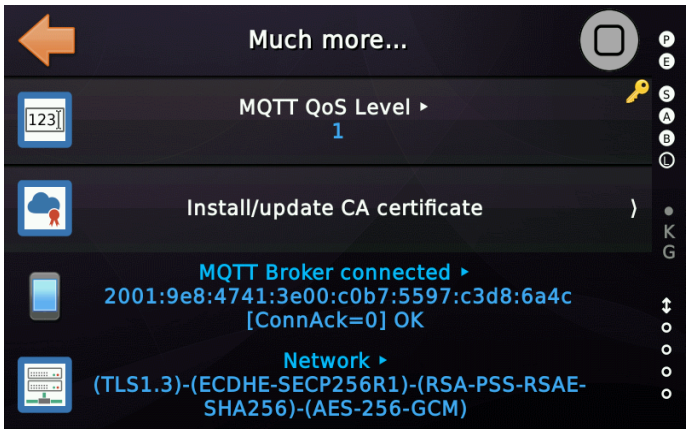


Figure 205: MQTT Network Connection Status

102.2.13 List of subscribed Topics

Topic Name	Value Range	Object Name	Object Description
enter_call	Number as String	Trigger landing/car call	This object can be used to trigger/enter a call. The call is provided as a numerical value (tuple) containing the floor, door and call type. Bit0..7 - Floor Bit8..15 - Door mask Bit16..19 - Call type 1 - Car call 4 - Landing direction independent 8 - Upward landing call 10 - Downward landing call If only a plain number is specified, a car call is entered to the floor (number) and the first available car door.
generic_output	Visible String	Field-bus based outputs terminal 1..16	These generic purpose outputs can be operated remotely and will be output by the lift controller to its physical terminals or via the CANopen bus system to any other I/O panel unit, for example *Field-bus based outputs → Field-bus based output 1, lift 1, all floors, all doors. In this example the string "**3:1**" would turn fieldbus terminal 3 to 1. The string "**2:0**" would turn fieldbus terminal 2 off.*
door_command	Number as String [0..8]	Trigger a door command	0 - none 1 - push door A open button 2 - push door A close button 3 - push door B open button 4 - push door B close button 5 - push door C open button 6 - push door C close button 7 - push door D open button 8 - push door D close button

102.2.14 List of Published Topics

Here is the list of topics, that the lift controller publishes under the path, defined by the '*MQTT Publish Path*' parameter.

Topic Name	Value Range	Object Name	Object Description
controller_ident_number	Visible String	Controller Identification Number	This object holds the vendor/manufacturer specific controller identification number as a string.
lift_ident_number	Visible String	Lift Identification Number	This object holds the vendor/manufacturer specific lift identification as a string.
collective_fault	Number as String [0/1]	Collective fault indicator	The collective fault indicator can be used as a simplified way of detecting a lift not being in service anymore. It is activated with a short delay when the lift has switched to one of the operating modes that prevent its use by passengers.
fault_pending	Number as String [0..2999]	Status Register	General status information in the form of an error code, which can be found in the appendix to this manual.
current_floor	Number as String [0..127]	Current car floor	This object holds the floor were the car currently is.
operating_mode	Number as String [0..22]	Lift controller mode	This object contains the current mode of the lift controller, such as Normal operation, Fire Alarm, Fire Fighter or Emergency Power operation. 0..1 – System startup 2 – Normal operation 3 – Normal operational (emergency power) 4 – Transport of hazard goods 5 – Automatic Learning Trip 6 – Remote Off (Standby) 7 – Emergency power operation 8 – Fire Alarm operation 9 – Rescue operation 10 – Fire Fighter Phase 1

Topic Name	Value Range	Object Name	Object Description
			11 – Fire Fighter Phase 2 12 – UCM-Test operation 13 – Limit Switch Test operation 14 – Speed governor test or Main Brake test 15 – Braking Distance assistant 16 – Power Fail 17 – Out of Service 18 – Inspection operation 19 – Emergency Electrical operation 20 – Emergency Evacuation (stutter brake) 21 – Blocking operation 22 – US ASME ACCESS Operation
travel_counter	Number as String	Trip counter	This object represents the internal trip counter of the lift controller.
operating_hours	Number as String	Operation Time Meter	This object represents the operating hour meter of the lift controller in 0.1 hours.
direction_change_counter	Number as String	Direction change counter	This object holds the internal counter, which counts how often the cabin has changed the driving direction.
travel_direction	Number as String [0..2]	Current travel direction	This object holds the current direction the car is travelling. (0 – none / 1 - ⬆ / 2 - ⬇)
recall_floor_reached	Number as String [0..1]	The lift has reached the recall floor.	Indicates that the lift has arrived at the recall floor. The lift can be recalled to a floor by means of a pending fire alarm, fire service, standby or evacuation operation.
engineer_on_site	Number as String [0..1]	Engineer on site	Indicates, that the engineer or technician on site has turned on some inspection, testing, rescue or maintenance function via an input or the user interface. 0 – off / 1 – on
safety_chain_bit_mask	Number as String [0..63]	Safety chain status bit mask	This object holds the current safety chain status as a bit mask, starting with BIT0 being the passive safety chain input.
landing_cntrl_off	Number	Status landing	This object is a bit mask and reflects if the

Topic Name	Value Range	Object Name	Object Description
	as String [0..7]	control off	landing control has been turned off via several sources. If the value is not zero, the landing control has been deactivated in one way or another. Bit 0 - Landing control switched off via menu. Bit 1 - Landing control switched off via input terminal. Bit 2 - Landing control switched off via remote/fieldbus system.
keep_doors_closed_on	Number as String [0..1]	Keep doors closed operation	This object reflects if the doors are being commanded to stay closed, usually in combination with some kind of maintenance work, being in progress.
maintenance_on	Number as String [0..1]	Maintenance Mode	This object holds the current maintenance mode. If the maintenance mode has been turned on, no faults will be recorded or forwarded to any kind of data gateway.
lift_is_parking	Number as String [0..1]	Lift parking indication	If no passenger calls are pending, the lift may enter the parking operation mode. That usually means the lift will drive to a specific floor or zone.
single_fault_indication	Number as String [0..65535]	Single fault indication	This value is actually a bit field, representing pending fault indicators. Bit 0 – Door fault Bit 1 – Drive fault Bit 2 – Weighing device fault Bit 3 – Positioning unit fault Bit 4 – Emergency call unit fault Bit 5 – Unattended car movement Bit 6 – Light power unit failure Bit 7 – Car illumination failure Bit 8 – Light barrier fault

Topic Name	Value Range	Object Name	Object Description
			Bit 9 – Door open button failure Bit 10 – Stop accuracy failure Bit 11 – Unintended safety door opening Bit 12 – Safety circuit (door bridging) fault Bit 13 – Power supply failure
pending_car_calls	Visible String	Car call acknowledge (lamps)	This object reflects the pending car call acknowledges as a hex door mask per floor, separated by a semicolon. Example: “0;1;0;0;2;0;0;1;0;3;0” Bit-0 (1) – Door A Bit-1 (2) – Door B Bit-2 (4) – Door C Bit-3 (8) – Door D The string will always start at floor 1 even if the lift has a bottom floor of 3 for example. The string will end on top-floor of the lift.
pending_landing_calls	Visible String	Hall call acknowledge (lamps)	This object reflects the pending landing call acknowledges as a hex door mask per floor, separated by a semicolon. Upward landing call and downward landing calls are separated by a minus '-' sign with the upward calls first. Example: “0-0;0-0;2-0;0-0;0-0;0-1” Bit-0 (1) – Door A Bit-1 (2) – Door B Bit-2 (4) – Door C Bit-3 (8) – Door D The string will always start at floor 1 even if the lift has a bottom floor of 3 for example. The string will end on top-floor of the lift.
average_la	Number	Average landing	This object holds the average landing call

Topic Name	Value Range	Object Name	Object Description
nding_waiting_time	as String	call waiting time	waiting time in tenth of a seconds.
average_travel_time	Number as String	Average travel time	This object holds the average travel time (passenger being in the cabin) in tenth of a seconds.
bottom_floor	Number as String [1..8]	Bottom Floor	The lowest floor that the lift can approach. Typically 1, this value can also be > 1 for group lifts if, for example, one lift cannot go into the basement or the parking garage.
top_floor	Number as String [2..127]	Top Floor	The top (upper) floor of the lift hoistway.
door_count	Number as String [1..4]	Door count	Count of car doors 1 – A 2 – A/B 3 – A/B/C 4 – A/B/C/D
car_in_zone	Number as String [0..1]	Car in door zone	This indication reflects, if the car/cabin is currently in a door zone or not.
car_load_situation	Number as String [0..6]	Car load situation	This object reflect the current car load situation. 0 – normal load 1 – no load 2 – full load 3 – overload 4 – slack rope (not always available) 5 – error 6 – high rope tension difference
car_illumination	Number as String [0..1]	Car illumination	This indicates the state of the car illumination being turned on or off.
lift_phone_readiness	Number as String	Lift Telephone	This reflects the state of the lift phone readiness signal, if being connected to the

Topic Name	Value Range	Object Name	Object Description
	[0..1]		lift controller.
lift_scenery	Number as String [0..14]	Lift scenery	This object reflects the current lift scenery as an enumeration. 0 - normal operation 1 - parking operation 2 - car preference/independent mode (VIP) 3 - low priority landing/hall call operation 4 - high priority landing/hall call operation 5 - low priority car call operation 6 - high priority car call operation 7 - Guest call operation 8 - Helicopter standby operation 9 - Helicopter serving operation 10 - Chemical operation 11 - Circulating operation 12 - Peak up/down operation 13 - Automobile operation 14 - Remote Standby operation
levelling_inaccuracies	Number as String	Leveling inaccuracies last maintenance	This object holds a counter reflecting how often the lift did not stop flush on level, since the last maintenance.
generic_inputs	Number as String [0..65535]	Generic Input Terminals	This object is used to reflect the state of the first 16 generic input terminals. The first terminal is Bit 0 and the last Bit 15.
generic_outputs	Number as String [0..65535]	Field-bus based output terminal 1..16	These generic purpose outputs can be operated via the corresponding subscription topic and will be output by the lift controller to its physical terminals or via the CANopen bus system to any other I/O panel unit, for example *Field-bus based outputs → Field-bus based output 1, lift 1, all floors, all doors.* The first terminal is Bit 0 and the last Bit 15.
controller_temperature	Number as String	Temperature of the controller	This object reflects the current lift controller temperature in degree Celsius.

Topic Name	Value Range	Object Name	Object Description
	[-10..60]		
service_interval_indication	Number as String [0..3]	Maintenance interval indication	If one of the maintenance intervals (trip counter, operating hour meter or date and time) has been expired, the maintenance interval signal, indicates that the lift installation is in need of maintenance. 0 – none 1 – Maintenance required 2/3 – Maintenance required, Out of Order
state_door_a state_door_b state_door_c state_door_d	Number as String [0..6]	Door A..D status	0 - Door is in an ambiguous state. 1 - Door is in emergency stop operation. 2 - Door stopped (with torque) at the current (intermediate) position. 3 - Door is opening. 4 - Door opened. 5 - Door is closing. 6 - Door is closed.

103 Voice Announcement, featuring the On-Board Audio

Usually the floor display in the car will have a voice announcement integrated. If not, you might want to feature the audio capabilities of the lift controller for that purpose. The lift controller comes with two audio connectors. By default both will play the user interface sounds. If required one of the audio connectors (*the green little terminal block*) can be switched to play voice announcements from the Micro-SD card of the lift controller. In that case two shielded wires will be required for sending the audio signal from the lift controller to the car, via the traveling cable.

The Audio Settings settings can be found by pressing the hardware button 'Favorites' and then go further to 'System Menu' → 'System' → 'More...' → 'Audio Settings'.

When activating the parameter *'Use on-board audio for voice announcements in the car*', the lift controller will use wave files from the SD-card to play the floor announcement and special announcements, like '*Lift goes up*', '*Door closing*', '*Overload*' or '*Fire Alarm*'.

There is a dedicated parameter for adjusting the volume of the voice announcement.

For best playback results, we recommend using 16kHz or 32kHz, 16-bit mono wave files. The following tables describe the file names, that the lift controller will use for voice announcements.

The files must be in the '**wav**' sub-folder in the root directory of the card.

Floor/Station	File Name	Comment
Floor 1 ... Floor 127	floor_1.wav floor_127.wav	Played, when the lift approaches to the floors 1 to 127.
Position Thresholds 1...4	posi_1.wav posi_4.wav	Played, when the lift triggers the position threshold 1 to 4.

Event	File Name	Comment
Overload	overload.wav	Played, when the load measurement system indicates overload, when boarding passengers.
Lift notifies passengers, that the car is going to travel upwards or downwards.	going_up.wav going_down.wav	When the lift has the doors still open, it will inform passengers about the next travel direction, to ensure that passengers are aware, of the direction the lift will go next. There is actually a delay time, used to define the moment after door opening, when to play the announcement.

Event	File Name	Comment
Doors opening and closing	doors_opening.wav doors_closing.wav	Played, before the lifts doors do open or close.
Doors turned to 'nudging' operation mode, with the light curtains being rendered non-operational.	step_away_doors.wav	This message is played, when the lift is operating the doors in '*nudging*' operation mode, with the light curtains, being deactivated. In that case only the *'Force limit signal'* is kept in operation.
The manual operated swing door/gate is kept open for a while.	please_close_doors.wav	There is a parameter defining the time span, that the swing door or gate needs to be open, before that announcement is played. There is also an option, defining, that the announcement is only played, if actually a call has been registered.
Ask or remind the passengers to enter a car call (destination).	select_destination.wav	After the lift had been called via a landing call, opened and closed the door again, no destination is entered, even that the load measurement system indicate, that some passengers might be in the car.
The lift approached to the floor but stopped not flush on level.	mind_the_step.wav	The lift stopped at a floor but missed the floor level. The position of the car is out of the level zone range, typically +/- 10 mm by default.
Typically during evacuation trips, the lift will prompt the passengers to leave the cabin.	leave_the_car.wav	This announcement is played, when the lift has reached the recall floor for emergency power operations or fire alarm travels. It is also played, when having reached the safe floor on rescue operations. It is also played for manual or automatic emergency evacuations (shutter brake feature) or when the lift arrives at a floor, because of a priority landing call to inform the remaining passengers to leave the car.
A passenger pressed a locked	enter_code.wav	If a car call (destination) has been locked by means of the build-in table, used for

Event	File Name	Comment
car call, that can be unlocked via a numerical code.		disabling/locking car calls and also a numerical code has been setup, in the dedicated table for that purpose, this voice announcement will ask the passenger to enter the code, using the car call buttons as a numerical keypad.
Fire Alarm has been activated.	fire_alarm.wav	This announcement is played, when fire alarm has been activated and the lift is going to travel to the dedicated fire alarm recall floor.
The lift has reached the fire alarm recall floor.	fire_alarm_reached.wav	Once the lift has reached the dedicated fire alarm recall floor, it will play this announcement in order to tell the remaining passenger in the car to leave.
The fire fighter operation has been activated.	fire_fighter_recall.wav	When the fire fighter operation mode has been activated (phase 1) and the lift is going to the fire fighter recall floor, this voice announcement will be played to inform any remaining passengers about what is happening.
The lift has reached the fire fighter recall floor and phase 2 has been activated, usually by means of a fire service key.	fire_fighter_service.wav	When the lift has arrived the fire fighter recall floor, it will usually be turned to phase 2 by means of a key switch in the car. In some countries the transition of phase 1 to phase 2 is done automatically, when the doors have been fully opened in the recall floor. Nevertheless when turning the lift to phase 2 this announcement is played.
Emergency Power operation has been activated.	emergency_power.wav	This announcement is played, when the emergency power operation has been activated.
The lift has reached the emergency power recall floor.	emergency_power_reached.wav	Once the lift has reached the dedicated emergency power recall floor, it will play this announcement in order to tell the remaining passenger in the car to leave.

Event	File Name	Comment
Earthquake Operation	earthquake.wav	This announcement is played, when earthquake mode has been activated and the lift is going to travel to the dedicated recall floor.
Maintenance activated.	maintenance.wav	When the lift is turned to maintenance operation by means of a dedicated key switch or simply via the user interface, this announcement is played.
Car preference (VIP) or Independent mode (US) activated	car_preference.wav	When the car preference mode, that let the passenger travel with car calls independently from any registered landing calls, has been activated, this voice announcement is played.
Special service (priority call) activated	special_service.wav	If the lift is traveling to a priority landing call, usually do provide some special service, like a bed transportation, this announcement will be played.
Floor passing chime	floor_passing.wav	In some regions the lift shall play a chime-sound, when passing a floor. The sound is played, when the lift is driving pass a floor without stopping.
Out of Order	out_of_order.wav	When the lift enters the out of service operation mode or even the blocked operation mode, this announcement will be played. The announcement is repeated, when a car call button (destination) has been pressed to remind the passenger, that this lift cannot be used.
Fire Alarm direction turnover required	fire_alarm_stopover .wav	This signal is only triggered when the lift is moving away from the fire alarm floor and therefore has to make an intermediate stop to reverse direction.
Fire Alarm clear the doors	fire_alarm_clear_ doors.wav	This signal is only triggered when fire alarm is activated and the doors are not closed.

104 Appendix – I/O Signals

104.1 Input Functions

All input functions can be parameterized using an On-Board terminal or using an external terminal, provided by a CiA417 compatible I/O-Panel unit.

There are a few exceptions regarding input signals that have to be On-Board:

- Safety Chain Input Signals
- Main Power Supervision (Power Loss Detection)

Generic input

- Terminal x

Hall call

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

Low priority hall call

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

High priority hall call

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

Car call

- Floor x

Low priority car call

- Floor x

Special function

- Request fan 1
- Request fan 2
- Request load time 1
- Request load time 2
- Key lock 1
- Key lock 2
- Key lock 3
- Key lock 4
- Request door open
- Request door close
- Fire recall
- Fire service
- Hall call disable
- Attendant service
- VIP service (car preference)
- Out of Order/Remote off
- Bed passenger service
- Special service
- Service run
- Fire alarm
- Provide priority
- Lift attendant start button
- Lift attendant drive through button
- Security run
- Second call car operation panel
- Door enabling
- Call cancel fire brigade
- Fire alarm reset
- Body detector
- Earthquake detector
- Cleaning travel
- Emergency alarm ready
- Emergency alarm green pictogram
- Emergency alarm yellow pictogram
- Emergency alarm button pressed

Fire detector

- Fire detector 1 [PID]
- Fire detector 2 [PIA]
- Fire detector 3 [PIDF]
- Fire detector 4 [PIAF]
- Fire detector 5...16

Inspection / Emergency Electrical Operation

- Car top inspection enable [NC]
- Car top inspection upward
- Car top inspection downward
- Car top inspection fast button
- Shaft pit inspection enable [NC]
- Shaft pit inspection upward
- Shaft pit inspection downward
- Shaft pit inspection fast button
- Emergency Electrical Operation enable [NC]
- Emergency Electrical Operation upward
- Emergency Electrical Operation downward
- Emergency Electrical Operation fast button
- Inspection in the pit reset signal

Floor selector

- Terminal (pre-limit) switch top [NC]
- Terminal (pre-limit) switch bottom [NC]
- Floor Level Sensor [PSU]
- Door Zone Sensor [PSU]
- Position correction [preset] upward
- Position correction [preset] downward

Safety circuit

- Passive safety circuit
- Emergency stop
- Shaft door
- Car door A
- Car door B
- Door lock

Guest call

- Floor x

Selection Call

- Up
- Down
- No direction

Drive unit signals

- Enable drive unit control signals
- Contactor stuck supervision [NC]
- Brake supervision [NC]
- Safety valve (UCM/RUN) state
- Safety valve (UCM/RDY) state
- Disable re-leveling
- PTC (Drive/Engine) [NC]
- Low hydraulic oil pressure
- Hydraulic oil overpressure
- Second brake supervision [NC]
- Third brake supervision [NC]
- Fourth brake supervision [NC]
- Drive readiness signal
- Traction sheave brake supervision [NC]
- Hydraulic pump enable (UCM/UP) signal
- Drive battery warning indication
- Drive battery error indication
- Lift start interlock
- Low Oil Protection [NC]
- Oil tank temperature shutdown switch [NC]
- Rope Brake status indication
- Rope Brake, door-zone contactor supervision
- Rope Brake, safety chain contactor supervision
- Brake enable signal
- Docking service contactor monitoring [NC]
- Hydraulic jack resync trigger
- ASME Hydro-ACR Relay Supervision [NC]
- Special Velocity Slow/Fast switching signal

Door controlling signals

- Limit Switch Door opened
- Limit Switch Door closed
- Door Light Curtain
- Force limit signal
- Door motion detector
- Selective door open button
- Fault Door Light Curtain
- Door open button
- Door close button
- Door Extra Supervision

- Extra Door Contactor Monitoring [NC]
- Car door safely closed position switch
- Safety light curtain signal
- Safety light curtain control
- Safety light curtain disable
- Car door locked
- Hidden door contact chain
- Secondary landing door table
- Third landing door table
- Fourth landing door table
- Fire service door open button
- Fire service door close button
- Finger protector sensor
- Wheel chair door open button
- Extra landing door light curtain
- Extra landing door force limit signal
- Extra landing door fully open indication
- Feature reduced door velocity
- Feedback of door power contact
- Shaft door retiring cam active
- Prevent door opening by landing call
- Ignore Force Limiter (legacy OTIS doors)

Status/controller signals

- No load
- Full load
- Overload
- Light Voltage [NC]
- Supply Voltage [NC]
- Unblock lift operation
- Phase Failure Supervision [NC]
- Bypass shaft doors
- Bypass car doors
- Lift undergoing maintenance
- Drop Protection, bolt released
- Reset low pit/head circuit
- Barrier 1 NORM low pit/head circuit
- Barrier 1 INS low pit/head circuit
- Barrier 2 NORM low pit/head circuit
- Barrier 2 INS low pit/head circuit
- Emergency Power activation
- Emergency Power enable evacuation
- Emergency Power lift stays operational
- Emergency Power battery rescue
- Emergency Power battery rescue direction
- Enter car roof inspection operation
- Enter shaft pit inspection operation
- Separating door supervision [NC]

- Manual Emergency Evacuation
- Automatic Emergency Evacuation
- Fire Service Hold
- Disable team/group operation
- Rescue/Salvage operation active
- Rescue/Salvage operation car calls enable
- Circulating operation
- Chemical transport
- Chemical transport reset
- Automotive passenger/person transport
- Automobile lift light barrier 'middle'
- Automobile lift light barrier 'front'
- Automobile lift light barrier 'rear'
- Over travel reset button
- Brake test switch
- Peak-up operation key switch
- Peak-down operation key switch
- Key switch 'Keep doors closed'
- Brake test circuit supervision
- Rescue/Salvage operation via Building Management (BMS)
- Evacuation/Rescue operation suspend signal
- Automatic evacuation/rescue service operation
- Driver assisted evacuation/rescue service operation
- Remote assisted evacuation/rescue service operation
- Fire Alarm Center
- Emergency Lift Phone Readiness Indication
- In-Car Stop-Switch
- Telescopic toe guard supervision [NC]
- Shuttle Service/Snow Cleaning
- External door bridging module feedback (SZ)
- External door bridging module zone (SZ)
- Platform operation activation
- Barrier 3 NORM low pit/head circuit
- Barrier 3 INS low pit/head circuit
- Disable intermediate stopover function
- Set parking floor
- Platform Hold to Run
- In-Car-Stop-Switch bridging relay supervision [NC]
- Drop Protection, contactor supervision [NC]
- Lift attendant upward button
- Lift attendant downward button
- Activate the controller display background light
- Trigger next call up
- Trigger next call down
- Car Lighting/Illuminant supervision [NC]
- Safety gear supervision input 1
- Safety gear supervision input 2
- Shaft light impulse relay status
- Turn the car light back on

- Shaft light button

Call enabling

- Car call enabling
- Landing call enabling
- Car & Landing call enabling
- Disable car & landing calls
- Cancel pending car calls
- Trigger a disabled car call
- Trigger a disabled hall call

Generic supervision inputs

- Generic supervision input 1...X

Pawl Device

- Extend pawl/bolt limit switch 1
- Retract pawl/bolt limit switch 1
- Car seated on pawl device
- Pawl device low hydraulic pressure
- Disable pawl device
- Service override, lock pawl device
- Service override, unlock pawl device
- Extend pawl/bolt limit switch 2
- Retract pawl/bolt limit switch 2

ASME Access Function [US]

- ASME Access Switch
- ASME Access upward
- ASME Access downward

Time Planner deactivation

- Time Planner X deactivation input

104.2 Output Functions

All output functions can be parameterized using an On-Board terminal or using an external terminal, provided by a CiA417 compatible I/O-Panel unit.

There are a few exceptions regarding output signals that have to be 'on-board':

- Pilot relays
- Quickstart relay

Generic output

- Terminal x

Hall call acknowledge

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

Low priority hall call acknowledge

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

High priority hall call acknowledge

- Up
- Down
- No direction
- Up [extra]
- Down [extra]
- No direction [extra]

Car call acknowledge

- Floor x

Low/High priority car call acknowledge

- Floor x

Special function acknowledgment

- Request fan 1 acknowledge
- Request fan 2 acknowledge
- Request load time 1 acknowledge
- Request load time 2 acknowledge
- Key lock 1 acknowledge
- Key lock 2 acknowledge
- Key lock 3 acknowledge
- Key lock 4 acknowledge
- Door open request acknowledge
- Door close request acknowledge
- Fire recall acknowledge
- Fire service acknowledge
- Hall call disable acknowledge
- Attendant service acknowledge
- VIP service acknowledge (car preference)
- Out of service acknowledge
- Bed passenger service acknowledge
- Special service acknowledge
- Service run acknowledge
- Fire alarm acknowledge
- Provide priority acknowledge
- Lift attendant start button acknowledge
- Lift attendant bypass button acknowledge
- Security run acknowledge
- Second call COP acknowledge
- Door enabling acknowledge
- Call cancel fire brigade acknowledge
- Fire alarm reset acknowledge
- Body detector acknowledge
- Earthquake detector acknowledge
- Cleaning travel acknowledge
- Emergency alarm ready acknowledge
- Emergency alarm green pictogram acknowledge
- Emergency alarm yellow pictogram acknowledge
- Emergency alarm button pressed acknowledge

Fire detector acknowledge signals

- Fire detector X acknowledge

Guest call

- Floor x

Lift lights

- Main light on acknowledge
- Main light off acknowledge
- Secondary light on acknowledge
- Secondary light off acknowledge
- Emergency light on acknowledge
- Emergency light off acknowledge
- Ambient light on acknowledge
- Ambient light off acknowledge
- Panel light on acknowledge
- Panel light off acknowledge
- Floor light on acknowledge
- Floor light off acknowledge
- Shaft light on acknowledge
- Shaft light off acknowledge

Floor indicator (1-out-n)

- Clear display data
- Floor x

Hall lantern

- Up
- Down
- Up/down

Direction indication

- Up
- Down
- Up/down
- Moving up
- Moving up
- Moving down
- Moving down
- Moving up/down

Special indication

- No load
- Full load
- Overload

- Fire recall
- Fire service
- Help is coming
- Special service
- Load time
- Lift occupied
- Out of service
- Please close door
- Fire alarm
- Hall call disable
- Travel to fire alarm floor
- Travel to fire recall floor
- Lift in maintenance
- VIP transport
- Guest Call Indication
- Medical emergency transport
- Chemical transport
- Bed transport
- Test travel
- Low priority hall call transport
- High priority hall call transport
- Step warning indication
- Attendant service
- Rescue operation
- Emergency power operation
- Passengers may are trapped
- Lift is traveling

Arrival indication

- Up
- Down
- No direction

Floor announcement

- Turn off speech synthesis
- Floor x
- Speak current floor

Vocal messages

- Switch off messages
- Announce door opening
- Announce door closing
- Announce lift is going up
- Announce lift is going down
- Announce lift is reserved
- Announce lift is available

- Announce lift is overloaded
- Announce lift is out of order
- Announce lift is in maintenance
- Announce lift is in emergency operation
- Announce lift is in firemen service
- Announce to step away from the doors
- Announce floor is access protected
- Announce to mind the step
- Announcement 'Please leave the lift'
- Announcement 'Select a destination'
- Announcement 'Don't use this lift'
- Announcement 'Wait for the rescue service'

Misc outputs

- Hall calls enable
- Lift operational
- Lift fault
- Lift blocked
- Alarm Button Filter
- Car/cabin buzzer

(Overload/Light curtain fault/Door nudging/Door open&close prewarning/Inspection under fire service)

Single fault indication

- Door fault
- Drive unit fault
- Load measuring fault
- Position unit fault
- Emergency call unit fault
- Unintended car movement (UCM)
- Light power supply
- Car light fault
- Light barrier unit fault
- Door “open" button fault
- Stopping accuracy fault
- Unintended safety contact door fault
- Protective Circuit (SZ) fault
- Mains power failure

Next Stop

- No next stop available
- Floor x

Time to door closure

- Time off
- Time span X seconds

Lift status indication

- Car in door zone indication
- Car on level indication
- Car above floor level indication
- Car below floor level indication
- Alarm button actuated indication
- Remote off activated indication
- Reached remote off floor indication
- Reached control floor indication
- Travel to Emergency Power floor indication
- Reached Emergency Power floor indication
- Lift remains active on em-power operation
- Reached fire recall floor indication
- Maintenance switch activated
- Inspection car top activated indication
- Inspection pit activated indication
- Emergency electrical operation activated
- Keep doors closed for maintenance indication
- Earthquake operation indication
- Travel to the earthquake operation floor
- Arrived at earthquake operation floor
- Test travel active indication
- Test travel has been completed
- Test travel has been failed
- Disabled/blocked door indication
- Lift parking indication
- Energy-saving mode 1
- Energy-saving mode 2
- Safety space head established indication
- Safety space pit established indication
- Safety space head not established indication
- Safety space pit not established indication
- Light barrier interrupted
- Reached Fire Alarm floor, doors fully opened

Estimated Time To Arrival

- Time off
- Time span X seconds

Remaining Load Time

- Time off
- Time span X seconds

Selection Call acknowledge

- Up
- Down
- No direction

Floor indicator binary code

- Terminal 1...8

Floor indicator gray code

- Terminal 1..8

Floor indicator 7-segment

- 7-segment low digit terminal a..g
- 7-segment low digit terminal dp
- 7-segment tens digit terminal a..g
- 7-segment tens digit terminal dp

Pilot control relays

- Pilot control relay 1 (up)
- Pilot control relay 2 (down)
- Pilot control relay 3
- Pilot control relay 4
- Pilot control relay 5
- Quick start control relay (K10)

Drive unit signals

- Drive unit control signal 1
- Drive unit control signal 2
- Drive unit control signal 3
- Drive unit control signal 4
- Drive unit control signal 5
- Drive unit control signal 6
- Drive unit control signal 7
- Drive unit control signal 8
- Drive unit control signal 9
- Drive unit control signal 10
- Drive/Run
- Drive/Brake
- Drive/Power
- Drive/Enabled
- Hydraulic/Slow upward valve
- Re-leveling upward
- Re-leveling downward

- Manual Emergency Evacuation Brake enable
- Automatic Emergency Evacuation Brake release
- Lubrication trigger
- Lift start interlock indication
- Motor fan
- Test brake 1..4 [A..D]
- Drive Auto-Tuning indication
- Delayed shut-off valve downwards
- Hydraulic jack resync indication
- Automatic brake testing indication
- Automatic brake test running
- Test brake module
- Runtime supervision tripped
- Lubrication runtime warning threshold
- Trip counter pulse after trip
- Destination is pending
- Automatic safety gear Test
- Automatic safety gear Reset
- ASME Hydro-ACR Relay

Door controlling signals

- Door is moving
- Door open
- Door close
- Door nudging
- Retiring cam
- Door pre-open warning
- Door pre-close warning
- Door unlock motor
- Swing door opener
- Door Extra Supervision Test
- Extra Door Contactor
- Extra Door Supervision Warning Siren
- Safety light curtain test signal
- Cabin/car door lock unit
- Car door fully opened
- Car door fully closed
- Vertical landing or swing door closed
- Safety light curtain tripped
- Light curtain power supply off
- Light curtain power supply off car indication
- Safety light curtain tripped in door zone
- Extra Door Supervision tripped
- Safety light curtain tripped in door zone
- Extra Door Supervision tripped
- Fire service door open button acknowledge
- Fire service door close button acknowledge
- Door power contact

- Landing door unlocked indication
- Door closing buzzer signal
- Door closing buzzer signal fire/evacuation
- UCM test, open safety chain for the doors
- Default landing door table
- Secondary landing door table
- Third landing door table
- Fourth landing door table
- Allocation time is running
- Door is blocked red indication
- Door is free/clear green indication
- Door light curtain fault input acknowledge
- Wheel chair door open button acknowledge
- Door is re-opening
- STOP! Do not go through the door!
- GO! It is safe, to go through the door!
- Door nudging buzzer
- Prevent door opening by landing call acknowledge
- Landing call but door opening prevented by input
- Opening of the car door required
- Clear the doors

Position Signals

- Car flush on level
- Car at door zone
- Car/cabin moving upwards
- Car/cabin moving downwards
- Floor passing signal

Status/controller signals

- Lift parking
- Car illumination off
- Re-leveling active
- Re-leveling error
- Driving to check/stopover floor
- Arrived at check/stopover floor
- Driving to standby floor
- Arrived at standby floor
- Door-Bypass warning
- Car-Fan signal
- Drop Protection activation
- Emergency Electrical Operation active
- Inspection active
- Control cabinet light
- Enter code indicator
- Travel to Emergency Power floor
- Lift arrived at Emergency Power floor

- Service operation acknowledge
- Drive to service position
- Arrived at service position
- Lift at fire recall floor
- Fire alarm/service inspection buzzer
- Emergency Evacuation Acknowledge
- Travel to the low priority call floor
- Travel to the high priority call floor
- Arrived at the low priority call floor
- Arrived at the high priority call floor
- Circulating operation acknowledge
- Speed governor tripping output
- Chemical transport acknowledgment
- Drive to the chemical/hazardous goods operation floor
- Speed governor reset trigger
- Over travel reset indication
- Brake test acknowledge
- Travel to rescue operation floor
- Arrived at rescue operation floor
- Rescue/Salvage acknowledgment
- Automobile transport acknowledgment
- Automobile Traffic Light 'Forward'
- Automobile Traffic Light 'Backward'
- Automobile Traffic Light 'Stop'
- Automobile Traffic Light 'Warning'
- Automotive passenger/person transport acknowledgment
- Automotive transport 'Drive Vehicle Out' indication
- Reached Emergency Power floor, doors fully opened
- Lift in special operation mode
- Lift controller powered up
- Maintenance interval indication
- Telescopic toe guard operation [NC]
- External door bridging module activation (SZ)
- Barrier free passenger operation
- Barrier 1 low pit/head acknowledge display
- Barrier 1 low pit/head acknowledge buzzer
- Barrier 2 low pit/head acknowledge display
- Barrier 2 low pit/head acknowledge buzzer
- Barrier 3 low pit/head acknowledge display
- Barrier 3 low pit/head acknowledge buzzer
- Lift unblock operation...
- Helicopter standby
- Helicopter floor/allocation
- Inspection in the pit reset signal acknowledge
- Customizable buzzer output
- Inspection in the pit driving buzzer
- Emergency Power lift stays operational acknowledge
- Cabin is empty indication
- Maximum Travels with Emergency Power reached

- Lift attendant upward indication
- Lift attendant downward indication
- ELGO Limax in EN81-21 operation mode
- Low pit/head tripped and ELGO Limax not in EN81-21 operation mode
- Pit Inspection Reset Buzzer
- Fire Alarm direction turnover required
- Fire Alarm clear the doors
- Arrived at Fire Alarm floor
- Automotive transport 'Drive Vehicle Into the Car' indication
- Fire Recall/Service requested indication
- Disable Fire Fighter Car Intercom
- Shaft light impulse relay
- Automobile has been loaded into the cabin
- Car/Pit Inspection upward-button acknowledgment
- Car/Pit Inspection downward-button acknowledgment
- Car call at current floor pressed
- Lift is idle
- Reduced Safety Space Gear Testing
- Inspection or Emergency electrical operation activated
- INS or EEO or Reduced Safety Space Gear Testing active
- INS/EEO upward-button acknowledgment
- INS/EEO downward-button acknowledgment

Temperature thresholds

- Temperature threshold X

Generic supervision acknowledges

- Generic supervision acknowledge X

Pawl Device

- Extend pawl/bolt/locking device 1
- Retract pawl/bolt/locking device 1
- Car has been seated
- Pawl Device re-pumping
- Pawl device error indication
- Pawl device has been locked 1
- Pawl device has been unlocked 1
- Extend pawl/bolt/locking device 2
- Retract pawl/bolt/locking device 2
- Pawl device has been locked 2
- Pawl device has been unlocked 2

Call disabling acknowledge

- Car call disabled acknowledge
- Landing call disabled acknowledge

- Disabled car call pressed indication
- Disabled landing call pressed indication

ASME Access Function [US]

- ASME Access Indication [US]

Energy Saving Indication

- Energy saving indication
- Energy standby indication

Velocity Thresholds

- Velocity threshold X

Generic supervision siren/indication

- Generic supervision siren/indication X

Cloud based generic outputs

- Cloud based generic output X

Safety Chain Acknowledge

- Acknowledge Passive safety circuit
- Acknowledge Emergency stop
- Acknowledge Shaft door
- Acknowledge Car door A
- Acknowledge Car door B
- Acknowledge Door lock

Acknowledge Building Zone

- Acknowledge Building Zone 1
- Acknowledge Building Zone X

Passenger user group acknowledges

- Passenger user group 1..X active

Field-bus based outputs

- Field-bus based output 1..X

Position Thresholds

- Position threshold 1..X

105 Appendix – Drive Signal Mapping

105.1 CANopen CiA417 compatible Drive Unit

105.1.1 Main Contactors

Output Function	Default On-Board Hardware Terminal	Meaning
K11 Pilot ctrl.relay 1	O3.1 (K11)	Upward
K12 Pilot ctrl.relay 2	O3.2 (K12)	Downward
K13 Pilot ctrl.relay 3	O3.3 (K13)	Driving (up/down)
K14 Pilot ctrl.relay 4	O3.4 (K14)	Brake signal

105.1.2 Drive Unit Signals (direction/velocity)

▶ For modern CANopen CiA417 drives, all direction and velocity signals, as well as status and error signals, are transmitted using the CANopen bus system.

105.2 DCP 3/4+ compatible Drive Unit

105.2.1 Main Contactors

Output Function	Default On-Board Hardware Terminal	Meaning
K11 Pilot ctrl.relay 1	O3.1 (K11)	Upward
K12 Pilot ctrl.relay 2	O3.2 (K12)	Downward
K13 Pilot ctrl.relay 3	O3.3 (K13)	Driving (up/down)
K14 Pilot ctrl.relay 4	O3.4 (K14)	Brake signal

105.2.2 Drive Unit Signals (direction/velocity)

▶ For DCP 3/4+ drives, all direction and velocity signals, as well as status and error signals, are transmitted using the serial DCP connection.

105.3 Classic Terminal controlled Inverter

105.3.1 Main Contactors

Output Function	Default On-Board Hardware Terminal	Meaning
K11 Pilot ctrl.relay 1	O3.1 (K11)	Upward
K12 Pilot ctrl.relay 2	O3.2 (K12)	Downward
K13 Pilot ctrl.relay 3	O3.3 (K13)	Driving (up/down)
K14 Pilot ctrl.relay 4	O3.4 (K14)	Brake signal

105.3.2 Drive Unit Signals (direction/velocity/brake/enable)

105.3.2.1 Brake enable

The brake enable signal from the legacy inverter to the lift controller is called '*Brake Enable*' and can be programmed to one of the input terminals of the lift controller.

You will need to turn the usage of that signal on, before using it, following '*Settings Menu → More... → Drive Unit → Type of Drive Unit & Properties → Drive Options → More... → Brake enable signal usage*'.

105.3.2.2 Drive enable

If the legacy inverter is in need of some kind of '*Enable*' signal, that is indicated before any direction or brake signal is peaked high, use the '*Drive/Enabled*' output function signal for that purpose and parameterized it on some output terminal of the lift controller unit.

105.3.2.3 Velocity enable

Some inverters output a signal to the controller, indicating that the magnetization phase is complete and velocity signals are accepted. The controller's input signal '*Drive unit signals → Enable drive unit control signals*' can be used for this purpose.

You will need to turn the usage of that signal on, before using it, following '*Settings Menu → More... → Drive Unit → Type of Drive Unit & Properties → Drive Options → More... → Drive unit control enable signal*'.

105.3.2.4 Direction Indication

The drive control signals 7/8 run along as direction signals, with '7-up' and '8-down'.

105.3.2.5 KEB mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	4
Velocity V1 (slow)	5 + 3
Velocity V2 (medium)	5 + 4
Velocity V3 (intermediate)	5 + 4 + 3
Velocity V4 (rated)	4 + 3
Velocity VI (inspection)	5
Velocity VR (emergency electrical operation)	5
Velocity VN (re-levelling)	3

105.3.2.6 Generic drive unit mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	3
Velocity V1 (slow)	3 + 6
Velocity V2 (medium)	3 + 4
Velocity VI (inspection)	3 + 5
Velocity VR (emergency electrical operation)	3 + 5
Velocity VN (re-levelling)	2

105.3.2.7 Fuji mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	4 + 3
Velocity V1 (slow)	5
Velocity V2 (medium)	5 + 3
Velocity V3 (intermediate)	3 + 2
Velocity V4 (rated)	5 + 4 + 3
Velocity VI (inspection)	4
Velocity VR (emergency electrical operation)	4
Velocity VN (re-levelling)	3

105.3.2.8 Mentor mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	5 + 3
Velocity V1 (slow)	5 + 4
Velocity V2 (medium)	5 + 4 + 3
Velocity V3 (intermediate)	6
Velocity V4 (nominal)	6 + 3
Velocity VI (inspection)	4
Velocity VR (emergency electrical operation)	3
Velocity VN (re-levelling)	5

105.3.2.9 Arkel mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	3
Velocity V1 (slow)	6 + 3
Velocity V2 (medium)	4 + 3
Velocity VI (inspection)	5 + 3
Velocity VR (emergency electrical operation)	5 + 3
Velocity VN (re-levelling)	6 + 5
Quickstart	2

105.3.2.10 MFC2x/3x mapping

Velocity	Drive unit control signals
Velocity V0 (MFC-V0)	3
Velocity V1 (MFC-V2)	6
Velocity V2 (MFC-VN)	4
Velocity VI (MFC-VI)	5
Velocity VR (emergency electrical operation)	5
Velocity VN (re-levelling)	3

105.3.2.11 Legacy CT mapping

Velocity	Drive unit control signals
Velocity V0	2
Velocity V1	2 + 3
Velocity V2	1 + 2
Velocity V3	3 + 2 + 1
Velocity V4	4 + 3 + 2 + 1
Velocity VI (inspection)	2 + 3
Velocity VR (emergency electrical operation)	2 + 3
Velocity VN (re-levelling)	2

105.3.2.12 Legacy Danfoss drive unit mapping

Velocity	Drive unit control signals
Velocity V0 (creeping)	2 (B1)
Velocity V1	1 (B2)
Velocity V2	1 + 3 (B2 + B0)
Velocity V3	1 + 2 (B2 + B1)
Velocity V4	1 + 2 + 3 (B2 + B1 + B0)
Velocity VI (inspection)	2 + 3 (B1 + B0)
Velocity VR (emergency electrical operation)	2 + 3 (B1 + B0)
Velocity VN (re-levelling)	3 (B0)

105.4 Legacy 2-Speed/Pole changing Motor

105.4.1 Main Contactors

Output Function	Default On-Board Hardware Terminal	Meaning
K11 Pilot ctrl.relay 1	O3.1 (K11)	Upward
K12 Pilot ctrl.relay 2	O3.2 (K12)	Downward
K13 Pilot ctrl.relay 3	O3.3 (K13)	Generic Fast
K14 Pilot ctrl.relay 4	O3.4 (K14)	Generic Slow

105.4.2 Drive Unit Signals (direction/velocity)

No drive unit signals available. Legacy Pole Changing Motors are controlled just with the main contactors.

If the 2-speed drive requires a kind of additional enable signal, which is to drop out with a delay, after the actual main contactors (direction/speed) drop out, the signal '*Drive unit signals → Drive/Enabled*' can be used in combination with the parameter '*Drive unit afterrun time*', which can be found under *Settings menu → More... → Drive Unit → Type of Drive Unit & Properties → Drive Options → More... → Even more...* .

For example, if the time were set to one second, the signal would continue for that second after the main contactor dropped out.

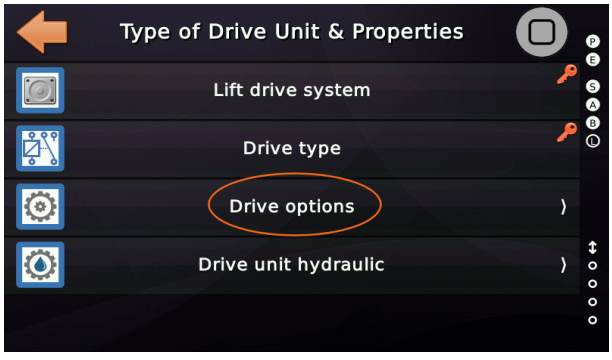
105.5 Hydraulic Drives

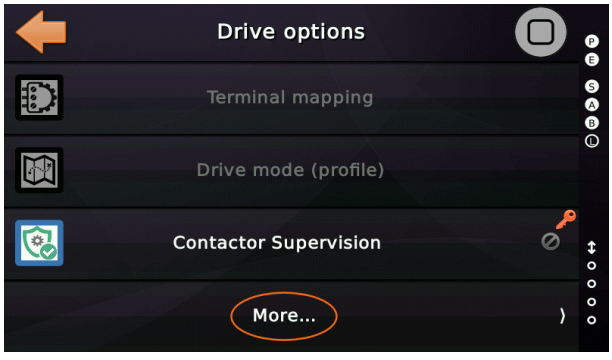
105.5.1 Main Contactors

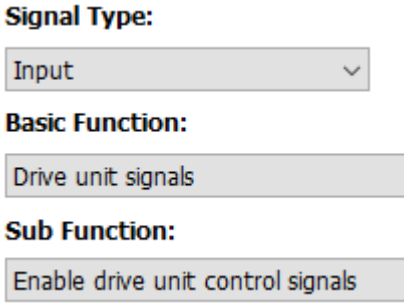
Output Function	Default On-Board Hardware Terminal	Meaning
K11 Pilot ctrl.relay 1	O3.1 (K11)	Upward
K12 Pilot ctrl.relay 2	O3.2 (K12)	Downward
K13 Pilot ctrl.relay 3	O3.3 (K13)	Generic Fast
K14 Pilot ctrl.relay 4	O3.4 (K14)	Depends on the actual pump model used: • Soft starter activation • Star/Delta signal *(K4 is activated to turn from Star to Delta)* • Inverter power signal • Primary power signal upward only
The optional pilot control relay 5 can be for example assigned to K10 (normally quick start) for ★/▲ controlling, in order to control the star contactor discretely.		

105.5.2 Soft-starter 'ramp-up' indication

In order to fire up the hydraulic valves **not** before the soft-starter has ramp-up the pump engine's current, the following input signal on Thor can be used in conjunction with the corresponding option, that enables this feature in the first place.

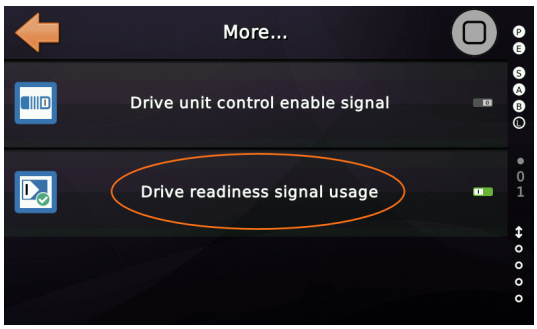






105.5.3 Drive Readiness Signal

If the drive provides a '*Ready Signal*' as a kind of fault indication, e. g. LRV, then this signal shall be connected to the lift controller as well. The input function in question would be '*Drive signals → Drive readiness signal*'. To tell the lift controller to expect a readiness signal from the drive, the following option has to be turned on as well '*Settings Menu → More... → Drive Unit → Type of Drive Unit & Properties → Drive Options → More... → Drive readiness signal usage'.*



▶ This signal should be peaked high if the drive unit is healthy and dropped low if not.

▶ This signal is sometimes mistaken for the '*Enable*' signal, that is coming from the inverter or soft-starter to tell that the valves can be opened or a velocity can be indicated. The Readiness signal **is not** that signal. That would be the '*Enable* ' signal.

105.5.4 Drive Unit Signals (direction/velocity)

105.5.4.1 Simple unregulated Hydraulic Drives

For simple unregulated hydraulic drives (3 or 4 valves) an additional signal exists to control the slow upward valve, featuring an optional afterrun time.

You will find the corresponding valve time by pressing first 'Home' and then the hardware button 'Settings Menu' and then go to 'More' → 'Drive Unit' → 'Type of Drive Unit' → 'Drive unit hydraulic' → 'Hydraulic valve delayed off (upward)'.

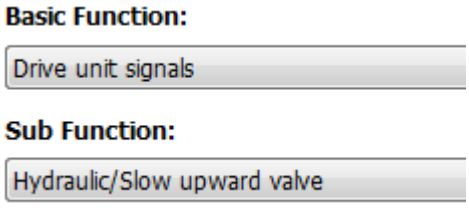


Figure 206: Output functions for the slow upward valve

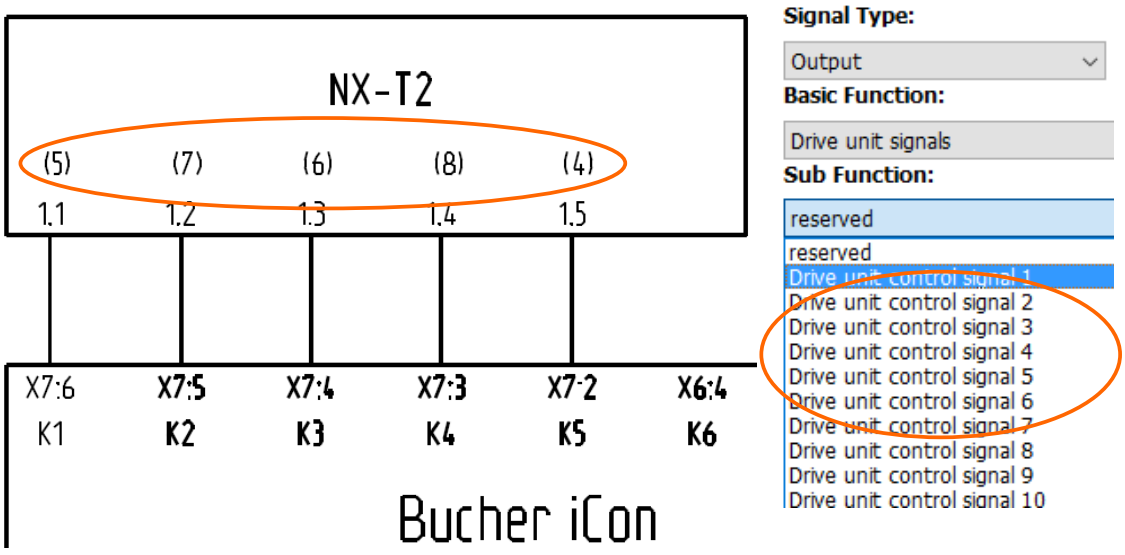
In the very same menu path, you also find an afterrun time for the oil pump, called 'Hydraulic pump delayed off' time. It only effects the pump engine for the upward direction.

▶ Both time parameters are setup in milliseconds and are '*off*' by default.

105.5.4.2 LRV Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7
Velocity V0 (creeping) downward	8
Velocity V1 (slow) upward	7 + 5 + 1
Velocity V1 (slow) downward	8 + 6 + 1
Velocity V2 (medium) upward	7 + 5 + 2
Velocity V2 (medium) downward	8 + 6 + 2
Velocity V3 (intermediate) upward	7 + 5 + 3
Velocity V3 (intermediate) downward	8 + 6 + 3
Velocity V4 (rated) upward	7 + 5
Velocity V4 (rated) downward	8 + 6
Velocity VI (inspection) upward	7 + 5 + 4
Velocity VI (inspection) downward	8 + 6 + 4
Velocity VR (emergency electrical operation) upward	7 + 5 + 4
Velocity VR (emergency electrical operation) downward	8 + 6 + 4
Velocity VN (re-levelling) upward	7
Velocity VN (re-levelling) downward	8

▶ For connecting the iValve (UCM) supervision feedback signal '**SMA**', the input function '*Drive unit signals* → ***Safety valve (UCM/RUN)*** *state*' shall be used.



105.5.4.3 NGV Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7
Velocity V0 (creeping) downward	8
Velocity V1 (slow) upward	7 + 3
Velocity V1 (slow) downward	8 + 3
Velocity V2 upward	7 + 5
Velocity V2 downward	8 + 6
Velocity VI (inspection) upward	7 + 4
Velocity VI (inspection) downward	8 + 4
Velocity VR (emergency electrical operation) upward	7 + 4
Velocity VR (emergency electrical operation) downward	8 + 4
Velocity VN (re-levelling) upward	7
Velocity VN (re-levelling) downward	8

▶ For connecting the UCM supervision (feedback) signals, the input functions '*Drive unit signals → Safety valve (UCM/RUN) state / Safety valve (UCM/RDY) state*' shall be used.

The NGV/A3 controller cards deliver actually three signals to the lift controller, which have to be wired to some controller inputs terminals.

- RDY – 'Drive Unit Signals' → Safety valve [UCM/RDY] state, lift 1
- RUN - 'Drive Unit Signals' → Safety valve [UCM/RUN] state, lift 1
- UP - 'Drive Unit Signals' → Hydraulic pump enable (UCM/UP) signal, lift 1

▶ In order to feature the ' Hydraulic pump enable (UCM/UP) signal', turn the dedicated option on as well.

You find that option under '*Settings Menu*' → '*More...*' → '*Drive unit*' → '*Type of Drive Unit & Properties*' → '*Drive unit hydraulic*' → '*More...*' → '*Hydraulic pump enable signal usage*'.

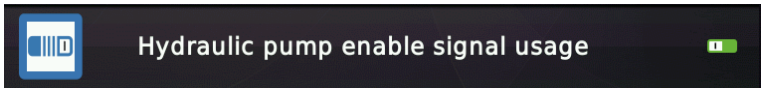
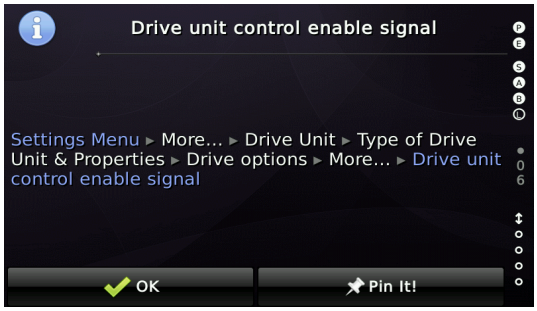


Figure 207: NGV specific 'UP' signal to enable the pump

105.5.4.4 GMV 3010 Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7 (VMP)
Velocity V0 (creeping) downward	8 (VMD)
Velocity V1 upward	7 (VMP) + 3 (VML)
Velocity V1 downward	8 (VMD) + 3 (VML)
Velocity VI (inspection) upward	7 (VMP) + 3 (VML)
Velocity VI (inspection) downward	8 (VMD) + 3 (VML)
Velocity VR (emergency electrical operation) upward	7 (VMP) + 3 (VML)
Velocity VR (emergency electrical operation) downward	8 (VMD) + 3 (VML)
Velocity VN (re-levelling) upward	7 (VMP)
Velocity VN (re-levelling) downward	8 (VMD)
Bi-directional Soft-Stop valve	2 (VMP/2CH/S)

You should use the input signal *'Drive Unit signals -> Enable drive unit control signals'*, coming from the soft-starter unit, to enable the valve signals, when the pump is up to speed. To make that work, make sure you turn on the dedicated option.



The VMP/2CH/S bi-directional Soft-Stop valve signal is internally handled and will be turned on together with the pump, before the soft-starter has indicated to have fully revved up the pump. After the soft starter has finished its job or when two seconds have passed, the signal is dropped again and finally turned on again later for 1.5 seconds about -50 mm before the final stop, when driving in upward direction. In downward direction the VMP/2CH/S signal will simply follow the VMD signal.

If your GMV 3010 has the additional SE1 and SE2 A3/UCM valves, you can use the drive unit signals *'Safety valve [UCM/RDY]'* and '*Safety valve [UCM/RUN]*' inputs for those. Make use of RDY for SE1 and RUN for SE2.

105.5.4.5 BLAIN SEV Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7
Velocity V0 (creeping) downward	8
Velocity V1 upward	7 + 5
Velocity V1 downward	8 + 6
Velocity VI (inspection) upward	7 + 5 + 4
Velocity VI (inspection) downward	8 + 6 + 4
Velocity VR (emergency electrical operation) upward	7 + 5 + 4
Velocity VR (emergency electrical operation) downward	8 + 6 + 4
Velocity VN (re-levelling) upward	7
Velocity VN (re-levelling) downward	8
UCM/A3 Valve	3

▶ If an optional UCM/A3 valve L10 is installed on the system, it can be operated with actuator control signal 3 starting with version V1.40.04. According to BLAIN documentation, this safety valve must be activated approximately 500 ms before the main valves.

105.5.4.6 AZRS-1/2/3 Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7 + 1
Velocity V0 (creeping) downward	8 + 1
Velocity V1 (slow) upward	7 + 3 + 1
Velocity V1 (slow) downward	8 + 3 + 1
Velocity V2 upward	7 + 4 + 1
Velocity V2 downward	8 + 4 + 1
Velocity VI (inspection) upward	7 + 5
Velocity VI (inspection) downward	8 + 5
Velocity VR (emergency electrical operation) upward	7 + 5
Velocity VR (emergency electrical operation) downward	8 + 5
Velocity VN (re-levelling) upward	7 + 6
Velocity VN (re-levelling) downward	8 + 6

▶ For connecting the UCM supervision (feedback) signal, the input function '*Drive unit signals → Safety valve (UCM/RUN) state*' shall be used.

▶There are two variants for the AZRS. One with UCM valve and one without!

105.5.4.7 AZFR Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7
Velocity V0 (creeping) downward	8
Velocity V1 (slow) upward	7 + 5 + 4
Velocity V1 (slow) downward	8 + 4 + 3
Velocity V2 upward	7 + 5
Velocity V2 downward	8 + 5
Velocity VR/VI (emergency electrical operation) upward	7 + 4
Velocity VR/VI (emergency electrical operation) downward	8 + 4
Velocity VN (re-levelling) upward	7 + 6
Velocity VN (re-levelling) downward	8 + 6

105.5.4.8 AZFR + Danfoss Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7
Velocity V0 (creeping) downward	8
Velocity V1 (slow) upward	7 + 4
Velocity V1 (slow) downward	8 + 4
Velocity V2 upward	7 + 5
Velocity V2 downward	8 + 5
Velocity VI/VR (emergency electrical operation) upward	7 + 4
Velocity VI/VR (emergency electrical operation) downward	8 + 4
Velocity VN (re-levelling) upward	7 + 6
Velocity VN (re-levelling) downward	8 + 6

▶ For connecting the UCM supervision (feedback) signal, the input function '*Drive unit signals → Safety valve (UCM/RUN) state*' shall be used.

▶ As this drive is using the inverter only for stopping when using V2 but not for V1, you will be in need to feature the '***Hydraulic Stop correction value after intermediate velocity usage***' parameters to make the lift stop flush when not using V2 for driving.

105.5.4.9 AZMR Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	7 (Valve 1)
Velocity V0 (creeping) downward	8 (Valve 2)
Velocity V1 upward	7 (Valve 1) + 5 (Valve 4)
Velocity V1 downward	8 (Valve 2) + 6 (Valve 3)
Velocity VI (inspection) upward	7 (Valve 1) + 5 (Valve 4)
Velocity VI (inspection) downward	8 (Valve 2) + 6 (Valve 3)
Velocity VR (emergency electrical operation) upward	7 (Valve 1) + 5 (Valve 4)
Velocity VR (emergency electrical operation) downward	8 (Valve 2) + 6 (Valve 3)
Velocity VN (re-levelling) upward	7 (Valve 1)
Velocity VN (re-levelling) downward	8 (Valve 2)

105.5.4.10 Hydronic H300 Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	5 (Valve 12:A) in advance 300 ms
Velocity V0 (creeping) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N)
Velocity V1 upward	5 (Valve 12:A) in advance 300 ms 3 (Valve 12:H)
Velocity V1 downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N) + 3 (Valve 12:H)
Velocity VI & VR (inspection) upward	5 (Valve 12:A) in advance 300 ms 3 (Valve 12:H)
Velocity VI & VR (inspection) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N) + 3 (Valve 12:H)
Velocity VN (re-levelling) upward	5 (Valve 12:A) in advance 300 ms
Velocity VN (re-levelling) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N)

► The valve 12:A is turned on 300 ms before starting and turned off 1,5 s after stop.

105.5.4.11 Hydronic H300-S Signal Mapping

Velocity	Drive unit control signals
Velocity V0 (creeping) upward	5 (Valve 12:A) in advance 300 ms
Velocity V0 (creeping) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N)
Velocity V1 upward	5 (Valve 12:A) in advance 300 ms 3 (Valve 12:H)
Velocity V1 downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N) + 3 (Valve 12:H)
Velocity VI & VR (inspection) upward	5 (Valve 12:A) in advance 300 ms 4 (Valve 12:S)
Velocity VI & VR (inspection) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N) + 4 (Valve 12:S)
Velocity VN (re-levelling) upward	5 (Valve 12:A) in advance 300 ms
Velocity VN (re-levelling) downward	5 (Valve 12:A) in advance 300 ms 8 (Valve 12:N)

► The valve 12:A is turned on 300 ms before starting and turned off 1,5 s after stop.

105.5.4.12 Bucher iCON CANopen

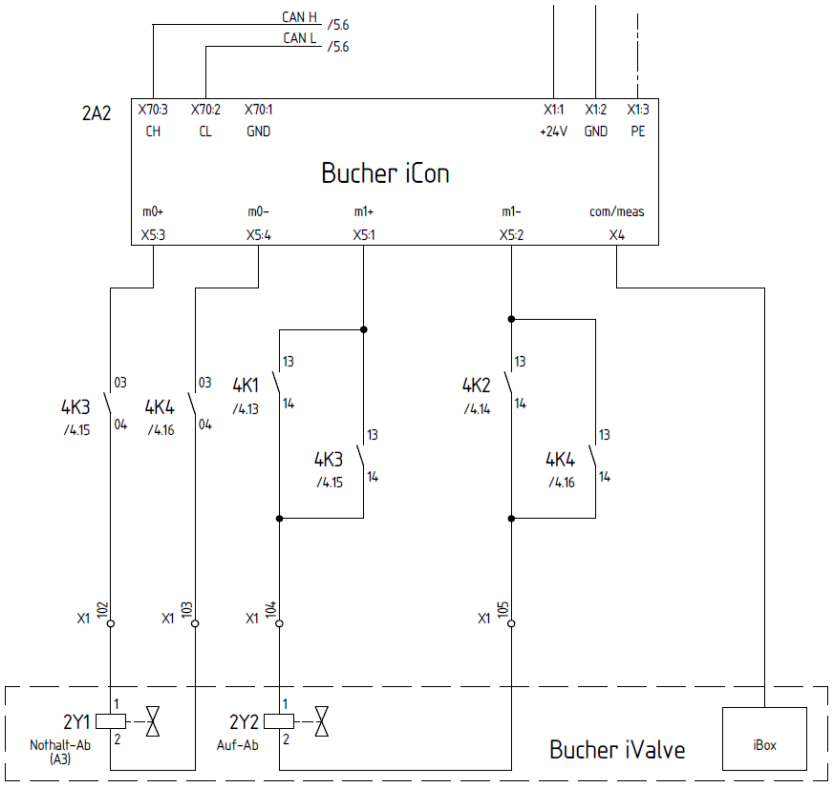
To operate the Bucher iCON CANopen you will need to setup the right hydraulic type:

You need two pilot relays on the controller unit. One for up and one for down:

- Pilot control relays → Pilot control relay 1, lift 1 [up]
- Pilot control relays → Pilot control relay 2, lift 1 [down]

Use the down contactor to drive the 2Y1 valve on the Bucher unit. Make a logical or by using the up and down contactor parallel to drive 2Y2 (up-down). Keep in mind that the normative often ask for two contactors dropping the power to those signals.

Here is a real world example were 4K1 and 4K2 are driven by the [up] pilot relay and 4K3 and 4K4 are driven by the [down] pilot relay:

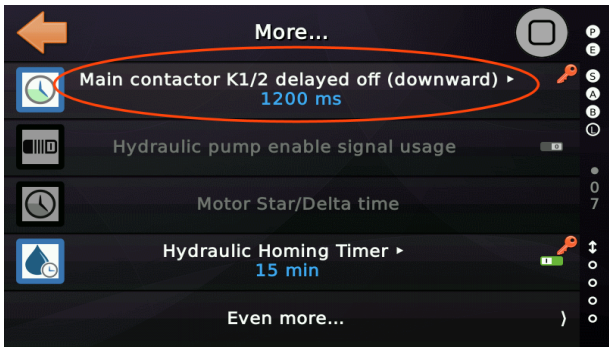


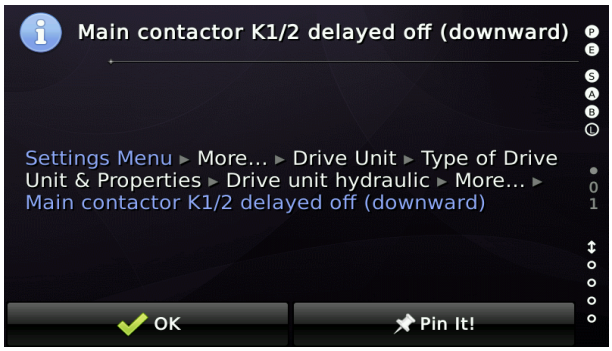
The iCON is transmitting the following status signals directly via the bus system over CAN1. Ensure that you do not have by mistake those signals parameterized as classical inputs somewhere as well. Especially the overload indication signal might be already parameterized somewhere on your car-top board (LXC).

- Drive unit signals → Safety valve [UCM/RUN] state, lift 1 [SMA]
- Drive unit signals → Drive readiness signal, lift 1
- Status/controller signals → Overload, lift 1
- Status/controller signals → Low hydraulic oil pressure, lift 1

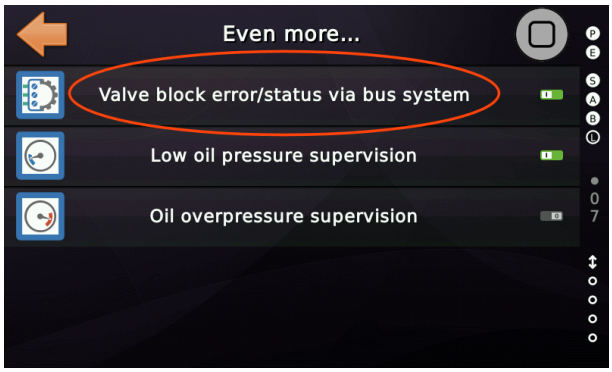
Now several option have to be set to operate the iCON unit correctly.

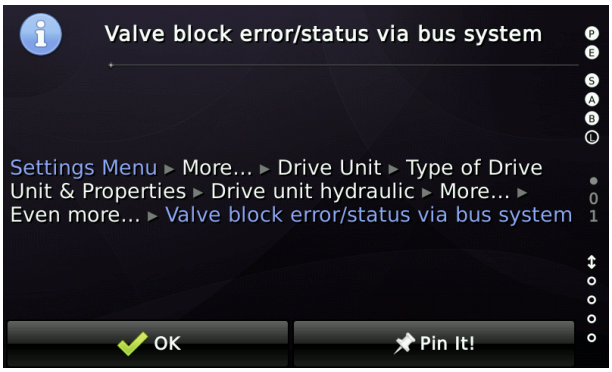
- Set a main contactor K1/2 dropping delay to 1200ms, when turning the main contactors off, like so:





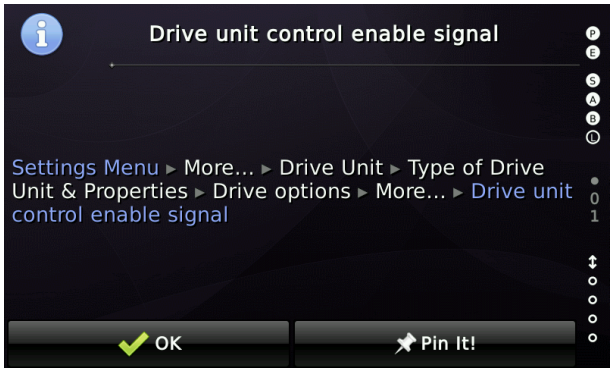
- Indicate to the lift controller, that the status information is send via the bus system, like so:



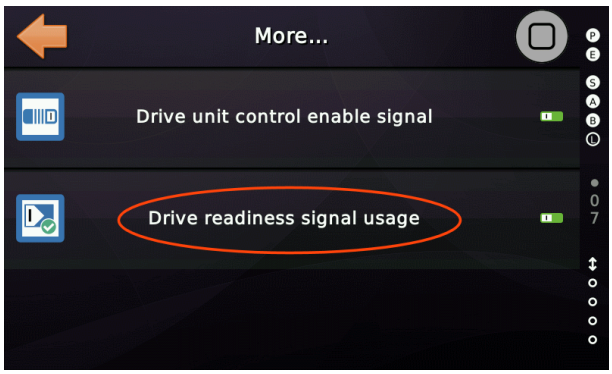


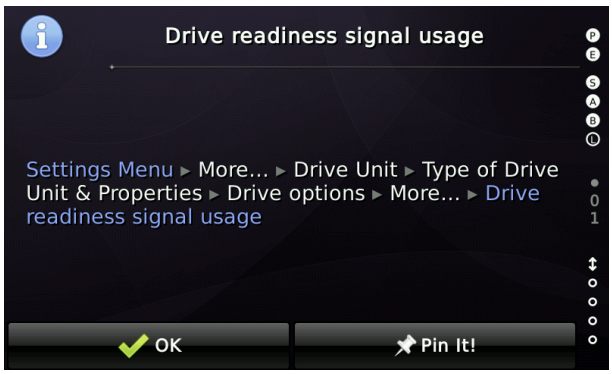
- If you operate the iCON using a soft-starter unit, you will also be in need to use the output of the soft-starter, indicating that it has revved up the pump, to drive the input signal *Drive unit signals → Enable drive unit control signal, lift 1*. You will not need that input, if you drive the pump via an inverter, that is directly

connected to the iCON (Nidec+Bucher variant). In order to use that input, you need to turn the function on. You find that option following Settings Menu → More... → Drive unit → Type of Drive Unit & Properties → Drive options → More...

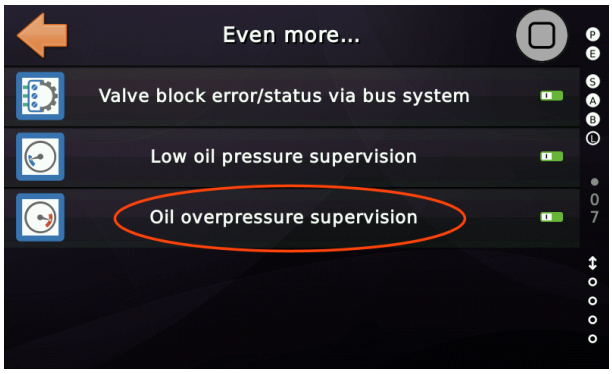


- The indication of the iCON to be ready to operate, is also send via the bus system. But you have to tell the controller to use it, by activating this option:

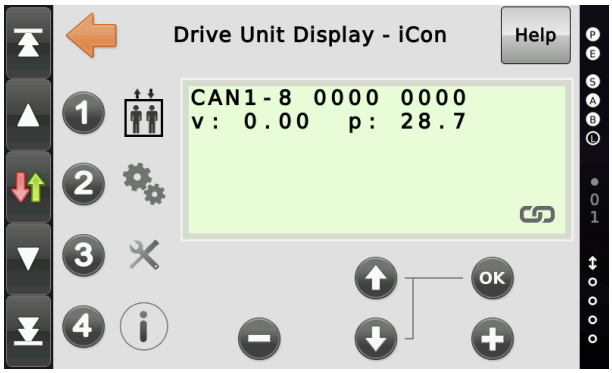


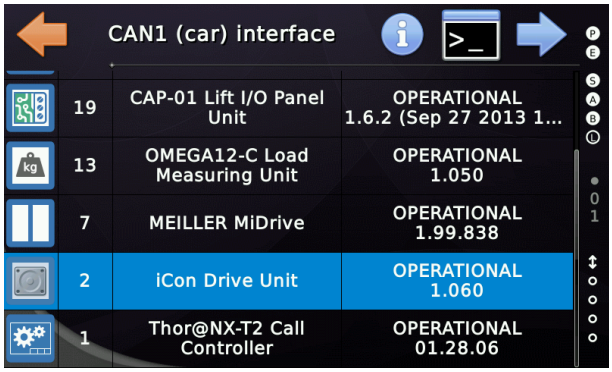


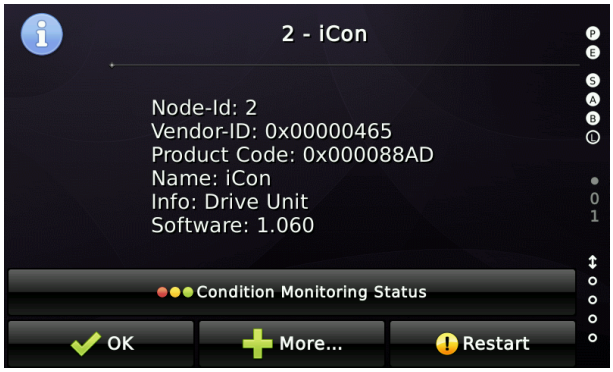
- If you have a wired overpressure indication as well, you will need to connect that one to *Drive Unit Signals → Hydraulic oil overpressure, lift 1*. In order to use that input, tell the lift controller to monitor it, by turning the corresponding option on as well:



- As with any other CANopen drive, you can get further status and runtime information directly via the CANopen display, as an alternative to the hand-held terminal of the iCON:







Whether there is a connection to the 'iCON CANopen' can also be checked in the node list, where the iCON should typically appear as node 2.

106 Appendix – Safety Chain on the Thor-SB

106.1 Scope of Application

The Safety Chain Sensing circuit monitors the speed governor contact (passive safety chain), the emergency stop signal, the landing door contact, the car door contacts and the door lock contact in lift controller applications for hydraulic and traction/cable lifts. A sequential switching circuit evaluates these signals further and makes them available to the micro controller (MCU). The connection diagram is shown in the figure below.

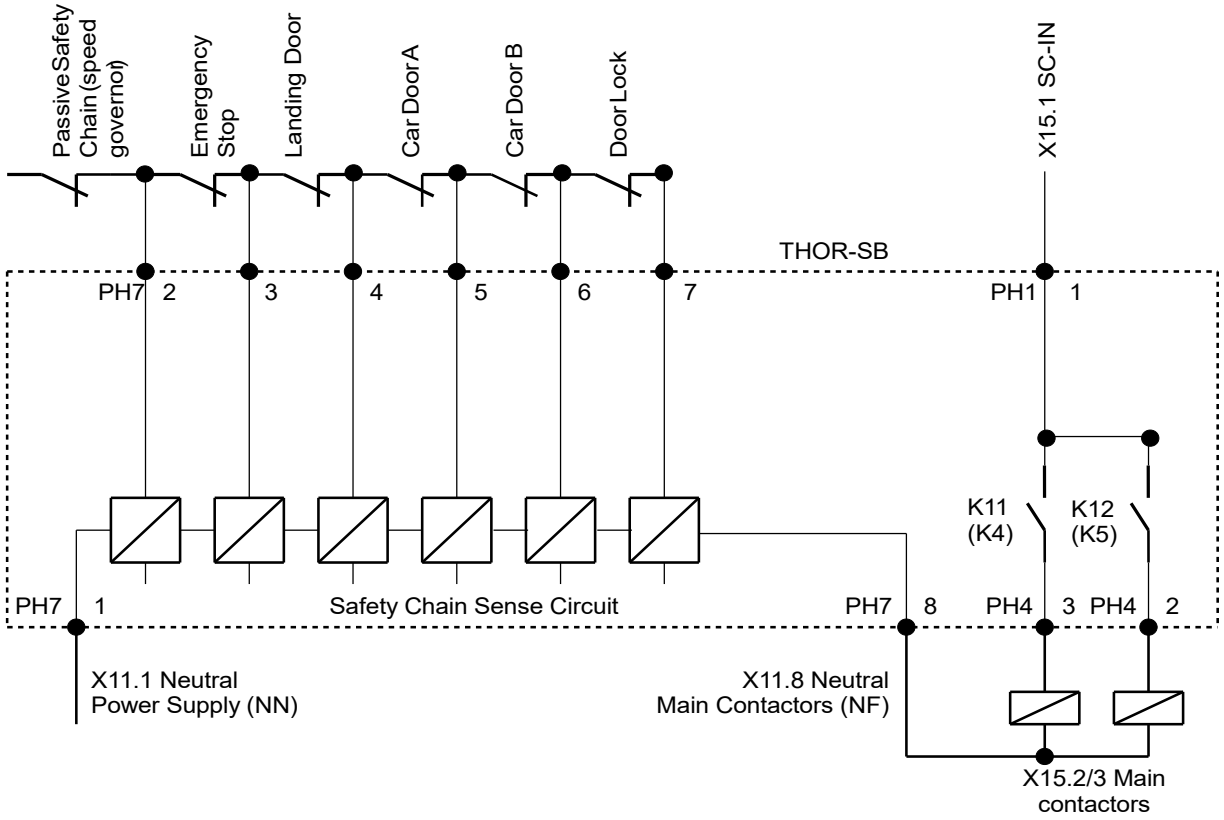


Figure 208: Schematics of the Safety Chain Sense Circuit at the Thor-SB board

The safety circuit with the safety chain sensing unit included in the Thor-E1/E2, is fused with a maximum current of 4 A. The connection of the neutral potential "NN" from the power supply network is done via the terminal PH7.1 (**X11.1**) at the THOR-SB board. The common neutral potential of the drive contactors, labeled as "NF", shall only be connected to terminal PH7.8 (**X11.8**) of the THOR-SB board.

106.2 Testability

In order to test the correct wiring related to the drive/main contactors and the THOR-SB board, including the terminals PH7.1 (**X11.1**), PH7.8 (**X11.8**), PH1.1 (**X15.1**), PH4.2 (**X15.2**), PH4.3 (**X15.3**), the neutral potential (NN) and the common/shared neutral for the main/drive contactors (NF) shall be verified.

1. Start the lift by a call to the very next stop. The pilot relays that driving the main contactors are turned on then.

2. The safety chain is closed, causing terminal PH4.2 (**X15.2**) or PH4.3 (**X15.3**) of the THOR-SB to have safety chain potential and the driving/main contactors are activated.

3. Disconnect the wire at terminal PH7.1 (**X11.1**) from the THOR-SB board, thus the neutral of the power supply network (NN) is interrupted for the THOR-SB board and the main/driving contactors.

4. The driving/main contactors are turned off and separate the energy to the drive unit on all electrical poles.

5. After that, reconnect the wire at terminal PH7.1 (**X11.1**) again.

6. Repeat this test procedure using the terminal PH7.8 (**X11.8**) of the THOR-SB labeled "NF" the next time.

7. After that, reconnect the wire at terminal PH7.8 (**X11.8**) again.

8. The lift is correctly wired, if the main/driving contactors had been turned off in both test scenarios. Otherwise the wiring has to be briefly checked for faults.

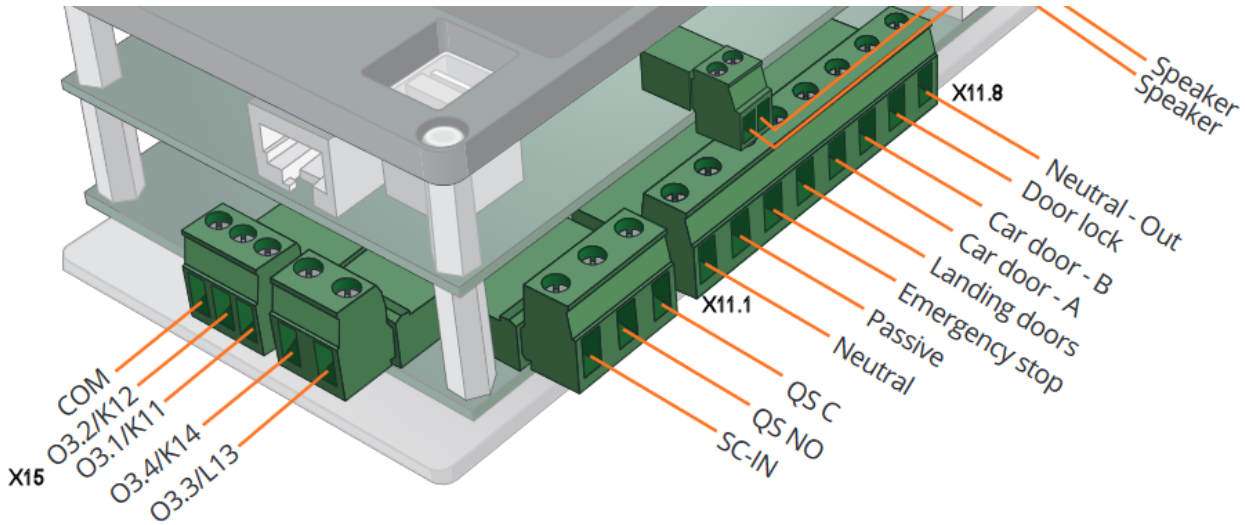


Figure 209: I/O SB-Board – See hardware manual for more details.

107 Safety Circuit at the THOR-SZ Board

The safety circuit (SZ) may be used for these purposes:

- Electrical safety devices in accordance with DIN EN81 part 20 & part 50, especially chapter 5.6 and is used as a replacement for mechanical switches.
- Approaching and re-levelling with opened car and landing doors - see DIN EN81 part 20 & part 50, especially chapter 5.12.1.4 "*Control of leveling, re-levelling and preliminary operation with doors not closed and locked*".
- Detection of unintended car movement (UCM) in accordance with the doors open being - see DIN EN 81 part 20 & 50, especially chapter 5.6.

The safety circuit is implemented featuring four positively driven safety relays.

- Relay "K8-A" = Start relay
- Relay "K7-A" = Supervision relay
- Relay "K9-A" = Door zone relay channel 2 (internally generated featuring an absolute positioning encoder.
- Relay "K10-A" = Door zones relay channel 1 (externally from a door zone sensor, e. g. magnetic/solenoid switch.

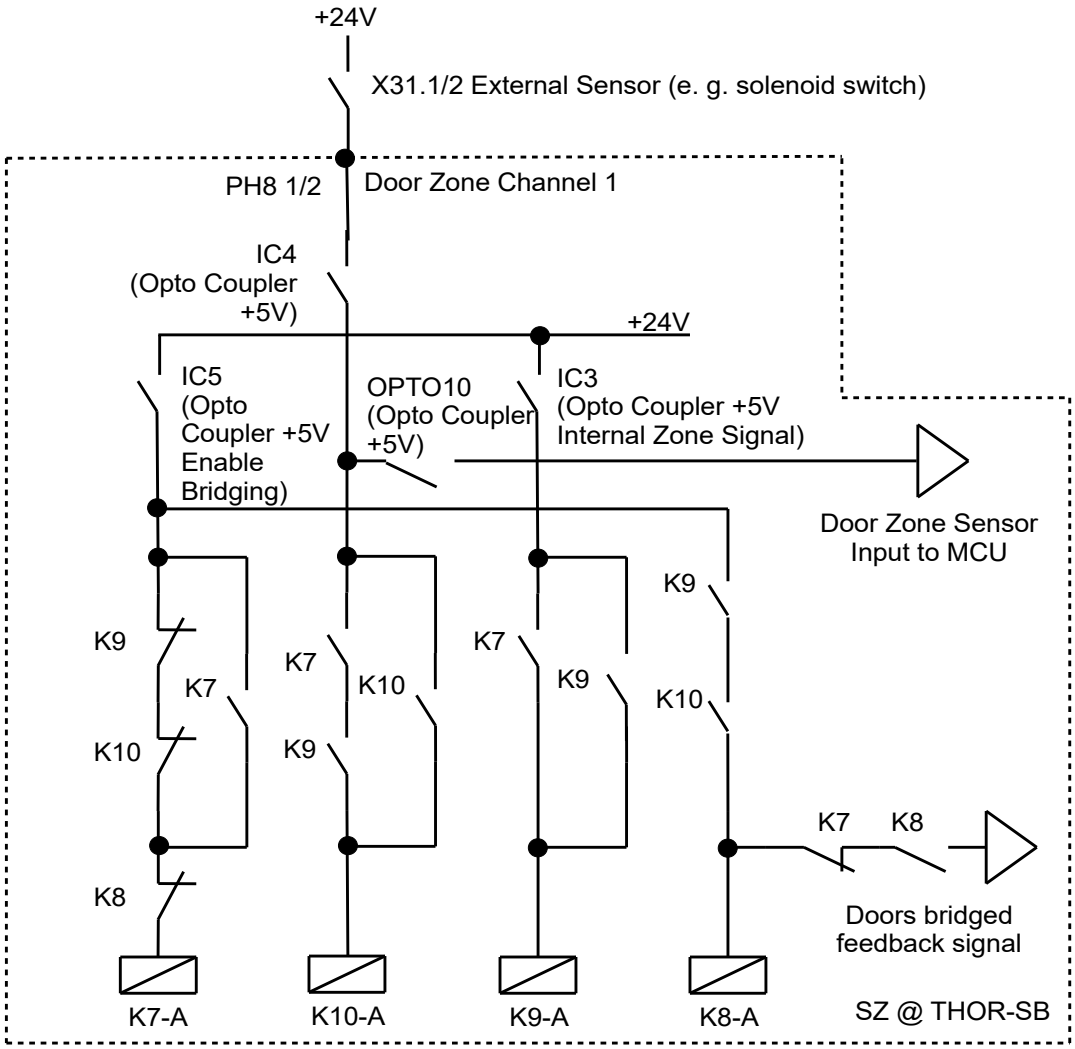


Figure 210: Principle of the Safety Circuit at the THOR-SZ board.

107.1 Testability

1. Start the lift by a call to the very next stop. All relays of the safety circuit are turned off when the cabin/car is leaving the door zone.

2. Disconnect the wire to terminal PH8.1/2 (**X31.1/2**), therefore, the sensor element input on channel one will keep being off.

3. The lift controller activates the safety circuit (Enable Bridging) and the relay K7-A will be turned on.

4. After the door zone is reached, the relay K9-A will be turned on, but the relay K10-A can not be turned on.

5. The circuit is not working properly and the bypass/bridging of the door safety chain can not happen.

6. The lift stops and notes that no door chain bridging had occurred. The system issues a fault and the lift stays blocked.

7. Now reconnect the wire to terminal PH8.1/2 (**X31.1/2**) and unblock the lift control system via the user interface. The lift is operational again.

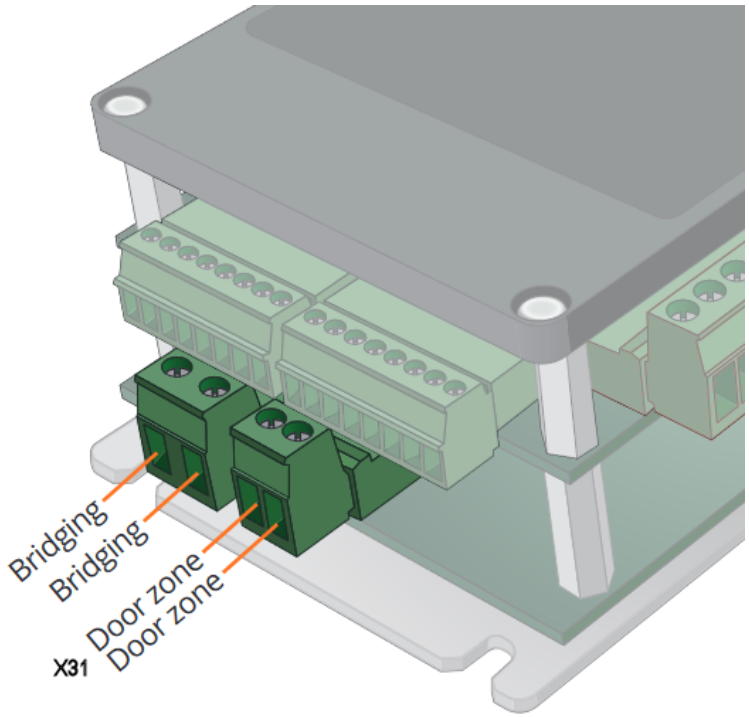


Figure 211: I/O SZ-Board – See hardware manual for more details.

107.2 SZ-Board Labeling

You find the labeling of the SZ-board on the short side of the unit, were the buttons are placed.

liftinstituut
SINCE 1933

PRODUCTEN
RvA C 087

EU-TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.
identification number Notified Body 0400,
commissioned by Decision no. 2023-0000172941

Certificate no.	:	NL23-400-1002-700-01 Revision no.: 1
Description of the product	:	Lift control unit for electric or hydraulic lifts with monitoring circuit for safety chain, door bridging circuit, detection of uncontrolled movement of the car (UCMP) and brake monitoring (ACOP/UCMP)
Trademark	:	Solidlift Holding AB
Type no.	:	THOR E
Name and address of the manufacturer	:	Hisselektronik Sweden AB Antennvägen 10 SE135 48, Tyresö, Sweden
Name and address of the certificate holder	:	Solidlift Holding AB Antennvägen 10 SE135 48, Tyresö, Sweden
Certificate issued on the following requirements	:	Lifts Directive 2014/33/EU
Certificate based on the following standard	:	EN 81-20:2020, clause 5.6.6.2, 5.6.7.3, 5.6.6.7, 5.6.7.9, 5.11.1, 5.11.2.1.2 and 5.11.2.3 EN 81-50:2020, clause 5.8 and 5.15
Test laboratory	:	None
Date and number of the laboratory report	:	None
Date of EU-type examination	:	December 2024 – March 2025
Additional document with this certificate	:	Report belonging to the EU-type examination certificate no.: NL23-400-1002-700-01 rev. 1
Additional remarks	:	Key parameters for detecting UCM: Detection distance: installed door-zone (variable) Max. response time THOR E : 10ms Speed and distance travelled : to be calculated
Conclusion	:	The safety component meets the requirements of the Lifts Directive 2014/33/EU considering any additional remarks mentioned above

Certification decision by

Amsterdam
Date : 27-03-2025
Valid until : 09-02-2028

P.J. Schaareman
Product Manager C&S

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· Registered at the KvK under number 34157363 ·

108 Application Menu Structure

Wednesday, 12.03.2025 - 10:18:34, 19 °C

Version: 01.40.04 (Mar 12 2025, 08:45:52)

108.1 Settings Menu

```
- Cabin/Car
    |
    +- Car/cabin lights off timer
    |    |
    |    +- Car/cabin lights off timer [CO:4111] - (Service)
    |    |    This object defines the time after the car/cabin light is turned off, if the lift is
    |    |    being idle.
    |    |
    |    +- Turn the car lights off, even if the landing doors are still open [CO:41F2] -
    |       (Service)
    |         This object defines on which floors the car light can be switched off, even if the
    |         automatic doors are still open. This table is only required if you have fully
    |         automatic power driven sliding doors and park with the doors open. You do not need
    |         this table for manual swing doors with automatic car doors.
    |
    +- Cabin light voltage monitoring [CO:414A] - (on site only) - (Setup)
    |    The car/cabin light voltage monitoring is using a 230V input on the safety board to
    |    detect a fail of the power supply feeding the cabin light. The input is extra debounced
    |    for stability reasons.
    |
    +- Displays & Indicators
    |    |
    |    +- Arrival indication
    |    |    |
    |    |    +- Arrival indicator delay time [CO:4114] - (Service)
    |    |    |    This object defines the arrival indicator delay time, starting after having
    |    |    |    passed the counting pulse.
    |    |    |
    |    |    +- Arrival indicator trigger [CO:4115] - (Service)
    |    |    |    This object defines which call types will trigger the arrival indicator -
    |    |    |    typically landing calls do.
    |    |    |
    |    |    +- Arrival indicator pulse duration [CO:4116] - (Service)
    |    |    |    This object defines how long the pulse is that triggers the arrival (gong)
    |    |    |    module. The gong pulse length was originally made for mechanical bells with a
    |    |    |    magnet to push a rod to the bell house.
    |    |    |
    |    |    +- Pulse the arrival indicator in down direction twice [CO:41C1] - (Service)
    |    |    |    This object defines, if the arrival indicator for the downward direction, shall
    |    |    |    be pulsed twice via the bus system. Be aware that a lot of voice announcers or
    |    |    |    displays already pulsing it twice, so activating this option may make them
    |    |    |    pulse four times then.
    |    |    |
    |    |    +- Arrival indicator delay policy [CO:41EE] - (Service)
    |    |         This object defines when the arrival indicator delay time shall start. By
    |    |         default it will start, when the lift is approaching. But you may want to start
    |    |         the delay time with the doors opening.
    |    |
    |    +- Hall lantern
    |    |    |
    |    |    +- Hall lantern options [CO:4112] - (Service)
    |    |    |    This object defines the moment to turn on the hall lantern, usually when the
    |    |    |    lift arrives. For swing doors that are unlocked by the car door being fully
    |    |    |    opened, it might be useful, that the hall lantern is not turned on, before the
    |    |    |    car door has been fully opened.
    |    |    |
```

```
|    |    +- Hall lantern priority policy [CO:41BA] - (Service)
|    |    |    This object defines if the hall lanterns shall blink at the dedicated floor,
|    |    |    when the lift is on priority or guest call operation mode.
|    |    |
|    |    +- Hall lantern timeout [CO:41C3] - (Service)
|    |    |    This object defines a timeout for the hall lanterns to be dropped. This might
|    |    |    be useful if local regulations ask for the hall lanterns to be turned off after
|    |    |    a while, with the lift being stationary or parking.
|    |    |
|    |    +- Hall lantern blink when dwell time is running [CO:41C7] - (Service)
|    |         This object defines if the hall lanterns shall blink, when the dwell time is
|    |         running with the doors open.
|    |
|    +- Floor announcement
|    |    |
|    |    +- Floor announcement delay time [CO:4308] - (Service)
|    |    |    This object defines the floor announcement delay time, starting after having
|    |    |    passed the counting pulse.
|    |    |
|    |    +- Floor announcement on car calls only [CO:4313] - (Service)
|    |         This object defines the floor announcement shall be triggered only, if car
|    |         calls are pending.
|    |
|    +- Announcement lift going up/down
|    |    |
|    |    +- Announcement lift going up/down delay time [CO:4382] - (Service)
|    |         This object defines the delay time, starting after door opening, to trigger the
|    |         voice announcement, telling the direction were the lift will go next.
|    |
|    +- More…
|         |
|         +- Transmit landing direction arrows to the car [CO:40D3] - (Service)
|         |    This object determines whether the direction arrows for the stops, that turn
|         |    the direction at the end stops in advance, should also be sent for the lift
|         |    car.
|         |
|         +- Car floor display supervision
|              |
|              +- Car floor display supervision 1 [CO:42A8] - (Service)
|              |
|              +- Car floor display supervision 2 [CO:42A9] - (Service)
|                   This object defines if the lift shall supervise the communication to the
|                   car's floor display, by means of monitoring the heartbeat, that the floor
|                   display is transmitting to indicate its current operating state. If the
|                   heartbeat is missing for five minutes in a row, the lift will enter out of
|                   order operation. This supervision is ignored as long as the lift in on
|                   Assembling/Installation operation mode.
|
+- Car Preference
|    |
|    +- Car calls on car preference [CO:4105] - (Service)
|    |    Defines if one or more car calls can be entered on car preference operation
|    |
|    +- Landing calls on car preference [CO:4140] - (Service)
|    |    This object defines if landing calls should be collected or canceled on car
|    |    preference operation.
|    |
|    +- Input Terminal Type [CO:4142] - (Service)
|    |    This object defines if the input for activating car preference is operated like a
|    |    (key) switch or like a button or card reader, just providing an impulse.
|    |
|    +- Car Preference Timeout [CO:41A0] - (Service)
|    |    This object defines the timeout for the car preference function, if featuring a card
|    |    reader/button instead of a key switch having two permanent positions.
|    |
|    +- More…
|         |
|         +- Re-enable locked car calls [CO:4175] - (Service)
|         |    This object defines if car calls, being disabled via the internal table, shall
|         |    be re-enabled, if the lift enters car preference operation.
|         |
|         +- Open doors on activation [CO:4141] - (Service)
```

```
|         |    This object defines to re-open the last opened door, if car preference is
|         |    activated and the lift is idle at the door zone.
|         |
|         +- Manual door operation on car preference [CO:419A] - (Service)
|              This object defines if the doors shall be operated in manual operation mode,
|              using constant pressure on the door open/close buttons, if car preference (VIP
|              or independent mode) has been activated.
|
+- More…
     |
     +- Car Fan
     |    |
     |    +- Operating mode [CO:4290-1] - (Service)
     |    |    This object defines how the cabin/car fan shall operate. Typically the fan
     |    |    starts automatically when the lift starts. An After-Run-Time parameter defines
     |    |    how long the fan shall be kept going after the lift has stopped. Beside that
     |    |    the fan can be started and stopped with a push-button. A Maximum-Run-Time
     |    |    parameter is used to turn the fan off automatically after a certain time-span.
     |    |
     |    +- Afterrun time [CO:4290-2] - (Service)
     |    |
     |    +- Maximum runtime [CO:4290-3] - (Service)
     |
     +- Customizable buzzer signal
     |    |
     |    +- Customizable buzzer signal -> Overload [CO:41EF-1] - (Service)
     |    |    This object defines which indications shall turn the customizable buzzer output
     |    |    on. This output can be helpful, to have one single output for driving a buzzer,
     |    |    triggered by different events, like overload, door nudging, driving with pit
     |    |    inspection, having fire service indicated while being on inspection operation
     |    |    or indicating a light barrier fault.
     |    |
     |    +- Customizable buzzer signal -> Fire alarm/service inspection buzzer [CO:41EF-2]
     |    |  - (Service)
     |    |
     |    +- Customizable buzzer signal -> Inspection in the pit driving buzzer [CO:41EF-3]
     |    |  - (Service)
     |    |
     |    +- Customizable buzzer signal -> Door light curtain fault input acknowledge
     |    |  [CO:41EF-4] - (Service)
     |    |
     |    +- More…
     |         |
     |         +- Customizable buzzer signal -> Door nudging [CO:41EF-5] - (Service)
     |         |
     |         +- Customizable buzzer signal -> Door preclose warning [CO:41EF-6] -
     |         |  (Service)
     |         |
     |         +- Customizable buzzer signal -> Door preopen warning [CO:41EF-7] - (Service)
     |         |
     |         +- Customizable buzzer signal -> Door-Bypass warning [CO:41EF-8] - (Service)
     |         |
     |         +- Even more…
     |              |
     |              +- Customizable buzzer signal -> Extra Door Supervision warning siren
     |              |  [CO:41EF-9] - (Service)
     |              |
     |              +- Customizable buzzer signal -> Door closing buzzer signal
     |              |  fire/evacuation [CO:41EF-10] - (Service)
     |              |
     |              +- Customizable buzzer signal -> Floor passing signal [CO:41EF-11] -
     |              |  (Service)
     |              |
     |              +- Customizable buzzer signal -> Arrived at service position
     |              |  [CO:41EF-12] - (Service)
     |              |
     |              +- Customizable buzzer signal -> Please close door [CO:41EF-13] -
     |                 (Service)
     |
     +- Telescopic toe guard supervision
     |    |
     |    +- Telescopic toe guard usage [CO:4198-1] - (Setup)
```

```
        |    |    This object defines if the lift has to supervise a telescopic toe guard via an
        |    |    input function. These special toe guards are usually used, if having a low pit
        |    |    situation, having not enough room for them in the lowest floor. Usually they
        |    |    are spring loaded and hold by an electromagnet. On a power drop they are pushed
        |    |    out and when the power comes back, the lift has to push them in again, by
        |    |    driving below the lowest floor, so that the toe guard will touch the ground.
        |    |    The lift will stop, if having reached the parameterized stop point, usually
        |    |    some millimeters below floor level.
        |    |
        |    +- Telescopic toe guard push-in distance [CO:4198-2] - (Service)
        |    |    This object defines the distance to be driven below the lowest floor level, in
        |    |    order to push-in the telescopic toe guard completely. This value is given in
        |    |    millimeter, below the bottom floor level.
        |    |
        |    +- Telescopic toe guard velocity [CO:4198-3] - (Service)
        |         This option determines the velocity at which the car travels to the lowest
        |         floor and then decelerates and retracts the telescopic toe guard. The lift will
        |         travel at rated speed to the floor above the lowest landing and then travel to
        |         the lowest floor at the set reduced speed and then decelerate.
        |
        +- Body detector
             |
             +- Body Detector usage [CO:441E] - (Service)
                  This object defines if the lift is featuring a body detector unit, indicating
                  if the cabin is empty by means of a digital input or a bus message.

- Call Processing
    |
    +- Type of Call Processing
    |    |
    |    +- Type of Call Processing [CO:4004] - (on site only) - (Setup)
    |    |    This parameter defines the type/mode of the lift controller's call processing, like
    |    |    PB, APB or Collective.
    |    |
    |    +- Car calls on APB lift operation [CO:4104] - (Setup)
    |    |    Defines if one or more car calls can be entered on APB lift operation.
    |    |
    |    +- Cancel pending calls if safety chain is interrupted while driving [CO:42DF] -
    |    |  (Service)
    |    |    This object defines if pending calls shall be cancelled if the safety chain is
    |    |    interrupted unattended while driving.
    |    |
    |    +- Rarely used…
    |         |
    |         +- Cancel calls on dropping the combination terminal «Car & Landing call enabling»
    |            [CO:42E2] - (Service)
    |              This object defines whether pending calls should be deleted if the combination
    |              input terminal «Car & Landing call enabling», which is used to jointly release
    |              car and landing calls, has been switched off.
    |
    +- Car calls
    |    |
    |    +- Car call cancelling
    |    |    |
    |    |    +- Enable Car call cancelling [CO:410E] - (Service)
    |    |    |    Enable car call cancelling by pressing the already acknowledge car call again.
    |    |    |    This needs 4-wire technology or a I/O component that supports pulsing the
    |    |    |    output to be able to read the input (button) even if the lamp has been lit up.
    |    |    |
    |    |    +- Button hold time car cancellation [CO:4120] - (Service)
    |    |         This object defines the time the passenger has to hold the car call button
    |    |         pressed in order to cancel an already active car call.
    |    |
    |    +- Car call disabling
    |    |    |
    |    |    +- Car call disabling table [CO:401A] - (Service)
    |    |    |    This object holds the table containing a door mask entry per floor for car
    |    |    |    calls being disabled. These locked car calls may be enabled via a input
    |    |    |    terminal or bus system message.
    |    |    |
    |    |    +- Car call 'enabling' afterrun time [CO:401C] - (Service)
    |    |    |    This object defines an 'after-run' time that has to expire after the car call
```

```
|    |    |    enabling signal peaks down, before the car call is disabled again.
|    |    |
|    |    +- Passenger user groups
|    |         |
|    |         +- Passenger user groups enable [CO:408B] - (Service)
|    |         |    This object enables a table that may contain a door mask entry per floor,
|    |         |    defining a secondary passenger user group. The idea is that those
|    |         |    passengers will only be able to enter car calls on the given floors/doors,
|    |         |    when they have entered the lift from one of those landings as well. In
|    |         |    order to make this work, those car calls have to be disabled for normal
|    |         |    passengers, via the car call disabling table in the first place.
|    |         |
|    |         +- First passenger user group table [CO:408C] - (Service)
|    |         |
|    |         +- Second passenger user group table [CO:408D] - (Service)
|    |         |
|    |         +- Third passenger user group table [CO:408E] - (Service)
|    |              This object holds the table containing a door mask entry per floor,
|    |              defining a secondary passenger user group. The idea is that those
|    |              passengers will only be able to enter car calls on the given floors/doors,
|    |              when they have entered the lift from one of those landings. In order to
|    |              make this work, those car calls have to be disabled for normal passengers
|    |              via the car call disabling table in the first place.
|    |
|    +- Car call code table
|    |    |
|    |    +- Car call code table [CO:404A] - (Service)
|    |    |    This object holds the table containing the floors and their door masks,
|    |    |    together with the numerical code needed to enable the call. The code has to be
|    |    |    entered via the car call panel, using the car call buttons as a number pad. You
|    |    |    may use the output 'Status/controller signals > Enter code indicator' to signal
|    |    |    that a code has to be entered.
|    |    |
|    |    +- Car call code time [CO:404B] - (Service)
|    |    |    This object defines the time span granted to the user in order to enter the
|    |    |    numerical code.
|    |    |
|    |    +- Door open button using car call codes [CO:407F] - (Service)
|    |         This object defines if for locked car calls, the door open button shall trigger
|    |         the code entering request. The codes are entered via the car call panel.
|    |
|    +- Max. car calls on 'no-load' [CO:4040] - (Service)
|    |    This parameter defines how many car calls can be registered, if the load measuring
|    |    unit of the car/cabin indicates, that the car is empty.
|    |
|    +- Cancel car calls on no-load policy [CO:4063] - (Service)
|         This object defines if pending car calls shall be cancelled when the doors are
|         closing, if more car calls had been registered as stated by the 'Max. car calls on
|         no-load' car call policy and the load measuring unit of the car/cabin indicates,
|         that the car is actually empty.
|
+- Landing calls
|    |
|    +- Misboarder detection [CO:410F] - (Service)
|    |    Enable the detection of misboarders - passengers that had pressed the wrong landing
|    |    call direction and then step into the car giving a car call in the opposite
|    |    direction. The lift controller will check which door had been opened and on which
|    |    door, using the light curtain, passengers had stepped in. If the given car call is
|    |    then entered in the wrong direction, the remaining landing call in the other
|    |    direction will then be canceled on that door side.
|    |
|    +- Landing call disabling
|    |    |
|    |    +- Landing call disabling table [CO:401B] - (Service)
|    |    |    This object holds the table containing a door mask entry per floor for landing
|    |    |    calls being disabled. These locked landing calls may be enabled via an input
|    |    |    terminal, a bus system message or a time planner function.
|    |    |
|    |    +- Landing call 'enabling' afterrun time [CO:401D] - (Service)
|    |    |    This object defines an 'after-run' time that has to expire after the landing
|    |    |    call enabling signal peaks down, before the landing call is disabled again.
|    |    |
```

```
|    |    +- Lock low priority calls as well [CO:42F0] - (Service)
|    |    |    This object declares if the table used for locking landing calls, applies to
|    |    |    low priority landing calls as well.
|    |    |
|    |    +- Lock high priority calls as well [CO:42F1] - (Service)
|    |         This object declares if the table used for locking landing calls, applies to
|    |         high priority landing calls as well.
|    |
|    +- Landing call acknowledge policy [CO:4062] - (Service)
|    |    This object defines when the landing call acknowledge (lamp) shall be canceled.
|    |    Usually the landing call acknowledge is turned off, when the lift has arrived to the
|    |    designated floor. For swing doors that are unlocked by the car door being fully
|    |    opened, it might be useful, that the landing call lamp is not turned off, before the
|    |    car door has been fully opened.
|    |
|    +- Latched landing call lamps blink while driving [CO:430E] - (Service)
|    |    This option makes all the pending (latched) landing call acknowledges (lamps) do
|    |    blink/flash, when the lift is driving. If the lift is standstill the acknowledges
|    |    (lamps) will be constantly turned on.
|    |
|    +- Inhibit time between up & down call [CO:41EB] - (Service)
|         This object defines if an inhibit time shall prevent the passenger from pressing
|         both landing calls at about the same time. This shall prevent the bad habit of some
|         passengers pressing both hall call buttons, thinking that the lift would arrive
|         faster and later on moan about the lift, driving in the wrong direction.
|
+- Priority calls
|    |
|    +- Low priority landing calls
|    |    |
|    |    +- Collect low priority landing calls [CO:410A] - (Service)
|    |    |    Use this object to allow collecting low priority call calls.
|    |    |
|    |    +- Allow multiple low priority calls on the very same floor [CO:410C] - (Service)
|    |    |    Allow multiple low priority landing calls on the very same floor, for example
|    |    |    used for bed transportation in a hospital.
|    |    |
|    |    +- Unlock car calls via car preference [CO:4163] - (Service)
|    |    |    Use this object to define if the car calls on a low priority operation, shall
|    |    |    only be enabled, if the car preference switch has been activated.
|    |    |
|    |    +- Rule for pending car calls [CO:4100] - (Service)
|    |    |    This object defines what happens to pending car calls, if a low priority
|    |    |    landing call is received.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Enter car calls on priority operation [CO:414C] - (Service)
|    |         |    This object defines if the passenger on a low priority operation is
|    |         |    allowed to enter several car calls or just one.
|    |         |
|    |         +- Cancel/disable landing calls [CO:414E] - (Service)
|    |         |    This object defines if pending landing calls shall be cancelled, if a low
|    |         |    priority call has been entered or if they shall be collected.
|    |         |
|    |         +- Pickup passenger with no-load [CO:4102] - (Service)
|    |         |    This object defines whether passengers are to be picked up on a low
|    |         |    priority operation, when the cabin is emptied. This requires a reliable
|    |         |    load measuring device.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Re-enable car calls on low priority operation [CO:41B1] - (Service)
|    |              |    This object defines if car calls, being disabled via the internal
|    |              |    table, shall be re-enabled, if the lift enters low priority landing
|    |              |    call operation.
|    |              |
|    |              +- Cancel load time on low priority calls [CO:42EE] - (Service)
|    |                   This object defines, if a pending load time, usually started with a
|    |                   key switch in the car, shall be aborted, if a priority landing call
|    |                   has been registered.
|    |
```

```
|    +- High priority landing calls
|         |
|         +- Collect high priority landing calls [CO:410B] - (Service)
|         |    Use this object to allow collecting high priority call calls.
|         |
|         +- Allow multiple high priority calls on the very same floor [CO:40FF] - (Service)
|         |    Allow multiple high priority landing calls on the very same floor, for example
|         |    used for the medical personal in a hospital.
|         |
|         +- Unlock car calls via car preference [CO:413F] - (Service)
|         |    Use this object to define if the car calls on a high priority operation, shall
|         |    only be enabled, if the car preference switch has been activated.
|         |
|         +- Rule for pending car calls [CO:4101] - (Service)
|         |    This object defines what happens to pending car calls, if a high priority
|         |    landing call is received.
|         |
|         +- More…
|              |
|              +- Enter car calls on priority operation [CO:414D] - (Service)
|              |    This object defines if the passenger on a low priority operation is
|              |    allowed to enter several car calls or just one.
|              |
|              +- Cancel/disable landing calls [CO:414F] - (Service)
|              |    This object defines if pending landing calls shall be canceled, if a high
|              |    priority call has been entered or if they shall be collected.
|              |
|              +- Pickup passenger with no-load [CO:4103] - (Service)
|              |    This object determines whether passengers are to be picked up on a high
|              |    priority operation, when the cabin is emptied. This requires a reliable
|              |    load measuring device.
|              |
|              +- Even more…
|                   |
|                   +- Re-enable car calls on high priority operation [CO:41B2] - (Service)
|                   |    This object defines if car calls, being disabled via the internal
|                   |    table, shall be re-enabled, if the lift enters high priority landing
|                   |    call operation.
|                   |
|                   +- Cancel load time on high priority calls [CO:42EF] - (Service)
|                        This object defines, if a pending load time, usually started with a
|                        key switch in the car, shall be aborted, if a priority landing call
|                        has been registered.
|
+- Guest calls
     |
     +- Allow car call reentering [CO:4301-1] - (Service)
     |    This option handles the reentering of car calls while the guest call operation if
     |    waiting for the lift to be ready. After enabling this option newly entered guest
     |    calls will be processed while the guest transfer is delayed.
     |
     +- Collect landing calls [CO:4301-2] - (Service)
     |    This option enables the collection of landing calls during an ongoing guest call
     |    operation. If deactivated landing calls will not be accepted.
     |
     +- Guest pick-up with empty car [CO:4301-3] - (Service)
     |    This option decides if an empty car is necessary for starting the guest call
     |    operation. Otherwise it can not be ensured that all passengers left the car.
     |
     +- More…
          |
          +- Guest delivery by car call [CO:4301-4] - (Service)
          |    This option enables the start of the guest delivery by pressing the car call
          |    button.
          |
          +- Guest delivery by weight change [CO:4301-5] - (Service)
          |    This option enables the start of the guest delivery by noticing a weight
          |    change.
          |
          +- Cancel call when dwell time expires [CO:4301-6] - (Service)
               This option defines, if the pending guest call shall be cancelled, if the dwell
               time expires, when waiting for the guest to enter the car at the pickup-floor.
```

```
- Controller/Piloting
    |
    +- Times & Options
    |    |
    |    +- Parking
    |    |    |
    |    |    +- Parking strategy [CO:419F] - (Service)
    |    |    |    This object defines if the lift shall feature a simple parking floor or a more
    |    |    |    enhanced mode, like 'zone parking' in a group/team environment. If running in
    |    |    |    'zone parking' mode, the program would split the hoistway into parts and
    |    |    |    ensures that every part is covered by a team lift.
    |    |    |
    |    |    +- Parking timer [CO:4117] - (Service)
    |    |    |    This object defines the time to park the lift when no calls are present. The
    |    |    |    parking floor is determined by the parking strategy/mode and other options.
    |    |    |
    |    |    +- Parking floor [CO:4107-3] - (Service)
    |    |    |    This object defines the parking floor, used for parking the lift, if being
    |    |    |    idle.
    |    |    |
    |    |    +- Parking in-between floors [CO:4060] - (Service)
    |    |    |    This object defines the distance used to park in-between floors, relative to
    |    |    |    the floor level position of the parking floor used.
    |    |    |
    |    |    +- More…
    |    |         |
    |    |         +- Cars at lobby floor [CO:419E] - (Service)
    |    |         |    This object defines how many cars shall be kept at the lobby floor, if
    |    |         |    featuring the 'zone parking' strategy.
    |    |         |
    |    |         +- Lobby floor/main entrance [CO:4107-2] - (Service)
    |    |         |    Defines the lobby floor, which is the main entrance of the building.
    |    |         |
    |    |         +- Doors in parking floor [CO:4064] - (Service)
    |    |         |    This object defines if the doors shall close after a while after having
    |    |         |    reached the parking floor.
    |    |         |
    |    |         +- Parking floor cross out table [CO:41C8] - (Service)
    |    |              This object holds the table containing the floors that shall be crossed
    |    |              out in zone parking mode (team only). Crossing floors out for zone parking
    |    |              might be useful, if certain floors in a building are, for security
    |    |              reasons, protected and parking the cars at those floors is unwanted.
    |    |
    |    +- Intermediate stopover
    |    |    |
    |    |    +- Stopover floor [CO:4107-1] - (Service)
    |    |    |    Defines a stopover floor used for example in a hotel's lobby.
    |    |    |
    |    |    +- Direction for stopover floor [CO:4109] - (Service)
    |    |    |    Defines in which direction the car should stop at the stopover floor.
    |    |    |
    |    |    +- Stopover at floor with cabin load only [CO:4108] - (Service)
    |    |    |    Defines if the car no-load signal should be taken in account for stopping at
    |    |    |    the stopover floor.
    |    |    |
    |    |    +- Doors at intermediate-stop-over floor [CO:413C] - (Service)
    |    |    |    Use this object to define the doors that shall open when doing a intermediate
    |    |    |    stop-over, typically in the lobby floor.
    |    |    |
    |    |    +- Wait for security signal at the intermediate stopover floor [CO:41E7] -
    |    |       (Service)
    |    |         This object defines if the lift shall wait, having arrived at the intermediate
    |    |         stopover floor, for the security run signal being indicated, before continuing
    |    |         driving to its dedicated destination.
    |    |
    |    +- Floor display timers
    |    |    |
    |    |    +- Floor displays off timer [CO:4110-1] - (Service)
    |    |    |    This object defines the time after the floor displays will be turned off, if
    |    |    |    the lift is being idle. This timer will effect hall lanterns and floor
    |    |    |    indicators. If you have defined a timer for reducing the display as well, this
```

```
|    |    |    timer will start, if the reducing timer has been exipired.
|    |    |
|    |    +- Floor displays reducing timer [CO:4110-2] - (Service)
|    |         This object defines the time after the floor displays will be reduced in
|    |         brightness, if the lift is being idle. This timer will effect hall lanterns and
|    |         floor indicators.
|    |
|    +- Lift fault signalization delay [CO:415B] - (Setup)
|    |    This object defines the delay to turn on the 'Lift fault' output signal, if the lift
|    |    is in a fault situation.
|    |
|    +- More…
|         |
|         +- Shuttle Service (snow cleaning) [CO:4199-1] - (Service)
|         |    This object defines if the lift has to travel once in a while to one end of the
|         |    hoistway and then the next time to the other end. This might be used for snow
|         |    cleaning, if the lift in question is an inclining lift or there is the risk of
|         |    the car freezing to the rails. This function is usually activated via an input
|         |    terminal.
|         |
|         +- Wait for security signal before start driving
|         |    |
|         |    +- Wait for security signal before start driving [CO:41E8-1] - (Setup)
|         |    |    Using this feature it can be defined, that the lift shall wait at certain
|         |    |    floors for a security signal to peak up once. The signal in question is
|         |    |    'Special Function > Security Run'.
|         |    |
|         |    +- Wait for security signal door table [CO:41E9] - (Setup)
|         |         This table defines the floors and doors were the lift shall wait for the
|         |         security signal to peak up, in order to start driving.
|         |
|         +- Lift occupied signalization policy [CO:4197] - (Service)
|         |    This object defines if the 'Lift occupied' signal shall only be generated for
|         |    APB & PB operation or generally for any kind of call processing.
|         |
|         +- Afterrun time Occupied signal [CO:42E0] - (Service)
|         |    This object defines a short delay time to switch off the occupied signal again,
|         |    when the doors are closed, there are no car calls, optionally the load
|         |    measuring device indicates no-load and the lift is free again to accept landing
|         |    calls.
|         |
|         +- Even more…
|              |
|              +- Use alternative destination instead of creeping [CO:4081] - (Service)
|              |    This object defines that if the lift can't go to a designated destination,
|              |    because there is no discrete velocity to use and only creeping would be an
|              |    option, the lift will automatically determine an alternate destination as
|              |    a stopover to start from there. This is a feature, that is turned on by
|              |    default but maybe turned off, if the lift is used in a bank building or a
|              |    prison building or another environment, were this would be not accepted.
|              |
|              +- Key Switch 1 bistable mode [CO:4221-1] - (Setup)
|              |
|              +- Key Switch 2 bistable mode [CO:4221-2] - (Setup)
|              |
|              +- Key Switch 3 bistable mode [CO:4221-3] - (Setup)
|              |
|              +- Key Switch 4 bistable mode [CO:4221-4] - (Setup)
|                   This object defines if the CANopen function for the given key switch,
|                   shall be bistable or direct.
|
+- Remote-Off/Standby
|    |
|    +- Final/destination floor [CO:4107-4] - (Service)
|    |    This object defines the floor to which the car/cabin is moved, if the lift is
|    |    switched to remote-off/standby mode.
|    |
|    +- Check/stop-over floor [CO:4107-5] - (Service)
|    |    This object defines the floor to which the car/cabin is moved for a stop-over,
|    |    before finally being driven to the destination floor. Useful for hotel/lobby
|    |    operation to have a look in the car, before the lift goes to standby.
|    |
```

```
|    +- Doors at check/stop-over floor [CO:4145] - (Service)
|    |    Use this object to define the doors that shall open when doing a stop-over,
|    |    typically in the lobby floor, for checking that the car/cabin is empty, before
|    |    leaving to the destination floor and turning the lift to remote-off/standby.
|    |
|    +- Doors at standby/remote-off floor [CO:41EA] - (Service)
|    |    This object defines if the doors shall close or be kept open, when having reached
|    |    the standby/remote-off floor.
|    |
|    +- More…
|         |
|         +- Landing call at standby floor [CO:4144] - (Service)
|         |    Use this object to define if the landing call button shall open the door at the
|         |    remote-off/standby floor, if being in standby operation.
|         |
|         +- Floor displays if being standby [CO:4146] - (Service)
|         |    Use this object to define if the displays, normally used to show the lift floor
|         |    and direction, shall be turned off. This might not work if the display show
|         |    some kind of 'Out of Order' indication, if a zero floor value is transmitted to
|         |    them.
|         |
|         +- Car Light in remote-off/standby operation [CO:41F7] - (Service)
|         |    Use this object to define if the car light shall be turned off, when the lift
|         |    enters standby operation mode.
|         |
|         +- Energy Saving Indication on Remote-off/Standby operation [CO:4426] - (Service)
|              Use this object to define if Energy Saving shall be signaled via the bus
|              system, if the lift has been turned to Remote-Off/Standby.
|
+- Fire alarm
|    |
|    +- Fire Alarm Strategy [CO:4151] - (Setup)
|    |    This object holds the fire alarm strategy. This parameter defines how the lift
|    |    targets the fire alarm floor. In simple mode, it just drives to one defined floor.
|    |    Using the 'Fire Alarm Center' strategy, the lift is informed via inputs to which
|    |    floor it shall drive. In 'Dynamic' mode the lift has fire/smoke detectors on the
|    |    relevant floors used to decide which floor shall be targeted.
|    |
|    +- Fire Alarm Levels
|    |    |
|    |    +- Fire Alarm Levels [CO:4153] - (Setup)
|    |    |    This object holds the fire alarm levels supported. Depending on the fire alarm
|    |    |    strategy, the lift will decide which fire alarm level will be targeted. For
|    |    |    details see the parameter 'Fire Alarm Strategy'.
|    |    |
|    |    +- Building Zones Fire Alarm Policy [CO:41CB-2] - (Service)
|    |    |    This object defines if the index of the current building zone (1…n) shall be
|    |    |    used to pick the fire alarm floor from the fire alarm level table. To use that
|    |    |    feature you have to set the fire alarm strategy to 'simple' in the first place.
|    |    |
|    |    +- Building Zones
|    |         |
|    |         +- Building Zones Usage [CO:41CB-1] - (Service)
|    |         |    This object defines if the lift shall interpret the different zone tables
|    |         |    as zones or floor ranges in a building. Other functions, like fire alarm,
|    |         |    can feature that information, in order to apply rules and policies,
|    |         |    depending in which zone the car currently is or is driving to.
|    |         |
|    |         +- Building Zone Tables
|    |         |    |
|    |         |    +- Building Zone Table 1 [CO:41CC] - (Service)
|    |         |    |
|    |         |    +- Building Zone Table 2 [CO:41CD] - (Service)
|    |         |    |
|    |         |    +- Building Zone Table 3 [CO:41CE] - (Service)
|    |         |    |
|    |         |    +- Building Zone Table 4 [CO:41CF] - (Service)
|    |         |         This object defines a zone or range of floors in a building. The
|    |         |         table works basically like a floor table, having set a bit (dot) for
|    |         |         every floor, that belongs to the given zone.
|    |         |
|    |         +- Building Zones Car Calls Policy [CO:41CB-3] - (Service)
```

```
|    |         |    This object defines how car calls shall be handled within a building zone.
|    |         |    Typically only car calls within the very same zone are allowed, preventing
|    |         |    passengers from cross a zone by entering a car call. This rule excludes
|    |         |    high priority car calls, that are usually key locked anyway.
|    |         |
|    |         +- Building Zones Fire Alarm Policy [CO:41CB-2] - (Service)
|    |              This object defines if the index of the current building zone (1…n) shall
|    |              be used to pick the fire alarm floor from the fire alarm level table. To
|    |              use that  feature you have to set the fire alarm strategy to 'simple' in
|    |              the first place.
|    |
|    +- Policy for passing smoked/burning floors [CO:4152] - (Setup)
|    |    This object holds the policy for passing smoked/burning floors, when evacuating the
|    |    lift and its passengers to the fire alarm (evacuation) floor. If passing
|    |    smoked/burning floors is allowed or not, depends heavily on the used doors in the
|    |    lift installation.
|    |
|    +- More…
|         |
|         +- Door options at fire alarm floor
|         |    |
|         |    +- Doors in fire alarm floor [CO:4150] - (Setup)
|         |    |    This object defines if the doors shall close after a while after having
|         |    |    reached the fire alarm floor.
|         |    |
|         |    +- Doors at fire alarm floor closing time [CO:41C2] - (Service)
|         |         This object defines an optional time span, if the doors shall close after
|         |         a while, having reached the fire alarm floor.
|         |
|         +- Policy for driving to the fire alarm floor [CO:417F] - (Setup)
|         |    This object holds the policy for driving to the fire alarm floor. Depending on
|         |    the rules of the local fire department, the lift shall always drive to the fire
|         |    alarm floor or only, if the fire alarm was activated while the lift was driving
|         |    but not if it was standstill.
|         |
|         +- Fire Alarm & Fire Alarm Cancel [CO:4154] - (Setup)
|         |    This object defines if a single static signal shall be used for fire alarm
|         |    handling or if activation and deactivation shall feature two separate signals
|         |    edge controlled. If featuring two signals (fire alarm & fire alarm cancel) the
|         |    'inverted' property of the inputs define if a fallen or raising edge is used.
|         |
|         +- Door open button, driving to the fire alarm floor [CO:417E] - (Service)
|              This object defines if the door-open button shall be kept operational, when the
|              lift does a stop over at some floor, in order to change the direction, driving
|              towards the dedicated fire alarm floor.
|
+- Emergency Stop Handling
|    |
|    +- Emergency Stop Recovery [CO:4148] - (Setup)
|    |    This defines if the emergency stop state can be recovered by releasing the em.stop
|    |    signal or if a car call has to be entered or a landing door has to be opened,
|    |    additionally.
|    |
|    +- Emergency Stop Safety Light Curtain Recovery [CO:41C0] - (Setup)
|         This defines if the emergency stop state can be recovered simply by releasing the
|         safety light curtain or if a car call has to be entered or a landing door has to be
|         opened, as well.
|
+- More…
     |
     +- Safety Chain Options
     |    |
     |    +- Safety chain debounce time before start [CO:4070] - (Service)
     |    |    This object defines the time span that the safety chain has to be complete,
     |    |    before the lift starts driving, after having boarded the passengers.
     |    |
     |    +- Safety Chain Shorts/Bypass Supervision [CO:413D] - (Setup)
     |    |    This object defines if the status of the doors (unlocked, opening or opened)
     |    |    shall be checked against the status of the safety chain, in order to detect
     |    |    safety chain bridges or bypasses.
     |    |
     |    +- Door <-> Lock Crossover Short Supervision [CO:413E] - (Setup)
```

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|    |    This object defines if the SZ shall be used to activate shortly power to the
|    |    door lock in order to detect a crossover-short to the cabin door contacts, if
|    |    the cabin doors had been opened.
|    |
|    +- Door crossover test delay [CO:430B] - (Service)
|    |    This object defines the time span after the doors have been opened, befor the
|    |    cross-over test starts.
|    |
|    +- Safety Chain Debounce times
|         |
|         +- Passive safety chain debounce time [CO:4074] - (Service)
|         |    This object defines the time span, used to extra debounce the passive
|         |    safety chain. If using locking devices in the chain, this value might be
|         |    increased. If using safety gear that does not mechanically stay in a
|         |    locked position, if having tripped, this value might be decreased.
|         |
|         +- Emergency Stop safety chain debounce time [CO:4073] - (Service)
|         |    This object defines the time span, used to extra debounce the emergency
|         |    stop safety chain. If using locking devices in the chain, this value might
|         |    be increased. If using safety gear that does not mechanically stay in a
|         |    locked position, if having tripped, this value might be decreased.
|         |
|         +- Swing door safety chain debounce time [CO:407C] - (Service)
|              This object defines the time span used to extra debounce the swing door
|              safety chain. If using old swing doors, that are worned out, this value
|              might be increased.
|
+- Phase Failure Supervision [CO:4156] - (Setup)
|    This object defines if an external unit is used to implement the phase failure
|    detection, featuring the corresponding lift controller input 'Phase Failure
|    Supervision'. Generally spoken the supervision function will detect a 'fallen peak'
|    and then set the lift 'Out Of Order'.
|
+- Fire brigade/service
|    |
|    +- Fire brigade/service on/off [CO:4190] - (Setup)
|    |    This object defines if the lift features fire brigade/service (fire fighter)
|    |    operation. This parameter also defines the actual variant of the fire service
|    |    operation, as there are some local/national differences. So please refer to
|    |    your local regulations.
|    |
|    +- Fire brigade recall floor [CO:4191] - (Setup)
|    |    This object defines the floor to which the lift drives, if the fire brigade
|    |    (fighter) operation has been activated, using the key switch at one of the
|    |    landings.
|    |
|    +- Fire brigade recall floor doors [CO:4192] - (Setup)
|    |    Use this object to define the doors to operate when the lift has arrived at the
|    |    fire recall (brigade) floor.
|    |
|    +- Fire service door cross-out table [CO:4193] - (Setup)
|    |    This object holds the cross-out table of all landing doors that can not be
|    |    operated in fire service operation, as requested by the EN81-72 regulations.
|    |    After arrival of the lift, the output signal 'Special Indication > Door open
|    |    request acknowledge, lift 1, car/cabin, door X' can be used to lit up the 'Door
|    |    open button' on that floor and door side, that actually can be opened by the
|    |    fire fighter.
|    |
|    +- More…
|         |
|         +- Fire service door operation mode [CO:4194] - (Setup)
|         |    Use this object to define how the doors shall behave in fire service
|         |    operation mode. Typically the doors are opened manually via the door open
|         |    button and shall automatically close, if the door has not been moved into
|         |    the 'opened' position. Anyhow, depending on local regulations, the doors
|         |    might have just to stop in the position they are, instead of automatic
|         |    closing.
|         |
|         +- Fire service door open/close buttons [CO:4195] - (Setup)
|         |    Use this object to define if the regular door open/close buttons shall be
|         |    featured for fire service phase 2 or if only the specific 'Fire service
|         |    door open/close' buttons shall be featured for this operation mode.
```

```
|         |
|         +- Fire service car call panel A/B/C/D usage [CO:4196] - (Setup)
|         |    Use this object to define which car call panel (door A/B/C/D) shall be
|         |    featured for the fire service operation. This panel might include calls
|         |    for a door X even if there is no door X at a specific floor. In fire
|         |    service operation, the lift will just check the floor indicated by the
|         |    call buttons of that panel and will drive there.
|         |
|         +- More…
|              |
|              +- Door open button, driving to the fire recall floor [CO:41BF] -
|              |  (Service)
|              |    This object defines if the door-open button shall be kept
|              |    operational, when the lift does a stop over at some floor, in order
|              |    to change the direction, driving towards the dedicated fire recall
|              |    floor.
|              |
|              +- Fire Service Car call policy [CO:4209] - (Service)
|                   This object defines if in fire service phase 2 an alterable car call
|                   or a single car call can be entered.
|
+- Emergency power
|    |
|    +- Emergency Power usage [CO:4180] - (Setup)
|    |    This object defines if the lift installation features the Emergency Power
|    |    operation mode.
|    |
|    +- Emergency Power floor [CO:4107-6] - (Setup)
|    |    This object defines the floor to which the lift drives, in a case of an
|    |    emergency power operation.
|    |
|    +- Emergency Power floor doors [CO:4181] - (Setup)
|    |    Use this object to define the doors to operate when the lift has arrived at the
|    |    emergency power floor.
|    |
|    +- Doors at Emergency Power floor
|    |    |
|    |    +- Doors at Emergency Power floor [CO:4187] - (Setup)
|    |    |    This object defines if the doors shall close after a while after having
|    |    |    reached the emergency power floor.
|    |    |
|    |    +- Doors at emergency power floor closing time [CO:42B4] - (Service)
|    |         This object defines an optional time span, if the doors shall close after
|    |         a while, having reached the emergency power floor.
|    |
|    +- More…
|         |
|         +- Emergency Power evacuation delay [CO:4185] - (Setup)
|         |    Use this object to define a time span that has to expire, before the lift
|         |    drives to the emergency power floor.
|         |
|         +- Emerg.Power evacuation sequence timeout [CO:4182] - (Setup)
|         |    Use this object to define the timeout, used when evacuating the lifts in a
|         |    sequence, to ensure that the next lift can evacuate, even if the
|         |    predecessor lift does not react as intended or simply does not reach the
|         |    'Emergency Power Floor'. You can create a sequence by connecting the
|         |    output 'Lift arrived at Emergency Power floor' to the input 'Emergency
|         |    Power enable evacuation' of the very next lift.
|         |
|         +- Emergency Power, travelling to floor timeout [CO:418B] - (Setup)
|         |    Use this object to define the timeout used when travelling to the
|         |    emergency power floor. If the lift does not start within the given
|         |    supervision time, the operation will be cancelled.
|         |
|         +- Em.Power, lift stays operational timeout [CO:418C] - (Setup)
|         |    Use this object to define the timeout, used when waiting for one of the
|         |    other lifts, in the lift team, to enter the 'Emergency Power, lift stays
|         |    operational' state. If this timeout expires, without any other lift having
|         |    reached that state, this lift will stay operational instead, under the
|         |    conditions of emergency power.
|         |
|         +- Even more…
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|              |
|              +- Emergency Power sequence via CANbus [CO:4184] - (Setup)
|              |    Use this object to define that the output signal 'Lift arrived at
|              |    Emergency Power floor' from the predecessor lift is monitored
|              |    directly on the CANbus, in order to start the 'Emergency Power'
|              |    evacuation trip for the very next lift in the sequence.
|              |
|              +- Emergency Power nominal velocity [CO:4183] - (Setup)
|              |    Use this object to define the velocity (V1..V9) that the drive shall
|              |    feature if running on 'Emergency Power', regarding to limitations of
|              |    the emergency power supply.
|              |
|              +- Emergency Stop on Emergency Power activation [CO:4186] - (Setup)
|              |    This object defines if the lift shall do a quick stop (Emergency
|              |    Stop), if the Emergency Power function has been activated. Otherwise
|              |    the lift will try to finish the current driving operation to reach
|              |    the next floor in the current direction.
|              |
|              +- Emergency Power has precedence over Fire Alarm [CO:42B0] - (Setup)
|              |    Use this object to define that the Emergency Power Operation takes
|              |    precedence (priority) over Fire Alarm Operation. If this option has
|              |    been activated and both operating modes are requested, the lift is
|              |    doing Emergency Power Operation but will use door nudging operation
|              |    when closing the doors, in order to ensure that they can't be blocked
|              |    by smoke.
|              |
|              +- Much more…
|                   |
|                   +- Emergency Power, Drive Second Parameter Set [CO:42B3] - (Setup)
|                   |    Use this object to define, if for driving with the Emergency
|                   |    Power Source, the CANopen drive unit shall be told to use a
|                   |    second, alternative parameter set. Not all drive unit support
|                   |    this feature. Consult the manual of your actual drive to find
|                   |    out, if this feature is possible.
|                   |
|                   +- Emergency Power Maximum Travels
|                   |    |
|                   |    +- Emergency Power Maximum Travels [CO:42B1] - (Service)
|                   |    |    Use this object to define a maximum count of travels, that
|                   |    |    can be done under Emergency Power Mode. This can be
|                   |    |    interesting when executing Fire Alarm, Fire Service or
|                   |    |    Rescue/Salvage operation mode, being powered with an
|                   |    |    emergency or auxiliary power source.
|                   |    |
|                   |    +- Out of Order - Emergency Power Maximum Travels [CO:42B2] -
|                   |       (Setup)
|                   |         Use this object to define, that the lift should be taken
|                   |         out of order, if the maximum count of travels, that can be
|                   |         done under Emergency Power Mode have been reached.
|                   |
|                   +- Emergency Battery Power Travel needs Car Call [CO:4206] -
|                   |  (Service)
|                   |    This object defines, if the emergency battery power travel, that
|                   |    moves the lift to the very next floor, usually via a single
|                   |    phase battery pack, shall not start before the passenger has
|                   |    pressed any car call button. The car call might has been
|                   |    registered before, while driving normally or pressed later on
|                   |    when the lift got stuck.
|                   |
|                   +- Cabin light voltage monitoring on Emergency Power [CO:4208] -
|                      (Service)
|                        This object defines, if the the lift controller shall continue
|                        monitoring the car light voltage, when being on emergency power
|                        operation.
|
+- Even more…
     |
     +- Temperature thresholds
     |    |
     |    +- Temperature threshold 1 [CO:4167-1] - (Setup)
     |    |    This object defines ambient temperature thresholds used to control output
     |    |    signals, that can be used to operate a fan or simply signal that a
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|    |    temperature values has been exceeded.
|    |
|    +- Temperature threshold 2 [CO:4167-2] - (Setup)
|    |
|    +- Temperature threshold 3 [CO:4167-3] - (Setup)
|    |
|    +- Temperature threshold 4 [CO:4167-4] - (Setup)
|
+- Generic supervision inputs
|    |
|    +- Generic supervision input #1
|    |    |
|    |    +- Usage [CO:4168-1] - (Setup)
|    |    |    This object defines if the given generic supervision input shall be
|    |    |    used by the system or not.
|    |    |
|    |    +- Input delay [CO:4168-2] - (Service)
|    |    |    This object defines the input delay of the generic supervision input.
|    |    |    This is used to delay the activation, if the signal changes its
|    |    |    state.
|    |    |
|    |    +- Fault signalization [CO:4168-3] - (Setup)
|    |    |    This object defines the fault signalization of the generic
|    |    |    supervision input. This parameter defines, if the signal shall cause
|    |    |    a 'fault', 'out of order' or 'blocking' event.
|    |    |
|    |    +- Inspection handling [CO:4168-4] - (Setup)
|    |    |    This object defines if the generic supervision input shall be
|    |    |    excluded being on inspection or emergency electrical operation.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Disable relevelling [CO:4168-5] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    disable the relevelling operation, if being indicated.
|    |         |
|    |         +- Energy saving policy [CO:4168-7] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on energy saving or standby operation.
|    |         |
|    |         +- Fire Alarm/Service policy [CO:4168-8] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on Fire alarm or fire recall/service operation.
|    |         |
|    |         +- Name/Label [CO:4168-6] - (Service)
|    |         |    This object defines an additional text or label, given for the
|    |         |    generic supervision input, to make it less 'generic' for the
|    |         |    technician or user.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Destination Floor [CO:4168-9] - (Service)
|    |              |    This object defines if the generic supervision input shall
|    |              |    be used to drive the lift to a dedicated destination floor.
|    |              |
|    |              +- Door to open at recall floor [CO:4168-11] - (Service)
|    |              |    This object is used to define the doors that shall open,
|    |              |    when the lift has arrived at the given recall floor, if any
|    |              |    floor had been defined.
|    |              |
|    |              +- Doors at floor [CO:4168] - (Service)
|    |              |    This object defines if the doors shall close after a while,
|    |              |    when having reached floor level.
|    |              |
|    |              +- Duration of the sirens/indication signal [CO:4168-10] -
|    |              |  (Service)
|    |              |    This object defines how long the siren/display output
|    |              |    signal should remain switched on when the supervision
|    |              |    functions has been triggered. By default, the signal will
|    |              |    remain on as long as the supervision has been triggered.
|    |              |    However, if you drive a siren or a buzzer, it may make
|    |              |    sense to limit the duration.
```

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|    |              |
|    |              +- Reopen doors via landing call [CO:4168-13] - (Service)
|    |                   This object defines, if the lift door can be re-opened by
|    |                   means of pressing the landing call. The door can always be
|    |                   re-opened by a car call or the door open button. But if it
|    |                   shall be possible to re-open the door via a landing call
|    |                   might depend on what the function is actually used for.
|    |
|    +- Generic supervision input #2
|    |    |
|    |    +- Usage [CO:4169-1] - (Setup)
|    |    |    This object defines if the given generic supervision input shall be
|    |    |    used by the system or not.
|    |    |
|    |    +- Input delay [CO:4169-2] - (Service)
|    |    |    This object defines the input delay of the generic supervision input.
|    |    |    This is used to delay the activation, if the signal changes its
|    |    |    state.
|    |    |
|    |    +- Fault signalization [CO:4169-3] - (Setup)
|    |    |    This object defines the fault signalization of the generic
|    |    |    supervision input. This parameter defines, if the signal shall cause
|    |    |    a 'fault', 'out of order' or 'blocking' event.
|    |    |
|    |    +- Inspection handling [CO:4169-4] - (Setup)
|    |    |    This object defines if the generic supervision input shall be
|    |    |    excluded being on inspection or emergency electrical operation.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Disable relevelling [CO:4169-5] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    disable the relevelling operation, if being indicated.
|    |         |
|    |         +- Energy saving policy [CO:4169-7] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on energy saving or standby operation.
|    |         |
|    |         +- Fire Alarm/Service policy [CO:4169-8] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on Fire alarm or fire recall/service operation.
|    |         |
|    |         +- Name/Label [CO:4169-6] - (Service)
|    |         |    This object defines an additional text or label, given for the
|    |         |    generic supervision input, to make it less 'generic' for the
|    |         |    technician or user.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Destination Floor [CO:4169-9] - (Service)
|    |              |    This object defines if the generic supervision input shall
|    |              |    be used to drive the lift to a dedicated destination floor.
|    |              |
|    |              +- Door to open at recall floor [CO:4169-11] - (Service)
|    |              |    This object is used to define the doors that shall open,
|    |              |    when the lift has arrived at the given recall floor, if any
|    |              |    floor had been defined.
|    |              |
|    |              +- Doors at floor [CO:4169] - (Service)
|    |              |    This object defines if the doors shall close after a while,
|    |              |    when having reached floor level.
|    |              |
|    |              +- Duration of the sirens/indication signal [CO:4169-10] -
|    |              |  (Service)
|    |              |    This object defines how long the siren/display output
|    |              |    signal should remain switched on when the supervision
|    |              |    functions has been triggered. By default, the signal will
|    |              |    remain on as long as the supervision has been triggered.
|    |              |    However, if you drive a siren or a buzzer, it may make
|    |              |    sense to limit the duration.
|    |              |
|    |              +- Reopen doors via landing call [CO:4169-13] - (Service)
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|    |                  This object defines, if the lift door can be re-opened by
|    |                  means of pressing the landing call. The door can always be
|    |                  re-opened by a car call or the door open button. But if it
|    |                  shall be possible to re-open the door via a landing call
|    |                  might depend on what the function is actually used for.
|    |
|    +- Generic supervision input #3
|    |    |
|    |    +- Usage [CO:416A-1] - (Setup)
|    |    |    This object defines if the given generic supervision input shall be
|    |    |    used by the system or not.
|    |    |
|    |    +- Input delay [CO:416A-2] - (Service)
|    |    |    This object defines the input delay of the generic supervision input.
|    |    |    This is used to delay the activation, if the signal changes its
|    |    |    state.
|    |    |
|    |    +- Fault signalization [CO:416A-3] - (Setup)
|    |    |    This object defines the fault signalization of the generic
|    |    |    supervision input. This parameter defines, if the signal shall cause
|    |    |    a 'fault', 'out of order' or 'blocking' event.
|    |    |
|    |    +- Inspection handling [CO:416A-4] - (Setup)
|    |    |    This object defines if the generic supervision input shall be
|    |    |    excluded being on inspection or emergency electrical operation.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Disable relevelling [CO:416A-5] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    disable the relevelling operation, if being indicated.
|    |         |
|    |         +- Energy saving policy [CO:416A-7] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on energy saving or standby operation.
|    |         |
|    |         +- Fire Alarm/Service policy [CO:416A-8] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on Fire alarm or fire recall/service operation.
|    |         |
|    |         +- Name/Label [CO:416A-6] - (Service)
|    |         |    This object defines an additional text or label, given for the
|    |         |    generic supervision input, to make it less 'generic' for the
|    |         |    technician or user.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Destination Floor [CO:416A-9] - (Service)
|    |              |    This object defines if the generic supervision input shall
|    |              |    be used to drive the lift to a dedicated destination floor.
|    |              |
|    |              +- Door to open at recall floor [CO:416A-11] - (Service)
|    |              |    This object is used to define the doors that shall open,
|    |              |    when the lift has arrived at the given recall floor, if any
|    |              |    floor had been defined.
|    |              |
|    |              +- Doors at floor [CO:416A] - (Service)
|    |              |    This object defines if the doors shall close after a while,
|    |              |    when having reached floor level.
|    |              |
|    |              +- Duration of the sirens/indication signal [CO:416A-10] -
|    |              |  (Service)
|    |              |    This object defines how long the siren/display output
|    |              |    signal should remain switched on when the supervision
|    |              |    functions has been triggered. By default, the signal will
|    |              |    remain on as long as the supervision has been triggered.
|    |              |    However, if you drive a siren or a buzzer, it may make
|    |              |    sense to limit the duration.
|    |              |
|    |              +- Reopen doors via landing call [CO:416A-13] - (Service)
|    |                   This object defines, if the lift door can be re-opened by
|    |                   means of pressing the landing call. The door can always be
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|    |                  re-opened by a car call or the door open button. But if it
|    |                  shall be possible to re-open the door via a landing call
|    |                  might depend on what the function is actually used for.
|    |
|    +- Generic supervision input #4
|    |    |
|    |    +- Usage [CO:416B-1] - (Setup)
|    |    |    This object defines if the given generic supervision input shall be
|    |    |    used by the system or not.
|    |    |
|    |    +- Input delay [CO:416B-2] - (Service)
|    |    |    This object defines the input delay of the generic supervision input.
|    |    |    This is used to delay the activation, if the signal changes its
|    |    |    state.
|    |    |
|    |    +- Fault signalization [CO:416B-3] - (Setup)
|    |    |    This object defines the fault signalization of the generic
|    |    |    supervision input. This parameter defines, if the signal shall cause
|    |    |    a 'fault', 'out of order' or 'blocking' event.
|    |    |
|    |    +- Inspection handling [CO:416B-4] - (Setup)
|    |    |    This object defines if the generic supervision input shall be
|    |    |    excluded being on inspection or emergency electrical operation.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Disable relevelling [CO:416B-5] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    disable the relevelling operation, if being indicated.
|    |         |
|    |         +- Energy saving policy [CO:416B-7] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on energy saving or standby operation.
|    |         |
|    |         +- Fire Alarm/Service policy [CO:416B-8] - (Setup)
|    |         |    This object defines if the generic supervision input shall be
|    |         |    excluded being on Fire alarm or fire recall/service operation.
|    |         |
|    |         +- Name/Label [CO:416B-6] - (Service)
|    |         |    This object defines an additional text or label, given for the
|    |         |    generic supervision input, to make it less 'generic' for the
|    |         |    technician or user.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Destination Floor [CO:416B-9] - (Service)
|    |              |    This object defines if the generic supervision input shall
|    |              |    be used to drive the lift to a dedicated destination floor.
|    |              |
|    |              +- Door to open at recall floor [CO:416B-11] - (Service)
|    |              |    This object is used to define the doors that shall open,
|    |              |    when the lift has arrived at the given recall floor, if any
|    |              |    floor had been defined.
|    |              |
|    |              +- Doors at floor [CO:416B] - (Service)
|    |              |    This object defines if the doors shall close after a while,
|    |              |    when having reached floor level.
|    |              |
|    |              +- Duration of the sirens/indication signal [CO:416B-10] -
|    |              |  (Service)
|    |              |    This object defines how long the siren/display output
|    |              |    signal should remain switched on when the supervision
|    |              |    functions has been triggered. By default, the signal will
|    |              |    remain on as long as the supervision has been triggered.
|    |              |    However, if you drive a siren or a buzzer, it may make
|    |              |    sense to limit the duration.
|    |              |
|    |              +- Reopen doors via landing call [CO:416B-13] - (Service)
|    |                   This object defines, if the lift door can be re-opened by
|    |                   means of pressing the landing call. The door can always be
|    |                   re-opened by a car call or the door open button. But if it
|    |                   shall be possible to re-open the door via a landing call
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|    |                  might depend on what the function is actually used for.
|    |
|    +- More…
|         |
|         +- Generic supervision input #5
|         |    |
|         |    +- Usage [CO:41D4-1] - (Setup)
|         |    |    This object defines if the given generic supervision input shall
|         |    |    be used by the system or not.
|         |    |
|         |    +- Input delay [CO:41D4-2] - (Service)
|         |    |    This object defines the input delay of the generic supervision
|         |    |    input. This is used to delay the activation, if the signal
|         |    |    changes its state.
|         |    |
|         |    +- Fault signalization [CO:41D4-3] - (Setup)
|         |    |    This object defines the fault signalization of the generic
|         |    |    supervision input. This parameter defines, if the signal shall
|         |    |    cause a 'fault', 'out of order' or 'blocking' event.
|         |    |
|         |    +- Inspection handling [CO:41D4-4] - (Setup)
|         |    |    This object defines if the generic supervision input shall be
|         |    |    excluded being on inspection or emergency electrical operation.
|         |    |
|         |    +- More…
|         |         |
|         |         +- Disable relevelling [CO:41D4-5] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be disable the relevelling operation, if being indicated.
|         |         |
|         |         +- Energy saving policy [CO:41D4-7] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on energy saving or standby operation.
|         |         |
|         |         +- Fire Alarm/Service policy [CO:41D4-8] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on Fire alarm or fire recall/service
|         |         |    operation.
|         |         |
|         |         +- Name/Label [CO:41D4-6] - (Service)
|         |         |    This object defines an additional text or label, given for
|         |         |    the generic supervision input, to make it less 'generic'
|         |         |    for the technician or user.
|         |         |
|         |         +- Even more…
|         |              |
|         |              +- Destination Floor [CO:41D4-9] - (Service)
|         |              |    This object defines if the generic supervision input
|         |              |    shall be used to drive the lift to a dedicated
|         |              |    destination floor.
|         |              |
|         |              +- Door to open at recall floor [CO:41D4-11] - (Service)
|         |              |    This object is used to define the doors that shall
|         |              |    open, when the lift has arrived at the given recall
|         |              |    floor, if any floor had been defined.
|         |              |
|         |              +- Doors at floor [CO:41D4] - (Service)
|         |              |    This object defines if the doors shall close after a
|         |              |    while, when having reached floor level.
|         |              |
|         |              +- Duration of the sirens/indication signal [CO:41D4-10]
|         |              |  - (Service)
|         |              |    This object defines how long the siren/display output
|         |              |    signal should remain switched on when the supervision
|         |              |    functions has been triggered. By default, the signal
|         |              |    will remain on as long as the supervision has been
|         |              |    triggered. However, if you drive a siren or a buzzer,
|         |              |    it may make sense to limit the duration.
|         |              |
|         |              +- Reopen doors via landing call [CO:41D4-13] - (Service)
|         |                   This object defines, if the lift door can be re-opened
|         |                   by means of pressing the landing call. The door can
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|         |                   always be re-opened by a car call or the door open
|         |                   button. But if it shall be possible to re-open the
|         |                   door via a landing call might depend on what the
|         |                   function is actually used for.
|         |
|         +- Generic supervision input #6
|         |    |
|         |    +- Usage [CO:41D5-1] - (Setup)
|         |    |    This object defines if the given generic supervision input shall
|         |    |    be used by the system or not.
|         |    |
|         |    +- Input delay [CO:41D5-2] - (Service)
|         |    |    This object defines the input delay of the generic supervision
|         |    |    input. This is used to delay the activation, if the signal
|         |    |    changes its state.
|         |    |
|         |    +- Fault signalization [CO:41D5-3] - (Setup)
|         |    |    This object defines the fault signalization of the generic
|         |    |    supervision input. This parameter defines, if the signal shall
|         |    |    cause a 'fault', 'out of order' or 'blocking' event.
|         |    |
|         |    +- Inspection handling [CO:41D5-4] - (Setup)
|         |    |    This object defines if the generic supervision input shall be
|         |    |    excluded being on inspection or emergency electrical operation.
|         |    |
|         |    +- More…
|         |         |
|         |         +- Disable relevelling [CO:41D5-5] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be disable the relevelling operation, if being indicated.
|         |         |
|         |         +- Energy saving policy [CO:41D5-7] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on energy saving or standby operation.
|         |         |
|         |         +- Fire Alarm/Service policy [CO:41D5-8] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on Fire alarm or fire recall/service
|         |         |    operation.
|         |         |
|         |         +- Name/Label [CO:41D5-6] - (Service)
|         |         |    This object defines an additional text or label, given for
|         |         |    the generic supervision input, to make it less 'generic'
|         |         |    for the technician or user.
|         |         |
|         |         +- Even more…
|         |              |
|         |              +- Destination Floor [CO:41D5-9] - (Service)
|         |              |    This object defines if the generic supervision input
|         |              |    shall be used to drive the lift to a dedicated
|         |              |    destination floor.
|         |              |
|         |              +- Door to open at recall floor [CO:41D5-11] - (Service)
|         |              |    This object is used to define the doors that shall
|         |              |    open, when the lift has arrived at the given recall
|         |              |    floor, if any floor had been defined.
|         |              |
|         |              +- Doors at floor [CO:41D5] - (Service)
|         |              |    This object defines if the doors shall close after a
|         |              |    while, when having reached floor level.
|         |              |
|         |              +- Duration of the sirens/indication signal [CO:41D5-10]
|         |              |  - (Service)
|         |              |    This object defines how long the siren/display output
|         |              |    signal should remain switched on when the supervision
|         |              |    functions has been triggered. By default, the signal
|         |              |    will remain on as long as the supervision has been
|         |              |    triggered. However, if you drive a siren or a buzzer,
|         |              |    it may make sense to limit the duration.
|         |              |
|         |              +- Reopen doors via landing call [CO:41D5-13] - (Service)
|         |                   This object defines, if the lift door can be re-opened
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|         |                  by means of pressing the landing call. The door can
|         |                  always be re-opened by a car call or the door open
|         |                  button. But if it shall be possible to re-open the
|         |                  door via a landing call might depend on what the
|         |                  function is actually used for.
|         |
|         +- Generic supervision input #7
|         |    |
|         |    +- Usage [CO:41D6-1] - (Setup)
|         |    |    This object defines if the given generic supervision input shall
|         |    |    be used by the system or not.
|         |    |
|         |    +- Input delay [CO:41D6-2] - (Service)
|         |    |    This object defines the input delay of the generic supervision
|         |    |    input. This is used to delay the activation, if the signal
|         |    |    changes its state.
|         |    |
|         |    +- Fault signalization [CO:41D6-3] - (Setup)
|         |    |    This object defines the fault signalization of the generic
|         |    |    supervision input. This parameter defines, if the signal shall
|         |    |    cause a 'fault', 'out of order' or 'blocking' event.
|         |    |
|         |    +- Inspection handling [CO:41D6-4] - (Setup)
|         |    |    This object defines if the generic supervision input shall be
|         |    |    excluded being on inspection or emergency electrical operation.
|         |    |
|         |    +- More…
|         |         |
|         |         +- Disable relevelling [CO:41D6-5] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be disable the relevelling operation, if being indicated.
|         |         |
|         |         +- Energy saving policy [CO:41D6-7] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on energy saving or standby operation.
|         |         |
|         |         +- Fire Alarm/Service policy [CO:41D6-8] - (Setup)
|         |         |    This object defines if the generic supervision input shall
|         |         |    be excluded being on Fire alarm or fire recall/service
|         |         |    operation.
|         |         |
|         |         +- Name/Label [CO:41D6-6] - (Service)
|         |         |    This object defines an additional text or label, given for
|         |         |    the generic supervision input, to make it less 'generic'
|         |         |    for the technician or user.
|         |         |
|         |         +- Even more…
|         |              |
|         |              +- Destination Floor [CO:41D6-9] - (Service)
|         |              |    This object defines if the generic supervision input
|         |              |    shall be used to drive the lift to a dedicated
|         |              |    destination floor.
|         |              |
|         |              +- Door to open at recall floor [CO:41D6-11] - (Service)
|         |              |    This object is used to define the doors that shall
|         |              |    open, when the lift has arrived at the given recall
|         |              |    floor, if any floor had been defined.
|         |              |
|         |              +- Doors at floor [CO:41D6] - (Service)
|         |              |    This object defines if the doors shall close after a
|         |              |    while, when having reached floor level.
|         |              |
|         |              +- Duration of the sirens/indication signal [CO:41D6-10]
|         |              |  - (Service)
|         |              |    This object defines how long the siren/display output
|         |              |    signal should remain switched on when the supervision
|         |              |    functions has been triggered. By default, the signal
|         |              |    will remain on as long as the supervision has been
|         |              |    triggered. However, if you drive a siren or a buzzer,
|         |              |    it may make sense to limit the duration.
|         |              |
|         |              +- Reopen doors via landing call [CO:41D6-13] - (Service)
```

```
|          |                  This object defines, if the lift door can be re-opened
|          |                  by means of pressing the landing call. The door can
|          |                  always be re-opened by a car call or the door open
|          |                  button. But if it shall be possible to re-open the
|          |                  door via a landing call might depend on what the
|          |                  function is actually used for.
|          |
|          +- Generic supervision input #8
|          |    |
|          |    +- Usage [CO:41D7-1] - (Setup)
|          |    |    This object defines if the given generic supervision input shall
|          |    |    be used by the system or not.
|          |    |
|          |    +- Input delay [CO:41D7-2] - (Service)
|          |    |    This object defines the input delay of the generic supervision
|          |    |    input. This is used to delay the activation, if the signal
|          |    |    changes its state.
|          |    |
|          |    +- Fault signalization [CO:41D7-3] - (Setup)
|          |    |    This object defines the fault signalization of the generic
|          |    |    supervision input. This parameter defines, if the signal shall
|          |    |    cause a 'fault', 'out of order' or 'blocking' event.
|          |    |
|          |    +- Inspection handling [CO:41D7-4] - (Setup)
|          |    |    This object defines if the generic supervision input shall be
|          |    |    excluded being on inspection or emergency electrical operation.
|          |    |
|          |    +- More…
|          |         |
|          |         +- Disable relevelling [CO:41D7-5] - (Setup)
|          |         |    This object defines if the generic supervision input shall
|          |         |    be disable the relevelling operation, if being indicated.
|          |         |
|          |         +- Energy saving policy [CO:41D7-7] - (Setup)
|          |         |    This object defines if the generic supervision input shall
|          |         |    be excluded being on energy saving or standby operation.
|          |         |
|          |         +- Fire Alarm/Service policy [CO:41D7-8] - (Setup)
|          |         |    This object defines if the generic supervision input shall
|          |         |    be excluded being on Fire alarm or fire recall/service
|          |         |    operation.
|          |         |
|          |         +- Name/Label [CO:41D7-6] - (Service)
|          |         |    This object defines an additional text or label, given for
|          |         |    the generic supervision input, to make it less 'generic'
|          |         |    for the technician or user.
|          |         |
|          |         +- Even more…
|          |              |
|          |              +- Destination Floor [CO:41D7-9] - (Service)
|          |              |    This object defines if the generic supervision input
|          |              |    shall be used to drive the lift to a dedicated
|          |              |    destination floor.
|          |              |
|          |              +- Door to open at recall floor [CO:41D7-11] - (Service)
|          |              |    This object is used to define the doors that shall
|          |              |    open, when the lift has arrived at the given recall
|          |              |    floor, if any floor had been defined.
|          |              |
|          |              +- Doors at floor [CO:41D7] - (Service)
|          |              |    This object defines if the doors shall close after a
|          |              |    while, when having reached floor level.
|          |              |
|          |              +- Duration of the sirens/indication signal [CO:41D7-10]
|          |              |  - (Service)
|          |              |    This object defines how long the siren/display output
|          |              |    signal should remain switched on when the supervision
|          |              |    functions has been triggered. By default, the signal
|          |              |    will remain on as long as the supervision has been
|          |              |    triggered. However, if you drive a siren or a buzzer,
|          |              |    it may make sense to limit the duration.
|          |              |
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|         |              +- Reopen doors via landing call [CO:41D7-13] - (Service)
|         |                   This object defines, if the lift door can be re-opened
|         |                   by means of pressing the landing call. The door can
|         |                   always be re-opened by a car call or the door open
|         |                   button. But if it shall be possible to re-open the
|         |                   door via a landing call might depend on what the
|         |                   function is actually used for.
|         |
|         +- Even more…
|              |
|              +- Generic supervision input #9
|              |    |
|              |    +- Usage [CO:41D8-1] - (Setup)
|              |    |    This object defines if the given generic supervision input
|              |    |    shall be used by the system or not.
|              |    |
|              |    +- Input delay [CO:41D8-2] - (Service)
|              |    |    This object defines the input delay of the generic
|              |    |    supervision input. This is used to delay the activation, if
|              |    |    the signal changes its state.
|              |    |
|              |    +- Fault signalization [CO:41D8-3] - (Setup)
|              |    |    This object defines the fault signalization of the generic
|              |    |    supervision input. This parameter defines, if the signal
|              |    |    shall cause a 'fault', 'out of order' or 'blocking' event.
|              |    |
|              |    +- Inspection handling [CO:41D8-4] - (Setup)
|              |    |    This object defines if the generic supervision input shall
|              |    |    be excluded being on inspection or emergency electrical
|              |    |    operation.
|              |    |
|              |    +- More…
|              |         |
|              |         +- Disable relevelling [CO:41D8-5] - (Setup)
|              |         |    This object defines if the generic supervision input
|              |         |    shall be disable the relevelling operation, if being
|              |         |    indicated.
|              |         |
|              |         +- Energy saving policy [CO:41D8-7] - (Setup)
|              |         |    This object defines if the generic supervision input
|              |         |    shall be excluded being on energy saving or standby
|              |         |    operation.
|              |         |
|              |         +- Fire Alarm/Service policy [CO:41D8-8] - (Setup)
|              |         |    This object defines if the generic supervision input
|              |         |    shall be excluded being on Fire alarm or fire
|              |         |    recall/service operation.
|              |         |
|              |         +- Name/Label [CO:41D8-6] - (Service)
|              |         |    This object defines an additional text or label, given
|              |         |    for the generic supervision input, to make it less
|              |         |    'generic' for the technician or user.
|              |         |
|              |         +- Even more…
|              |              |
|              |              +- Destination Floor [CO:41D8-9] - (Service)
|              |              |    This object defines if the generic supervision
|              |              |    input shall be used to drive the lift to a
|              |              |    dedicated destination floor.
|              |              |
|              |              +- Door to open at recall floor [CO:41D8-11] -
|              |              |  (Service)
|              |              |    This object is used to define the doors that
|              |              |    shall open, when the lift has arrived at the
|              |              |    given recall floor, if any floor had been
|              |              |    defined.
|              |              |
|              |              +- Doors at floor [CO:41D8] - (Service)
|              |              |    This object defines if the doors shall close
|              |              |    after a while, when having reached floor level.
|              |              |
|              |              +- Duration of the sirens/indication signal
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|              |              |              |  [CO:41D8-10] - (Service)
|              |              |              |    This object defines how long the siren/display
|              |              |              |    output signal should remain switched on when the
|              |              |              |    supervision functions has been triggered. By
|              |              |              |    default, the signal will remain on as long as the
|              |              |              |    supervision has been triggered. However, if you
|              |              |              |    drive a siren or a buzzer, it may make sense to
|              |              |              |    limit the duration.
|              |              |              |
|              |              |              +- Reopen doors via landing call [CO:41D8-13] -
|              |              |                 (Service)
|              |              |                   This object defines, if the lift door can be
|              |              |                   re-opened by means of pressing the landing call.
|              |              |                   The door can always be re-opened by a car call or
|              |              |                   the door open button. But if it shall be possible
|              |              |                   to re-open the door via a landing call might
|              |              |                   depend on what the function is actually used for.
|              |              |
|              |              +- Generic supervision input #10
|              |              |    |
|              |              |    +- Usage [CO:41D9-1] - (Setup)
|              |              |    |    This object defines if the given generic supervision input
|              |              |    |    shall be used by the system or not.
|              |              |    |
|              |              |    +- Input delay [CO:41D9-2] - (Service)
|              |              |    |    This object defines the input delay of the generic
|              |              |    |    supervision input. This is used to delay the activation, if
|              |              |    |    the signal changes its state.
|              |              |    |
|              |              |    +- Fault signalization [CO:41D9-3] - (Setup)
|              |              |    |    This object defines the fault signalization of the generic
|              |              |    |    supervision input. This parameter defines, if the signal
|              |              |    |    shall cause a 'fault', 'out of order' or 'blocking' event.
|              |              |    |
|              |              |    +- Inspection handling [CO:41D9-4] - (Setup)
|              |              |    |    This object defines if the generic supervision input shall
|              |              |    |    be excluded being on inspection or emergency electrical
|              |              |    |    operation.
|              |              |    |
|              |              |    +- More…
|              |              |         |
|              |              |         +- Disable relevelling [CO:41D9-5] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be disable the relevelling operation, if being
|              |              |         |    indicated.
|              |              |         |
|              |              |         +- Energy saving policy [CO:41D9-7] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on energy saving or standby
|              |              |         |    operation.
|              |              |         |
|              |              |         +- Fire Alarm/Service policy [CO:41D9-8] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on Fire alarm or fire
|              |              |         |    recall/service operation.
|              |              |         |
|              |              |         +- Name/Label [CO:41D9-6] - (Service)
|              |              |         |    This object defines an additional text or label, given
|              |              |         |    for the generic supervision input, to make it less
|              |              |         |    'generic' for the technician or user.
|              |              |         |
|              |              |         +- Even more…
|              |              |              |
|              |              |              +- Destination Floor [CO:41D9-9] - (Service)
|              |              |              |    This object defines if the generic supervision
|              |              |              |    input shall be used to drive the lift to a
|              |              |              |    dedicated destination floor.
|              |              |              |
|              |              |              +- Door to open at recall floor [CO:41D9-11] -
|              |              |              |  (Service)
|              |              |              |    This object is used to define the doors that
|              |              |              |    shall open, when the lift has arrived at the
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|              |              |              |    given recall floor, if any floor had been
|              |              |              |    defined.
|              |              |              |
|              |              |              +- Doors at floor [CO:41D9] - (Service)
|              |              |              |    This object defines if the doors shall close
|              |              |              |    after a while, when having reached floor level.
|              |              |              |
|              |              |              +- Duration of the sirens/indication signal
|              |              |              |  [CO:41D9-10] - (Service)
|              |              |              |    This object defines how long the siren/display
|              |              |              |    output signal should remain switched on when the
|              |              |              |    supervision functions has been triggered. By
|              |              |              |    default, the signal will remain on as long as the
|              |              |              |    supervision has been triggered. However, if you
|              |              |              |    drive a siren or a buzzer, it may make sense to
|              |              |              |    limit the duration.
|              |              |              |
|              |              |              +- Reopen doors via landing call [CO:41D9-13] -
|              |              |                 (Service)
|              |              |                   This object defines, if the lift door can be
|              |              |                   re-opened by means of pressing the landing call.
|              |              |                   The door can always be re-opened by a car call or
|              |              |                   the door open button. But if it shall be possible
|              |              |                   to re-open the door via a landing call might
|              |              |                   depend on what the function is actually used for.
|              |              |
|              |              +- Generic supervision input #11
|              |              |    |
|              |              |    +- Usage [CO:41DA-1] - (Setup)
|              |              |    |    This object defines if the given generic supervision input
|              |              |    |    shall be used by the system or not.
|              |              |    |
|              |              |    +- Input delay [CO:41DA-2] - (Service)
|              |              |    |    This object defines the input delay of the generic
|              |              |    |    supervision input. This is used to delay the activation, if
|              |              |    |    the signal changes its state.
|              |              |    |
|              |              |    +- Fault signalization [CO:41DA-3] - (Setup)
|              |              |    |    This object defines the fault signalization of the generic
|              |              |    |    supervision input. This parameter defines, if the signal
|              |              |    |    shall cause a 'fault', 'out of order' or 'blocking' event.
|              |              |    |
|              |              |    +- Inspection handling [CO:41DA-4] - (Setup)
|              |              |    |    This object defines if the generic supervision input shall
|              |              |    |    be excluded being on inspection or emergency electrical
|              |              |    |    operation.
|              |              |    |
|              |              |    +- More…
|              |              |         |
|              |              |         +- Disable relevelling [CO:41DA-5] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be disable the relevelling operation, if being
|              |              |         |    indicated.
|              |              |         |
|              |              |         +- Energy saving policy [CO:41DA-7] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on energy saving or standby
|              |              |         |    operation.
|              |              |         |
|              |              |         +- Fire Alarm/Service policy [CO:41DA-8] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on Fire alarm or fire
|              |              |         |    recall/service operation.
|              |              |         |
|              |              |         +- Name/Label [CO:41DA-6] - (Service)
|              |              |         |    This object defines an additional text or label, given
|              |              |         |    for the generic supervision input, to make it less
|              |              |         |    'generic' for the technician or user.
|              |              |         |
|              |              |         +- Even more…
|              |              |              |
|              |              |              +- Destination Floor [CO:41DA-9] - (Service)
```

```
|              |              |              |    This object defines if the generic supervision
|              |              |              |    input shall be used to drive the lift to a
|              |              |              |    dedicated destination floor.
|              |              |              |
|              |              |              +- Door to open at recall floor [CO:41DA-11] -
|              |              |              |  (Service)
|              |              |              |    This object is used to define the doors that
|              |              |              |    shall open, when the lift has arrived at the
|              |              |              |    given recall floor, if any floor had been
|              |              |              |    defined.
|              |              |              |
|              |              |              +- Doors at floor [CO:41DA] - (Service)
|              |              |              |    This object defines if the doors shall close
|              |              |              |    after a while, when having reached floor level.
|              |              |              |
|              |              |              +- Duration of the sirens/indication signal
|              |              |              |  [CO:41DA-10] - (Service)
|              |              |              |    This object defines how long the siren/display
|              |              |              |    output signal should remain switched on when the
|              |              |              |    supervision functions has been triggered. By
|              |              |              |    default, the signal will remain on as long as the
|              |              |              |    supervision has been triggered. However, if you
|              |              |              |    drive a siren or a buzzer, it may make sense to
|              |              |              |    limit the duration.
|              |              |              |
|              |              |              +- Reopen doors via landing call [CO:41DA-13] -
|              |              |                 (Service)
|              |              |                   This object defines, if the lift door can be
|              |              |                   re-opened by means of pressing the landing call.
|              |              |                   The door can always be re-opened by a car call or
|              |              |                   the door open button. But if it shall be possible
|              |              |                   to re-open the door via a landing call might
|              |              |                   depend on what the function is actually used for.
|              |              |
|              |              +- Generic supervision input #12
|              |              |    |
|              |              |    +- Usage [CO:41DB-1] - (Setup)
|              |              |    |    This object defines if the given generic supervision input
|              |              |    |    shall be used by the system or not.
|              |              |    |
|              |              |    +- Input delay [CO:41DB-2] - (Service)
|              |              |    |    This object defines the input delay of the generic
|              |              |    |    supervision input. This is used to delay the activation, if
|              |              |    |    the signal changes its state.
|              |              |    |
|              |              |    +- Fault signalization [CO:41DB-3] - (Setup)
|              |              |    |    This object defines the fault signalization of the generic
|              |              |    |    supervision input. This parameter defines, if the signal
|              |              |    |    shall cause a 'fault', 'out of order' or 'blocking' event.
|              |              |    |
|              |              |    +- Inspection handling [CO:41DB-4] - (Setup)
|              |              |    |    This object defines if the generic supervision input shall
|              |              |    |    be excluded being on inspection or emergency electrical
|              |              |    |    operation.
|              |              |    |
|              |              |    +- More…
|              |              |         |
|              |              |         +- Disable relevelling [CO:41DB-5] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be disable the relevelling operation, if being
|              |              |         |    indicated.
|              |              |         |
|              |              |         +- Energy saving policy [CO:41DB-7] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on energy saving or standby
|              |              |         |    operation.
|              |              |         |
|              |              |         +- Fire Alarm/Service policy [CO:41DB-8] - (Setup)
|              |              |         |    This object defines if the generic supervision input
|              |              |         |    shall be excluded being on Fire alarm or fire
|              |              |         |    recall/service operation.
|              |              |         |
```

```
|              |         +- Name/Label [CO:41DB-6] - (Service)
|              |         |    This object defines an additional text or label, given
|              |         |    for the generic supervision input, to make it less
|              |         |    'generic' for the technician or user.
|              |         |
|              |         +- Even more…
|              |              |
|              |              +- Destination Floor [CO:41DB-9] - (Service)
|              |              |    This object defines if the generic supervision
|              |              |    input shall be used to drive the lift to a
|              |              |    dedicated destination floor.
|              |              |
|              |              +- Door to open at recall floor [CO:41DB-11] -
|              |              |  (Service)
|              |              |    This object is used to define the doors that
|              |              |    shall open, when the lift has arrived at the
|              |              |    given recall floor, if any floor had been
|              |              |    defined.
|              |              |
|              |              +- Doors at floor [CO:41DB] - (Service)
|              |              |    This object defines if the doors shall close
|              |              |    after a while, when having reached floor level.
|              |              |
|              |              +- Duration of the sirens/indication signal
|              |              |  [CO:41DB-10] - (Service)
|              |              |    This object defines how long the siren/display
|              |              |    output signal should remain switched on when the
|              |              |    supervision functions has been triggered. By
|              |              |    default, the signal will remain on as long as the
|              |              |    supervision has been triggered. However, if you
|              |              |    drive a siren or a buzzer, it may make sense to
|              |              |    limit the duration.
|              |              |
|              |              +- Reopen doors via landing call [CO:41DB-13] -
|              |                 (Service)
|              |                   This object defines, if the lift door can be
|              |                   re-opened by means of pressing the landing call.
|              |                   The door can always be re-opened by a car call or
|              |                   the door open button. But if it shall be possible
|              |                   to re-open the door via a landing call might
|              |                   depend on what the function is actually used for.
|              |
|              +- Much more…
|                   |
|                   +- Generic supervision input #13
|                   |    |
|                   |    +- Usage [CO:41DC-1] - (Setup)
|                   |    |    This object defines if the given generic supervision
|                   |    |    input shall be used by the system or not.
|                   |    |
|                   |    +- Input delay [CO:41DC-2] - (Service)
|                   |    |    This object defines the input delay of the generic
|                   |    |    supervision input. This is used to delay the
|                   |    |    activation, if the signal changes its state.
|                   |    |
|                   |    +- Fault signalization [CO:41DC-3] - (Setup)
|                   |    |    This object defines the fault signalization of the
|                   |    |    generic supervision input. This parameter defines, if
|                   |    |    the signal shall cause a 'fault', 'out of order' or
|                   |    |    'blocking' event.
|                   |    |
|                   |    +- Inspection handling [CO:41DC-4] - (Setup)
|                   |    |    This object defines if the generic supervision input
|                   |    |    shall be excluded being on inspection or emergency
|                   |    |    electrical operation.
|                   |    |
|                   |    +- More…
|                   |         |
|                   |         +- Disable relevelling [CO:41DC-5] - (Setup)
|                   |         |    This object defines if the generic supervision
|                   |         |    input shall be disable the relevelling operation,
|                   |         |    if being indicated.
```

```
|                   |         |
|                   |         +- Energy saving policy [CO:41DC-7] - (Setup)
|                   |         |    This object defines if the generic supervision
|                   |         |    input shall be excluded being on energy saving or
|                   |         |    standby operation.
|                   |         |
|                   |         +- Fire Alarm/Service policy [CO:41DC-8] - (Setup)
|                   |         |    This object defines if the generic supervision
|                   |         |    input shall be excluded being on Fire alarm or
|                   |         |    fire recall/service operation.
|                   |         |
|                   |         +- Name/Label [CO:41DC-6] - (Service)
|                   |         |    This object defines an additional text or label,
|                   |         |    given for the generic supervision input, to make
|                   |         |    it less 'generic' for the technician or user.
|                   |         |
|                   |         +- Even more…
|                   |              |
|                   |              +- Destination Floor [CO:41DC-9] - (Service)
|                   |              |    This object defines if the generic
|                   |              |    supervision input shall be used to drive the
|                   |              |    lift to a dedicated destination floor.
|                   |              |
|                   |              +- Door to open at recall floor [CO:41DC-11] -
|                   |              |  (Service)
|                   |              |    This object is used to define the doors that
|                   |              |    shall open, when the lift has arrived at the
|                   |              |    given recall floor, if any floor had been
|                   |              |    defined.
|                   |              |
|                   |              +- Doors at floor [CO:41DC] - (Service)
|                   |              |    This object defines if the doors shall close
|                   |              |    after a while, when having reached floor
|                   |              |    level.
|                   |              |
|                   |              +- Duration of the sirens/indication signal
|                   |              |  [CO:41DC-10] - (Service)
|                   |              |    This object defines how long the
|                   |              |    siren/display output signal should remain
|                   |              |    switched on when the supervision functions
|                   |              |    has been triggered. By default, the signal
|                   |              |    will remain on as long as the supervision
|                   |              |    has been triggered. However, if you drive a
|                   |              |    siren or a buzzer, it may make sense to
|                   |              |    limit the duration.
|                   |              |
|                   |              +- Reopen doors via landing call [CO:41DC-13] -
|                   |                 (Service)
|                   |                   This object defines, if the lift door can be
|                   |                   re-opened by means of pressing the landing
|                   |                   call. The door can always be re-opened by a
|                   |                   car call or the door open button. But if it
|                   |                   shall be possible to re-open the door via a
|                   |                   landing call might depend on what the
|                   |                   function is actually used for.
|                   |
|                   +- Generic supervision input #14
|                   |    |
|                   |    +- Usage [CO:41DD-1] - (Setup)
|                   |    |    This object defines if the given generic supervision
|                   |    |    input shall be used by the system or not.
|                   |    |
|                   |    +- Input delay [CO:41DD-2] - (Service)
|                   |    |    This object defines the input delay of the generic
|                   |    |    supervision input. This is used to delay the
|                   |    |    activation, if the signal changes its state.
|                   |    |
|                   |    +- Fault signalization [CO:41DD-3] - (Setup)
|                   |    |    This object defines the fault signalization of the
|                   |    |    generic supervision input. This parameter defines, if
|                   |    |    the signal shall cause a 'fault', 'out of order' or
|                   |    |    'blocking' event.
```

```
|                    |    |
|                    |    +- Inspection handling [CO:41DD-4] - (Setup)
|                    |    |    This object defines if the generic supervision input
|                    |    |    shall be excluded being on inspection or emergency
|                    |    |    electrical operation.
|                    |    |
|                    |    +- More…
|                    |         |
|                    |         +- Disable relevelling [CO:41DD-5] - (Setup)
|                    |         |    This object defines if the generic supervision
|                    |         |    input shall be disable the relevelling operation,
|                    |         |    if being indicated.
|                    |         |
|                    |         +- Energy saving policy [CO:41DD-7] - (Setup)
|                    |         |    This object defines if the generic supervision
|                    |         |    input shall be excluded being on energy saving or
|                    |         |    standby operation.
|                    |         |
|                    |         +- Fire Alarm/Service policy [CO:41DD-8] - (Setup)
|                    |         |    This object defines if the generic supervision
|                    |         |    input shall be excluded being on Fire alarm or
|                    |         |    fire recall/service operation.
|                    |         |
|                    |         +- Name/Label [CO:41DD-6] - (Service)
|                    |         |    This object defines an additional text or label,
|                    |         |    given for the generic supervision input, to make
|                    |         |    it less 'generic' for the technician or user.
|                    |         |
|                    |         +- Even more…
|                    |              |
|                    |              +- Destination Floor [CO:41DD-9] - (Service)
|                    |              |    This object defines if the generic
|                    |              |    supervision input shall be used to drive the
|                    |              |    lift to a dedicated destination floor.
|                    |              |
|                    |              +- Door to open at recall floor [CO:41DD-11] -
|                    |              |  (Service)
|                    |              |    This object is used to define the doors that
|                    |              |    shall open, when the lift has arrived at the
|                    |              |    given recall floor, if any floor had been
|                    |              |    defined.
|                    |              |
|                    |              +- Doors at floor [CO:41DD] - (Service)
|                    |              |    This object defines if the doors shall close
|                    |              |    after a while, when having reached floor
|                    |              |    level.
|                    |              |
|                    |              +- Duration of the sirens/indication signal
|                    |              |  [CO:41DD-10] - (Service)
|                    |              |    This object defines how long the
|                    |              |    siren/display output signal should remain
|                    |              |    switched on when the supervision functions
|                    |              |    has been triggered. By default, the signal
|                    |              |    will remain on as long as the supervision
|                    |              |    has been triggered. However, if you drive a
|                    |              |    siren or a buzzer, it may make sense to
|                    |              |    limit the duration.
|                    |              |
|                    |              +- Reopen doors via landing call [CO:41DD-13] -
|                    |                 (Service)
|                    |                   This object defines, if the lift door can be
|                    |                   re-opened by means of pressing the landing
|                    |                   call. The door can always be re-opened by a
|                    |                   car call or the door open button. But if it
|                    |                   shall be possible to re-open the door via a
|                    |                   landing call might depend on what the
|                    |                   function is actually used for.
|                    |
|                   +- Generic supervision input #15
|                    |    |
|                    |    +- Usage [CO:41DE-1] - (Setup)
|                    |    |    This object defines if the given generic supervision
```

```
|                  |    |    input shall be used by the system or not.
|                  |    |
|                  |    +- Input delay [CO:41DE-2] - (Service)
|                  |    |    This object defines the input delay of the generic
|                  |    |    supervision input. This is used to delay the
|                  |    |    activation, if the signal changes its state.
|                  |    |
|                  |    +- Fault signalization [CO:41DE-3] - (Setup)
|                  |    |    This object defines the fault signalization of the
|                  |    |    generic supervision input. This parameter defines, if
|                  |    |    the signal shall cause a 'fault', 'out of order' or
|                  |    |    'blocking' event.
|                  |    |
|                  |    +- Inspection handling [CO:41DE-4] - (Setup)
|                  |    |    This object defines if the generic supervision input
|                  |    |    shall be excluded being on inspection or emergency
|                  |    |    electrical operation.
|                  |    |
|                  |    +- More…
|                  |         |
|                  |         +- Disable relevelling [CO:41DE-5] - (Setup)
|                  |         |    This object defines if the generic supervision
|                  |         |    input shall be disable the relevelling operation,
|                  |         |    if being indicated.
|                  |         |
|                  |         +- Energy saving policy [CO:41DE-7] - (Setup)
|                  |         |    This object defines if the generic supervision
|                  |         |    input shall be excluded being on energy saving or
|                  |         |    standby operation.
|                  |         |
|                  |         +- Fire Alarm/Service policy [CO:41DE-8] - (Setup)
|                  |         |    This object defines if the generic supervision
|                  |         |    input shall be excluded being on Fire alarm or
|                  |         |    fire recall/service operation.
|                  |         |
|                  |         +- Name/Label [CO:41DE-6] - (Service)
|                  |         |    This object defines an additional text or label,
|                  |         |    given for the generic supervision input, to make
|                  |         |    it less 'generic' for the technician or user.
|                  |         |
|                  |         +- Even more…
|                  |              |
|                  |              +- Destination Floor [CO:41DE-9] - (Service)
|                  |              |    This object defines if the generic
|                  |              |    supervision input shall be used to drive the
|                  |              |    lift to a dedicated destination floor.
|                  |              |
|                  |              +- Door to open at recall floor [CO:41DE-11] -
|                  |              |  (Service)
|                  |              |    This object is used to define the doors that
|                  |              |    shall open, when the lift has arrived at the
|                  |              |    given recall floor, if any floor had been
|                  |              |    defined.
|                  |              |
|                  |              +- Doors at floor [CO:41DE] - (Service)
|                  |              |    This object defines if the doors shall close
|                  |              |    after a while, when having reached floor
|                  |              |    level.
|                  |              |
|                  |              +- Duration of the sirens/indication signal
|                  |              |  [CO:41DE-10] - (Service)
|                  |              |    This object defines how long the
|                  |              |    siren/display output signal should remain
|                  |              |    switched on when the supervision functions
|                  |              |    has been triggered. By default, the signal
|                  |              |    will remain on as long as the supervision
|                  |              |    has been triggered. However, if you drive a
|                  |              |    siren or a buzzer, it may make sense to
|                  |              |    limit the duration.
|                  |              |
|                  |              +- Reopen doors via landing call [CO:41DE-13] -
|                  |                 (Service)
```

```
|                    |                    This object defines, if the lift door can be
|                    |                    re-opened by means of pressing the landing
|                    |                    call. The door can always be re-opened by a
|                    |                    car call or the door open button. But if it
|                    |                    shall be possible to re-open the door via a
|                    |                    landing call might depend on what the
|                    |                    function is actually used for.
|                    |
|                    +- Generic supervision input #16
|                         |
|                         +- Usage [CO:41DF-1] - (Setup)
|                         |    This object defines if the given generic supervision
|                         |    input shall be used by the system or not.
|                         |
|                         +- Input delay [CO:41DF-2] - (Service)
|                         |    This object defines the input delay of the generic
|                         |    supervision input. This is used to delay the
|                         |    activation, if the signal changes its state.
|                         |
|                         +- Fault signalization [CO:41DF-3] - (Setup)
|                         |    This object defines the fault signalization of the
|                         |    generic supervision input. This parameter defines, if
|                         |    the signal shall cause a 'fault', 'out of order' or
|                         |    'blocking' event.
|                         |
|                         +- Inspection handling [CO:41DF-4] - (Setup)
|                         |    This object defines if the generic supervision input
|                         |    shall be excluded being on inspection or emergency
|                         |    electrical operation.
|                         |
|                         +- More…
|                              |
|                              +- Disable relevelling [CO:41DF-5] - (Setup)
|                              |    This object defines if the generic supervision
|                              |    input shall be disable the relevelling operation,
|                              |    if being indicated.
|                              |
|                              +- Energy saving policy [CO:41DF-7] - (Setup)
|                              |    This object defines if the generic supervision
|                              |    input shall be excluded being on energy saving or
|                              |    standby operation.
|                              |
|                              +- Fire Alarm/Service policy [CO:41DF-8] - (Setup)
|                              |    This object defines if the generic supervision
|                              |    input shall be excluded being on Fire alarm or
|                              |    fire recall/service operation.
|                              |
|                              +- Name/Label [CO:41DF-6] - (Service)
|                              |    This object defines an additional text or label,
|                              |    given for the generic supervision input, to make
|                              |    it less 'generic' for the technician or user.
|                              |
|                              +- Even more…
|                                   |
|                                   +- Destination Floor [CO:41DF-9] - (Service)
|                                   |    This object defines if the generic
|                                   |    supervision input shall be used to drive the
|                                   |    lift to a dedicated destination floor.
|                                   |
|                                   +- Door to open at recall floor [CO:41DF-11] -
|                                   |  (Service)
|                                   |    This object is used to define the doors that
|                                   |    shall open, when the lift has arrived at the
|                                   |    given recall floor, if any floor had been
|                                   |    defined.
|                                   |
|                                   +- Doors at floor [CO:41DF] - (Service)
|                                   |    This object defines if the doors shall close
|                                   |    after a while, when having reached floor
|                                   |    level.
|                                   |
|                                   +- Duration of the sirens/indication signal
```

```
|                                    |  [CO:41DF-10] - (Service)
|                                    |    This object defines how long the
|                                    |    siren/display output signal should remain
|                                    |    switched on when the supervision functions
|                                    |    has been triggered. By default, the signal
|                                    |    will remain on as long as the supervision
|                                    |    has been triggered. However, if you drive a
|                                    |    siren or a buzzer, it may make sense to
|                                    |    limit the duration.
|                                    |
|                                    +- Reopen doors via landing call [CO:41DF-13] -
|                                       (Service)
|                                         This object defines, if the lift door can be
|                                         re-opened by means of pressing the landing
|                                         call. The door can always be re-opened by a
|                                         car call or the door open button. But if it
|                                         shall be possible to re-open the door via a
|                                         landing call might depend on what the
|                                         function is actually used for.
|
+- Emergency Evacuation
|    |
|    +- Emergency Evacuation on/off [CO:41A3] - (Setup)
|    |    This operating mode is used to move the car to the very next floor by
|    |    opening the brake and limiting the velocity to 0.3 m/s (59 ft/min)
|    |    maximum.
|    |
|    +- Emergency Evacuation stopping distance [CO:41A4] - (Service)
|    |    If the operating mode 'Emergency Evacuation' is used to move the car to
|    |    the very next floor by opening the brake and limiting the velocity to
|    |    0.3 m/s (59 ft/min) maximum, this object defines the stopping distance,
|    |    used to fine-tune the stop position in order to reduce the 'step' between
|    |    the car and the floor level.
|    |
|    +- Automatic Emergency Evacuation delay [CO:41A5] - (Service)
|    |    If the operating mode 'Emergency Evacuation' is used to move the car
|    |    automatically to the very next floor, by releasing the brake and limiting
|    |    the velocity to 0.3 m/s (59 ft/min) maximum, this object defines the delay
|    |    time used to release the brake, after the operating mode has been
|    |    activated.
|    |
|    +- Automatic Emergency Evacuation duration [CO:41A6] - (Service)
|    |    If the operating mode 'Emergency Evacuation' is used to move the car
|    |    automatically to the very next floor, by releasing the brake and limiting
|    |    the velocity to 0.3 m/s (59 ft/min) maximum, this object defines the
|    |    timeout used to limit the operation duration, before the procedure is
|    |    finally defined as 'having failed'.
|    |
|    +- More…
|         |
|         +- Automatic Emergency Evacuation activation time [CO:41B6] - (Service)
|         |    This object defines a delay time used to accept the input for turning
|         |    the lift into 'Automatic Evacuation Operation'. This might be useful,
|         |    if the output that triggers this input, may be peaked up for a short
|         |    time, without the lift being in need to react on it.
|         |
|         +- Emergency Evacuation maximum velocity [CO:41B5] - (Setup)
|         |    This operating mode is used to move the car to the very next floor by
|         |    opening the brake and limiting the velocity to the given value,
|         |    typically 0.3 m/s (59 ft/min) maximum. This object is used to define
|         |    the velocity threshold used to engage the brake.
|         |
|         +- Automatic Emergency Evacuation Movement Supervision [CO:41B9] -
|         |  (Service)
|         |    If the operating mode 'Emergency Evacuation' is used to move the car
|         |    automatically to the very next floor, by releasing the brake and
|         |    limiting the velocity to typically 0.3 m/s (59 ft/min) maximum, this
|         |    object defines a supervision time used to detect, if the car actually
|         |    starts moving at all. This supervision timer is re-triggered as long
|         |    as the car is moving.
|         |
|         +- Manual Emergency Evacuation Safety Chain Check [CO:41B7] - (Setup)
```

```
|         |    This object defines, if on manual emergency evacuation operation
|         |    mode, the safety chain is taken in account as a prerequisite to open
|         |    the brake. In the case there is no power on the safety chain, the
|         |    technician has manually to check that all doors have been closed,
|         |    before releasing the brake. This is the same as he/she would manually
|         |    release the brake mechanically. We always suggest to keep the safety
|         |    chain alive for this operation mode, but it is not always possible.
|         |    So use that feature with care.
|         |
|        +- Even more…
|             |
|             +- Manual Emergency Evacuation Drop Protection [CO:420A] - (Setup)
|             |    This object defines, if on Manual Emergency Evacuation operation
|             |    mode, the Drop Protection shall be operated by the lift
|             |    controller. This option is only available, if the safety chain
|             |    check for the Manual Emergency Evacuation operation mode has
|             |    been activated as well. Otherwise a Drop Protection needs to be
|             |    operated manually.
|             |
|             +- Use regular pilot relays for brake opening on Automatic
|             |  Emergency Evacuation [CO:41BB] - (Setup)
|             |    This object defines, if the regular pilot relays shall be
|             |    featured for brake opening. Otherwise, only the dedicated brake
|             |    opening output for automatic emergency evacuation will be
|             |    activated, in order to open the brake. If you can use the
|             |    regular pilot relays for brake opening highly depends on your
|             |    actual schematics and drive/brake type.
|             |
|             +- Automatic Emergency Evacuation needs Car Call [CO:4204] -
|                (Service)
|                  This object defines, if the automatic emergency evacuation, that
|                  moves the lift to the very next floor, just by brake opening,
|                  shall not start before the passenger has pressed any car call
|                  button. The car call might has been registered before, while
|                  driving normally or pressed later on when the lift got stuck.
|
+- Low Pit/Head Barrier Supervision
|    |
|    +- Low Pit/Head Barrier Supervision [CO:4043] - (Setup)
|    |    This object defines if supervision signals are used to monitor the
|    |    mechanical position of the barriers used in low pit/head solutions. The
|    |    requirements for this might be differ in different countries.
|    |
|    +- Type of Low Pit/Head Barrier Supervision [CO:4059] - (Setup)
|    |    This object defines if the lift features a low pit & head or only pit or
|    |    only head solution.
|    |
|    +- Input terminal assignment Low Pit/Head Barriers
|    |    |
|    |    +- Barrier 1 INS low pit/head circuit [CO:40C0-1] - (Service)
|    |    |    This objects can be used to assign a specific barrier function or
|    |    |    placement to a low head/pit supervision input pair. Using these
|    |    |    objects, you can define if an input signal pair is specifically used
|    |    |    for the pit, the head or a fence supervision. This information can be
|    |    |    used by the lift controller to draw the icons in the right colour
|    |    |    onto the screen, making it easier to see, which barrier or balustrade
|    |    |    is in the wrong position to operate the lift in normal or inspection
|    |    |    mode.
|    |    |
|    |    +- Barrier 2 INS low pit/head circuit [CO:40C0-2] - (Service)
|    |    |
|    |    +- Barrier 3 INS low pit/head circuit [CO:40C0-3] - (Service)
|    |    |
|    |    +- Feature ELGO PSU status as Barrier INS input signal [CO:40A4] -
|    |       (Setup)
|    |         This object defines if the EN81-21 status indication of the ELGO safe
|    |         encoder (PSU) can be featured as a substitute to the wired barrier
|    |         inspection (INS) position input.
|    |
|    +- More…
|         |
|         +- Extra Door Supervision Signals
```

```
|          |    |
|          |    +- Extra Door Supervision Signals [CO:4042] - (on site only) -
|          |    |  (Setup)
|          |    |    This object defines if some doors feature an extra supervision
|          |    |    contact, indicating that the door has been opened unattended.
|          |    |
|          |    +- Door Supervision Table [CO:4041] - (on site only) - (Setup)
|          |    |    This object holds the table declaring which doors feature an
|          |    |    extra supervision contact, indicating that the door has been
|          |    |    opened unattended.
|          |    |
|          |    +- Extra Door Supervision Time Span [CO:4048] - (Setup)
|          |    |    This object defines the time the extra door supervision contacts
|          |    |    must be low in order to throw a supervision fault event.
|          |    |
|          |    +- Extra Door Supervision Contactor Monitoring [CO:4049] - (on site
|          |    |  only) - (Setup)
|          |    |    This object defines if a special contactor is monitored, that is
|          |    |    used to turn off the safety chain power, if one or more of the
|          |    |    extra door supervision contacts signal, that a door has been
|          |    |    opened.
|          |    |
|          |    +- More…
|          |         |
|          |         +- Emergency electrical operation top distance, if shaft head
|          |         |  door supervision tripped [CO:4094] - (Setup)
|          |         |    This object defines the distance to stop before the last
|          |         |    floor level position, if driving on emergency electrical
|          |         |    operation, if the extra door supervision, usually used
|          |         |    together with a low head or low pit solution, has been
|          |         |    tripped.
|          |         |
|          |         +- Emergency electrical operation bottom distance, if shaft
|          |         |  pit door supervision tripped [CO:4095] - (Setup)
|          |         |    This object defines the distance to stop before the last
|          |         |    floor level position, if driving on emergency electrical
|          |         |    operation, if the extra door supervision, usually used
|          |         |    together with a low head or low pit solution, has been
|          |         |    tripped.
|          |         |
|          |         +- Even more…
|          |              |
|          |              +- Extra Door Supervision Landing Contact [CO:4068] -
|          |              |  (Setup)
|          |              |    This object defines if the closed landing door contact
|          |              |    shall be used to decide, if the extra door supervision
|          |              |    contact on the current floor, shall be checked as
|          |              |    well, before start or not.
|          |              |
|          |              +- Flash the hall calls, if tripping extra door
|          |                 supervision [CO:441A] - (Setup)
|          |                   This object defines if the landing call lamps shall
|          |                   flash at all landings, if the Extras Door Supervision
|          |                   function had been tripped.
|          |
|          +- Low Pit/Head Barrier Blocking Policy [CO:41E0] - (Setup)
|          |    This object defines if the lift shall be blocked, if the Low Pit/Head
|          |    Barrier solution has been tripped. Usually the lift has to be blocked
|          |    in that situation. But for some regions, exceptions for renovating
|          |    older lifts had been introduced, which do not require or not allow
|          |    the lift to enter blocking operation.
|          |
|          +- Inspection floor stop distance
|          |    |
|          |    +- Inspection top floor stop distance [CO:401E] - (Setup)
|          |    |    This object defines the distance to stop before the top floor
|          |    |    level position, if driving on inspection operation.
|          |    |
|          |    +- Inspection bottom floor stop distance [CO:401F] - (Setup)
|          |    |    This object defines the distance to stop before the bottom floor
|          |    |    level position, if driving on inspection operation.
|          |    |
```

```
|         |    +- Dedicated Pit Inspection bottom floor stop distance [CO:4076] -
|         |    |  (Setup)
|         |    |    This object defines the distance to stop before the bottom floor
|         |    |    level position, if driving on pit inspection operation.
|         |    |
|         |    +- Terminal (Pre-limit) Hoistway Switches [CO:4157] - (Setup)
|         |         This object defines if terminal (pre-limit) hoistway switches
|         |         are regularly used to ensure the lift decelerating to V0, before
|         |         the very end of the hoistway has been reached.
|         |
|         +- Low pit barrier safe distance [CO:405A] - (Setup)
|         |    This object defines the lowest position up to which the car can
|         |    travel, using the car top inspection control panel in downward
|         |    direction, without the barrier in the pit having been set up
|         |    beforehand to the inspection position.
|         |
|         +- Low head barrier safe distance [CO:40A3] - (Setup)
|              This object defines the highest position up to which the car can
|              travel, using the pit inspection control panel in upward direction,
|              without the barrier in the head having been set up beforehand to the
|              inspection position.
|
+- Much more…
     |
     +- Energy Saving Operation
     |    |
     |    +- Energy Saving Timer
     |    |    |
     |    |    +- Energy Saving Timer [CO:41AE] - (Service)
     |    |    |    If the lift is idle for the given time span, the lift will
     |    |    |    activate the dedicated output and transmits 'Energy Saving Level
     |    |    |    S4' via the CANopen bus. Usually the CANopen displays and drive
     |    |    |    units will react on this automatically, entering an energy
     |    |    |    saving operation mode. Be aware that this actually means, that
     |    |    |    processing the first landing call might take a bit longer as the
     |    |    |    systems have to enter normal operation first.
     |    |    |
     |    |    +- Energy Saving Wakeup Time [CO:41AC] - (Service)
     |    |         If the lift is idle for the given time span, the lift will
     |    |         activate the dedicated output and transmits 'Energy Saving Level
     |    |         S4' via the CANopen bus. Usually the CANopen displays and drive
     |    |         units will react on this automatically, entering an energy
     |    |         saving operation mode. This time defines how long it takes to
     |    |         wake up all components, that had entered the energy saving
     |    |         operation before.
     |    |
     |    +- Standby Timer
     |         |
     |         +- Standby Timer [CO:41AF] - (Service)
     |         |    If the lift is idle for the given time span, the lift will
     |         |    activate the dedicated output and transmits 'Energy Saving Level
     |         |    S6' via the CANopen bus. Usually the CANopen displays, doors and
     |         |    drive units will react on this automatically, entering standby
     |         |    operation mode. Be aware that this actually means, that
     |         |    processing the first landing call might take quite a bit longer
     |         |    as the systems have to enter normal operation first and the
     |         |    drive unit needs to power up its DC-bus again.
     |         |
     |         +- Standby Wakeup Time [CO:41AD] - (Service)
     |              If the lift is idle for the given time span, the lift will
     |              activate the dedicated output and transmits 'Energy Saving Level
     |              S6' via the CANopen bus. Usually the CANopen displays, doors and
     |              drive units will react on this automatically, entering standby
     |              operation mode. This time defines how long it takes to wake up
     |              all components, that had entered standby operation before.
     |
     +- Earthquake Operation
     |    |
     |    +- Earthquake Operation usage [CO:4210] - (Setup)
     |    |    This object is used to turn on support for the earthquake operation
     |    |    mode. The passengers in the car shall be protected from falling
     |    |    objects and the collision caused by the counterweight. In addition,
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|    |    the entrapment of people in the lift shall be avoided.
|    |
|    +- Earthquake Escape Floor [CO:4107-9] - (Setup)
|    |    This object is used to define an optional dedicated floor, that the
|    |    lift shall drive to, in the case of an earthquake being detected. If
|    |    you leave this parameter turned off, the lift will drive to the next
|    |    floor in upward direction above the middle of the shaft, in order to
|    |    make sure, that the counter weight will be below the car.
|    |
|    +- Earthquake floor doors [CO:4211] - (Setup)
|    |    Use this object to define the doors to operate when the lift has
|    |    arrived at the earthquake floor. This parameter only makes sense,
|    |    when a dedicate floor for earthquake operation has been defined.
|    |
|    +- Behavior of the doors at the earthquake floor [CO:4212] - (Service)
|    |    This object defines if the doors shall stay open or close after a
|    |    while, when the lift has reached the Earthquake floor.
|    |
|    +- More…
|         |
|         +- Earthquake nominal velocity [CO:4213] - (Setup)
|         |    Use this object to define the maximum velocity (V1..V4) that the
|         |    lift shall use, if running in Earthquake mode, with respect to
|         |    the mechanical limitations of the rails and rollers.
|         |
|         +- Earthquake fallback time [CO:4214] - (Service)
|              Use this object to define a fallback time to return the lift
|              from Earthquake operation, if the sensor signal is not
|              indicating an Earthquake anymore.
|
+- Rescue/Salvage operation
|    |
|    +- Rescue/Salvage operation usage [CO:416C] - (Setup)
|    |    This object is used to turn on the usage of the rescue operation
|    |    mode, that is usually activated via an input terminal and will behave
|    |    like a simple fire alarm operation but provides the possibility to
|    |    control the car via car calls, once the lift has arrived at the
|    |    rescue floor and a key-switch in the car has been activated. Doors
|    |    are on constant pressure operation mode and the light curtains will
|    |    be ignored to ensure they are not effected by smoke. This operation
|    |    mode is usually used to evacuate people in a wheelchair out of the
|    |    building.
|    |
|    +- Rescue operation floor [CO:416D] - (Setup)
|    |    This object is used to select the floor to which the car is driven,
|    |    when the lift has been turned to rescue operation mode.
|    |
|    +- Rescue operation floor doors [CO:416E] - (Setup)
|    |    This object is used to select the doors to open at the floor to which
|    |    the car is driven, when the lift has been turned to rescue operation
|    |    mode.
|    |
|    +- Table for excluding doors in Rescue operation [CO:417A] - (Setup)
|    |    This object holds the cross-out table of all landing doors that can
|    |    not be operated in evacuation service operation. After arrival of the
|    |    lift, the output signal 'Special Indication > Door open request
|    |    acknowledge, lift 1, car/cabin, door X' can be used to lit up the
|    |    'Door open button' on that floor and door side, that actually can be
|    |    opened by the evacuation assistant.
|    |
|    +- More…
|         |
|         +- Rescue operation stopovers [CO:417B] - (Service)
|         |    This object defines if being on automatic rescue/evacuation
|         |    operation it shall be allowed to do stopover on the way back to
|         |    the recall floor. This shall usually only be allowed, if the
|         |    lift is equipped with sensors that indicate that there is enough
|         |    space left to take more weel chairs and passengers. This sensor
|         |    shall trigger the full load in order to prevent stopovers.
|         |
|         +- Train Platform 1 [CO:4252] - (Setup)
|         |    This object is used to select a floor, were the car shall return
```

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|         |    to, after having driven a disabled person to the rescue floor.
|         |    That pickup or evacuation floor might be a train platform below
|         |    ground.
|         |
|         +- Train Platform 2 [CO:4253] - (Setup)
|              This object is used to select a floor, were the car shall return
|              to, after having driven a disabled person to the rescue floor.
|              That pickup or evacuation floor might be a train platform below
|              ground.
|
+- Circulating operation
|    |
|    +- Circulating operation usage [CO:41A7] - (Service)
|    |    This operating mode can be used, if the lift shall drive
|    |    automatically to a set of floors, stopover on each defined floor, do
|    |    a door cycle at the floor and finally drive to the next given floor,
|    |    from the floor table. Once the floor table has been completed, the
|    |    lift will start over again. You can define how many complete cycles
|    |    the lift shall do, before pausing this operation mode for an
|    |    adjustable time span.
|    |
|    +- Floor table/plan for circulating operation [CO:41AA]
|    |    This object defines the floor table/plan used, if running on
|    |    circulating operation, to define to which floors the lift shall drive
|    |    in which order. The lowest entry is the main floor, were the car will
|    |    in the end return to.
|    |
|    +- Cycle counts on circulating operation [CO:41A8]
|    |    This object defines how many cycles the lift controller shall
|    |    perform, before doing a pause and operating normally.
|    |
|    +- Pausing time in-between cycles on circulating operation [CO:41A9]
|    |    This object defines the pause time in-between cycles, if having
|    |    performed the given count of cycles.
|    |
|    +- More…
|         |
|         +- Inhibit time for regularly passenger calls [CO:41AB]
|         |    This object defines the inhibit time used, if a regularly
|         |    passenger call has been processed, before the next could
|         |    interrupt the circulating operation again.
|         |
|         +- Light barrier power off function [CO:41B4] - (Service)
|         |    This object defines if the light barrier shall be powered off
|         |    after arrival, when operating in circulating operation mode
|         |
|         +- Light barrier power off time [CO:41B3] - (Service)
|              This object defines the time the light barrier will be powered
|              off after arrival, if the lift is running on circulating
|              operation mode.
|
+- Further more…
     |
     +- Chemical operation parameter
     |    |
     |    +- Chemical operation usage [CO:41D0-1] - (Setup)
     |    |    This object defines if the lift shall support the transportation
     |    |    of chemicals or hazard goods. In this operation mode a
     |    |    technician can load the car with a key and then move the car to
     |    |    another floor by using the same key on a different landing
     |    |    floor.
     |    |
     |    +- Chemical operation timeout [CO:41D0-2] - (Service)
     |    |    This object defines the timeout for the chemical operation mode,
     |    |    if the technician using it, would forget to use the key switch
     |    |    in the 'Reset' position once to bring the lift back to normal
     |    |    operation.
     |    |
     |    +- Process all car calls when activating chemical operation
     |    |  [CO:41D0-3] - (Service)
     |    |    This object defines if all pending car calls shall be processed
     |    |    first, before the lift enters the Chemical/Hazard Goods
```

```
|    |    Operation. Otherwise the lift will stop at the next car call and
|    |    then the remaining calls are cancelled.
|    |
|    +- Chemical operation abort time Fire Recall [CO:41D0-4] -
|    |  (Service)
|    |    This object defines the time granted to the person in the car,
|    |    when being on Chemical/Hazard Goods operation and a Fire Recall
|    |    operation is requested. This timer shall make sure, that the
|    |    person has a chance to turn off the key switch and leave the
|    |    car.
|    |
|    +- Transition Time Landing/Car Switch [CO:41D0-5] - (Service)
|         This object defines the time granted to the passenger when
|         removing the key from the Chemical Operation key switch at the
|         landing and inserting the key into the Chemical Operation key
|         switch in the cabin.
|
+- Peak-up/down operation
|    |
|    +- Peak-up mode ignores downward landing calls [CO:41E5] -
|    |  (Service)
|    |    This object defines if the lift being in peak-up operation,
|    |    shall ignore pending downward landing calls. Use this function
|    |    with care. Ensure that other group/team lifts are able to serve
|    |    downwards calls, as long as this lift ignores them.
|    |
|    +- Peak-down mode ignores upward landing calls [CO:41E6] -
|       (Service)
|         This object defines if the lift being in peak-down operation,
|         shall ignore pending upward landing calls. Use this function
|         with care. Ensure that other group/team lifts are able to serve
|         upwards calls, as long as this lift ignores them.
|
+- Velocity thresholds
|    |
|    +- Velocity Threshold 1 [CO:41F0-1] - (Setup)
|    |    This object defines velocity thresholds used to control output
|    |    signals, that can for example be featured to operate
|    |    deceleration supervision circuits. The signals will be turned
|    |    on, if the velocity has fallen under the given threshold.
|    |
|    +- Velocity Threshold 2 [CO:41F0-2] - (Setup)
|    |
|    +- Velocity Threshold 3 [CO:41F0-3] - (Setup)
|    |
|    +- Velocity Threshold 4 [CO:41F0-4] - (Setup)
|
+- Timeout Emergency Lift Phone readiness [CO:41EC] - (Service)
|    This object defines the timeout used to render the lift non
|    operational, if the emergency telephone system indicates to be not
|    ready anymore. This might happen, if the mobile telephone net is down
|    or the unit has no reception for any other reason.
|
+- Special Functions…
     |
     +- Automobile transport parameter
     |    |
     |    +- Automobile transport usage [CO:41D1-1] - (Setup)
     |         This object specifies that the lift is mainly used for
     |         automobile or vehicle transportation. There is an input
     |         signal that can be used when the lift is exceptionally used
     |         for passenger transport and the positioning light barriers
     |         shall be ignored.
     |
     +- Building Zones
     |    |
     |    +- Building Zones Usage [CO:41CB-1] - (Service)
     |    |    This object defines if the lift shall interpret the
     |    |    different zone tables as zones or floor ranges in a
     |    |    building. Other functions, like fire alarm, can feature
     |    |    that information, in order to apply rules and policies,
     |    |    depending in which zone the car currently is or is driving
```

```
|    |    to.
|    |
|    +- Building Zone Tables
|    |    |
|    |    +- Building Zone Table 1 [CO:41CC] - (Service)
|    |    |
|    |    +- Building Zone Table 2 [CO:41CD] - (Service)
|    |    |
|    |    +- Building Zone Table 3 [CO:41CE] - (Service)
|    |    |
|    |    +- Building Zone Table 4 [CO:41CF] - (Service)
|    |         This object defines a zone or range of floors in a
|    |         building. The table works basically like a floor
|    |         table, having set a bit (dot) for every floor, that
|    |         belongs to the given zone.
|    |
|    +- Building Zones Car Calls Policy [CO:41CB-3] - (Service)
|    |    This object defines how car calls shall be handled within a
|    |    building zone. Typically only car calls within the very
|    |    same zone are allowed, preventing passengers from cross a
|    |    zone by entering a car call. This rule excludes high
|    |    priority car calls, that are usually key locked anyway.
|    |
|    +- Building Zones Fire Alarm Policy [CO:41CB-2] - (Service)
|         This object defines if the index of the current building
|         zone (1…n) shall be used to pick the fire alarm floor from
|         the fire alarm level table. To use that  feature you have
|         to set the fire alarm strategy to 'simple' in the first
|         place.
|
+- Helicopter Feature
|    |
|    +- Helicopter Feature [CO:419B] - (Service)
|    |    This object defines whether the lift should support the
|    |    helicopter function used in some hospitals. There the lift
|    |    must be ready to be called to the helicopter floor and then
|    |    wait for the patient to be transported.
|    |
|    +- Helicopter allocation floor [CO:4107-7] - (Service)
|    |    This object defines the floor, were the lift shall wait for
|    |    the helicopter's crew. Usually an allocation time is
|    |    defined as a final timeout.
|    |
|    +- Helicopter standby floor [CO:4107-8] - (Service)
|    |    This object defines the floor, were the lift shall be
|    |    standby in order for being called to the actual helicopter
|    |    floor.
|    |
|    +- High priority call helicopter allocation time [CO:4113-11]
|       - (Service)
|         This object defines the dwell or allocation time used by
|         the lift after having stopped because of a high priority
|         landing call at the helicopter floor.
|
+- Docking Service Operation
|    |
|    +- Docking Service Operation usage [CO:4415-1] - (Setup)
|    |    This object defines if the lift shall feature the docking
|    |    service operation, used to level the lift to a truck bed,
|    |    with the doors being open.
|    |
|    +- Docking service workspace [CO:4416] - (Service)
|         This object hold the docking service workspace in
|         millimeter per floor. This is the distance the car can
|         travel upwards from the floor level position in order to
|         match the level of a truck bed.
|
+- Rarely used…
     |
     +- Elevator Operator Mode
     |    |
     |    +- Elevator Operator Mode [CO:4207] - (Service)
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```
                                |         This object defines if the lift can be turned to
                                |         Elevator Operator mode, sometimes also called Lift
                                |         Attended mode, were an assistant (lift boy/girl) is
                                |         controlling the lift, instead of the passengers,
                                |         entering their destinations themselves.
                                |
                                +- Security Door Opening
                                |    |
                                |    +- Security Door Opening usage [CO:41C5-1] - (Setup)
                                |    |    This object activates a feature that keep the doors
                                |    |    closed, when arriving at a floor by means of a car
                                |    |    call. Which doors shall be kept closed, can be defined
                                |    |    in a dedicated door table. To open the door, the
                                |    |    passenger is in need to first press the corresponding
                                |    |    car call button again and then has an adjustable time
                                |    |    span granted to open the door via the door-open
                                |    |    button. In that time span, the door-open-button
                                |    |    acknowledge signal is turned on.
                                |    |
                                |    +- Security Door Opening Table [CO:41C6] - (Setup)
                                |    |    This object activates a feature that keep the doors
                                |    |    closed, when arriving at a floor by means of a car
                                |    |    call. Which doors shall be kept closed, can be defined
                                |    |    in a dedicated door table. To open the door, the
                                |    |    passenger is in need to first press the corresponding
                                |    |    car call button again and then has an adjustable time
                                |    |    span granted to open the door via the door-open
                                |    |    button. In that time span, the door-open-button
                                |    |    acknowledge signal is turned on.
                                |    |
                                |    +- Security Door Opening Time [CO:41C5-2] - (Service)
                                |         For the secure door opening feature, this object
                                |         defines the time granted to the passenger, for secure
                                |         door opening. To open the door, the passenger must
                                |         first press the corresponding call button again and
                                |         then has this adjustable time period to open the door
                                |         via the door opening button.
                                |
                                +- Smart Shaft Light Management
                                     |
                                     +- Smart Shaft Light Management [CO:41FB-1] - (Setup)
                                     |    The lift controller can turn on/off the shaft light on
                                     |    demand, for example when Fire Brigade operation mode
                                     |    has been requested. For that an output for controlling
                                     |    the shaft light impulse relay and an input for sensing
                                     |    the status of the impulse relay is required.
                                     |
                                     +- Smart Shaft Light Timeout (manual) [CO:41FB-2] -
                                        (Service)
                                          If the shaft light has been activated manually, by
                                          means of operating the impulse relay powering the
                                          lights, the lift controller can turn the light off
                                          again, if no reason, like Maintenance or Inspection or
                                          Extra Door Supervision or Fire Brigade operation is
                                          pending.

- Doors
    |
    +- Count of car/cabin doors [CO:4003] - (on site only) - (Setup)
    |    The count of car/cabin doors of the lift.
    |
    +- Landing Door Tables
    |    |
    |    +- Landing Door Table 1 (Default) [CO:400B] - (Setup)
    |    |    This object holds the table declaring all landing doors. (Door table 1)
    |    |
    |    +- Landing Door Table 2 [CO:400C] - (Setup)
    |    |    This object holds the second alternate table declaring all landing doors. (Door
    |    |    table 2)
    |    |
    |    +- Landing Door Table 3 [CO:400D] - (Setup)
    |    |    This object holds the third alternate table declaring all landing doors. (Door table
```

```
|    |    3)
|    |
|    +- Landing Door Table 4 [CO:400E] - (Setup)
|    |    This object holds the fourth alternate table declaring all landing doors. (Door
|    |    table 4)
|    |
|    +- Swing/Manual Door Table [CO:400F] - (Setup)
|         This object holds the table declaring swing door exceptions for generally as
|         automatic door defined landing doors. This table is rarely used.
|
+- Door Properties
|    |
|    +- Door A
|    |    |
|    |    +- Type of Door A [CO:4005-1] - (on site only) - (Setup)
|    |    |    The type of each of the lift doors, like 'Automatic car door & landing door'.
|    |    |    This object defines only the mechanical type of the door not the way it is
|    |    |    controlled.
|    |    |
|    |    +- Door limit switches & signals
|    |    |    |
|    |    |    +- Door limit switch 'opened' [CO:4006-1] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully opened'.
|    |    |    |
|    |    |    +- Door limit switch 'closed' [CO:4007-1] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully closed'.
|    |    |    |
|    |    |    +- Door drive at limit switch 'opened' [CO:4017-1] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'opened' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- Door drive at limit switch 'closed' [CO:4018-1] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'closed' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Car door safely closed position switches [CO:4039-1] - (Setup)
|    |    |         |    In order to comply with the EN81-20, some doors provide a separate
|    |    |         |    position switch, signalling that the car door is safely
|    |    |         |    (mechanically) closed. This signal is used to ensure that the lift
|    |    |         |    can be safely driven in car door bypass operation.
|    |    |         |
|    |    |         +- Door signals reversal time [CO:4091-1] - (Service)
|    |    |         |    This object defines the minimum time span for reversing the door open
|    |    |         |    and close signals.
|    |    |         |
|    |    |         +- Door close signal afterrun on opening [CO:4090-1] - (Service)
|    |    |              This object defines if the door close signal shall be kept on for a
|    |    |              short timespan, when the doors start to open. Some door solutions
|    |    |              involving car door locking mechanism required this behaviour.
|    |    |
|    |    +- Door opening time span [CO:4123-1] - (Service)
|    |    |    This object defines the time span the door needs usually to open. This time is
|    |    |    used if the limit switch does not signal the door to be opened or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- Door closing time span [CO:4172-1] - (Service)
|    |    |    This object defines the time span the door need usually to close. This time is
|    |    |    used if the limit switch does not signal the door to be closed or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Door locking time span [CO:4174-1] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to lock the
|    |         |    landing door mechanically.
|    |         |
```

```
|    |         +- Door unlocking time span [CO:4173-1] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to unlock the
|    |         |    landing door mechanically.
|    |         |
|    |         +- Door lock engage delay [CO:4069-1] - (Service)
|    |         |    This object defines the delay time between the door lock policy being
|    |         |    fulfilled (typically the landing door being closed) and the door lock
|    |         |    output (magnet) being engaged.
|    |         |
|    |         +- Door lock dropping delay [CO:406E-1] - (Service)
|    |         |    This object defines the delay time between the moment the door lock output
|    |         |    (magnet) could be released and the output really dropping the power. This
|    |         |    might be useful if the mechanics of the door require the magnet being
|    |         |    dropped belated, while the car door is already opening.
|    |         |
|    |         +- More…
|    |              |
|    |              +- Close door A at idle [CO:4009-1] - (Service)
|    |              |    Use this object to define the time span for closing the lift doors
|    |              |    automatically, if no load, dwell or allocation time is running.
|    |              |
|    |              +- Close door at idle after last car call [CO:4093-1] - (Service)
|    |              |    Use this object to define if after the last car call the dwell time
|    |              |    or idle time shall close the door.
|    |              |
|    |              +- Open door before unlocking [CO:406F-1] - (Service)
|    |              |    This object defines if the automatic car door shall and can be
|    |              |    opened, before the landing door has been unlocked, usually via a cam
|    |              |    lock magnet.
|    |              |
|    |              +- Much more…
|    |                   |
|    |                   +- Safety light curtain usage [CO:403A-1] - (on site only) -
|    |                   |  (Setup)
|    |                   |    This object defines if the cabin/car features safety light
|    |                   |    curtains. Those safety light curtains may be used instead of
|    |                   |    car/cabin doors on older lifts having swing/manual doors.
|    |                   |
|    |                   +- Finger protector timeout [CO:403B-1] - (Service)
|    |                        This object defines the timeout for a permanent active finger
|    |                        protector, before the door will start to re-close again
|    |                        automatically.
|    |
|    +- Door B
|    |    |
|    |    +- Type of Door B [CO:4005-2] - (on site only) - (Setup)
|    |    |    The type of each of the lift doors, like 'Automatic car door & landing door'.
|    |    |    This object defines only the mechanical type of the door not the way it is
|    |    |    controlled.
|    |    |
|    |    +- Door limit switches & signals
|    |    |    |
|    |    |    +- Door limit switch 'opened' [CO:4006-2] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully opened'.
|    |    |    |
|    |    |    +- Door limit switch 'closed' [CO:4007-2] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully closed'.
|    |    |    |
|    |    |    +- Door drive at limit switch 'opened' [CO:4017-2] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'opened' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- Door drive at limit switch 'closed' [CO:4018-2] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'closed' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- More…
|    |    |         |
```

```
|    |    |         +- Car door safely closed position switches [CO:4039-2] - (Setup)
|    |    |         |    In order to comply with the EN81-20, some doors provide a separate
|    |    |         |    position switch, signalling that the car door is safely
|    |    |         |    (mechanically) closed. This signal is used to ensure that the lift
|    |    |         |    can be safely driven in car door bypass operation.
|    |    |         |
|    |    |         +- Door signals reversal time [CO:4091-2] - (Service)
|    |    |         |    This object defines the minimum time span for reversing the door open
|    |    |         |    and close signals.
|    |    |         |
|    |    |         +- Door close signal afterrun on opening [CO:4090-2] - (Service)
|    |    |              This object defines if the door close signal shall be kept on for a
|    |    |              short timespan, when the doors start to open. Some door solutions
|    |    |              involving car door locking mechanism required this behaviour.
|    |    |
|    |    +- Door opening time span [CO:4123-2] - (Service)
|    |    |    This object defines the time span the door needs usually to open. This time is
|    |    |    used if the limit switch does not signal the door to be opened or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- Door closing time span [CO:4172-2] - (Service)
|    |    |    This object defines the time span the door need usually to close. This time is
|    |    |    used if the limit switch does not signal the door to be closed or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Door locking time span [CO:4174-2] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to lock the
|    |         |    landing door mechanically.
|    |         |
|    |         +- Door unlocking time span [CO:4173-2] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to unlock the
|    |         |    landing door mechanically.
|    |         |
|    |         +- Door lock engage delay [CO:4069-2] - (Service)
|    |         |    This object defines the delay time between the door lock policy being
|    |         |    fulfilled (typically the landing door being closed) and the door lock
|    |         |    output (magnet) being engaged.
|    |         |
|    |         +- Door lock dropping delay [CO:406E-2] - (Service)
|    |         |    This object defines the delay time between the moment the door lock output
|    |         |    (magnet) could be released and the output really dropping the power. This
|    |         |    might be useful if the mechanics of the door require the magnet being
|    |         |    dropped belated, while the car door is already opening.
|    |         |
|    |         +- More…
|    |              |
|    |              +- Close door B at idle [CO:4009-2] - (Service)
|    |              |    Use this object to define the time span for closing the lift doors
|    |              |    automatically, if no load, dwell or allocation time is running.
|    |              |
|    |              +- Close door at idle after last car call [CO:4093-2] - (Service)
|    |              |    Use this object to define if after the last car call the dwell time
|    |              |    or idle time shall close the door.
|    |              |
|    |              +- Open door before unlocking [CO:406F-2] - (Service)
|    |              |    This object defines if the automatic car door shall and can be
|    |              |    opened, before the landing door has been unlocked, usually via a cam
|    |              |    lock magnet.
|    |              |
|    |              +- Much more…
|    |                   |
|    |                   +- Safety light curtain usage [CO:403A-2] - (on site only) -
|    |                   |  (Setup)
|    |                   |    This object defines if the cabin/car features safety light
|    |                   |    curtains. Those safety light curtains may be used instead of
|    |                   |    car/cabin doors on older lifts having swing/manual doors.
|    |                   |
|    |                   +- Finger protector timeout [CO:403B-2] - (Service)
|    |                        This object defines the timeout for a permanent active finger
|    |                        protector, before the door will start to re-close again
```

```
|    |                       automatically.
|    |
|    +- Door C
|    |    |
|    |    +- Type of Door C [CO:4005-3] - (on site only) - (Setup)
|    |    |    The type of each of the lift doors, like 'Automatic car door & landing door'.
|    |    |    This object defines only the mechanical type of the door not the way it is
|    |    |    controlled.
|    |    |
|    |    +- Door limit switches & signals
|    |    |    |
|    |    |    +- Door limit switch 'opened' [CO:4006-3] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully opened'.
|    |    |    |
|    |    |    +- Door limit switch 'closed' [CO:4007-3] - (Setup)
|    |    |    |    This object defines if the door unit has limit switch information,
|    |    |    |    signaling if the door has been 'fully closed'.
|    |    |    |
|    |    |    +- Door drive at limit switch 'opened' [CO:4017-3] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'opened' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- Door drive at limit switch 'closed' [CO:4018-3] - (Setup)
|    |    |    |    This objects defines the behaviour of the door drive, if the limit switch
|    |    |    |    'closed' has been reached. The door drive may be turned off at the limit
|    |    |    |    switch or kept being turned on.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Car door safely closed position switches [CO:4039-3] - (Setup)
|    |    |         |    In order to comply with the EN81-20, some doors provide a separate
|    |    |         |    position switch, signalling that the car door is safely
|    |    |         |    (mechanically) closed. This signal is used to ensure that the lift
|    |    |         |    can be safely driven in car door bypass operation.
|    |    |         |
|    |    |         +- Door signals reversal time [CO:4091-3] - (Service)
|    |    |         |    This object defines the minimum time span for reversing the door open
|    |    |         |    and close signals.
|    |    |         |
|    |    |         +- Door close signal afterrun on opening [CO:4090-3] - (Service)
|    |    |              This object defines if the door close signal shall be kept on for a
|    |    |              short timespan, when the doors start to open. Some door solutions
|    |    |              involving car door locking mechanism required this behaviour.
|    |    |
|    |    +- Door opening time span [CO:4123-3] - (Service)
|    |    |    This object defines the time span the door needs usually to open. This time is
|    |    |    used if the limit switch does not signal the door to be opened or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- Door closing time span [CO:4172-3] - (Service)
|    |    |    This object defines the time span the door need usually to close. This time is
|    |    |    used if the limit switch does not signal the door to be closed or the door has
|    |    |    no limit switches at all.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Door locking time span [CO:4174-3] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to lock the
|    |         |    landing door mechanically.
|    |         |
|    |         +- Door unlocking time span [CO:4173-3] - (Service)
|    |         |    This object defines the time span the door/cam lock needs to unlock the
|    |         |    landing door mechanically.
|    |         |
|    |         +- Door lock engage delay [CO:4069-3] - (Service)
|    |         |    This object defines the delay time between the door lock policy being
|    |         |    fulfilled (typically the landing door being closed) and the door lock
|    |         |    output (magnet) being engaged.
|    |         |
|    |         +- Door lock dropping delay [CO:406E-3] - (Service)
```

```
|    |         |    This object defines the delay time between the moment the door lock output
|    |         |    (magnet) could be released and the output really dropping the power. This
|    |         |    might be useful if the mechanics of the door require the magnet being
|    |         |    dropped belated, while the car door is already opening.
|    |         |
|    |         +- More…
|    |              |
|    |              +- Close door C at idle [CO:4009-3] - (Service)
|    |              |    Use this object to define the time span for closing the lift doors
|    |              |    automatically, if no load, dwell or allocation time is running.
|    |              |
|    |              +- Close door at idle after last car call [CO:4093-3] - (Service)
|    |              |    Use this object to define if after the last car call the dwell time
|    |              |    or idle time shall close the door.
|    |              |
|    |              +- Open door before unlocking [CO:406F-3] - (Service)
|    |              |    This object defines if the automatic car door shall and can be
|    |              |    opened, before the landing door has been unlocked, usually via a cam
|    |              |    lock magnet.
|    |              |
|    |              +- Much more…
|    |                   |
|    |                   +- Safety light curtain usage [CO:403A-3] - (on site only) -
|    |                   |  (Setup)
|    |                   |    This object defines if the cabin/car features safety light
|    |                   |    curtains. Those safety light curtains may be used instead of
|    |                   |    car/cabin doors on older lifts having swing/manual doors.
|    |                   |
|    |                   +- Finger protector timeout [CO:403B-3] - (Service)
|    |                        This object defines the timeout for a permanent active finger
|    |                        protector, before the door will start to re-close again
|    |                        automatically.
|    |
|    +- Door D
|         |
|         +- Type of Door D [CO:4005-4] - (on site only) - (Setup)
|         |    The type of each of the lift doors, like 'Automatic car door & landing door'.
|         |    This object defines only the mechanical type of the door not the way it is
|         |    controlled.
|         |
|         +- Door limit switches & signals
|         |    |
|         |    +- Door limit switch 'opened' [CO:4006-4] - (Setup)
|         |    |    This object defines if the door unit has limit switch information,
|         |    |    signaling if the door has been 'fully opened'.
|         |    |
|         |    +- Door limit switch 'closed' [CO:4007-4] - (Setup)
|         |    |    This object defines if the door unit has limit switch information,
|         |    |    signaling if the door has been 'fully closed'.
|         |    |
|         |    +- Door drive at limit switch 'opened' [CO:4017-4] - (Setup)
|         |    |    This objects defines the behaviour of the door drive, if the limit switch
|         |    |    'opened' has been reached. The door drive may be turned off at the limit
|         |    |    switch or kept being turned on.
|         |    |
|         |    +- Door drive at limit switch 'closed' [CO:4018-4] - (Setup)
|         |    |    This objects defines the behaviour of the door drive, if the limit switch
|         |    |    'closed' has been reached. The door drive may be turned off at the limit
|         |    |    switch or kept being turned on.
|         |    |
|         |    +- More…
|         |         |
|         |         +- Car door safely closed position switches [CO:4039-4] - (Setup)
|         |         |    In order to comply with the EN81-20, some doors provide a separate
|         |         |    position switch, signalling that the car door is safely
|         |         |    (mechanically) closed. This signal is used to ensure that the lift
|         |         |    can be safely driven in car door bypass operation.
|         |         |
|         |         +- Door signals reversal time [CO:4091-4] - (Service)
|         |         |    This object defines the minimum time span for reversing the door open
|         |         |    and close signals.
|         |         |
```

```
|         |         +- Door close signal afterrun on opening [CO:4090-4] - (Service)
|         |              This object defines if the door close signal shall be kept on for a
|         |              short timespan, when the doors start to open. Some door solutions
|         |              involving car door locking mechanism required this behaviour.
|         |
|         +- Door opening time span [CO:4123-4] - (Service)
|         |    This object defines the time span the door needs usually to open. This time is
|         |    used if the limit switch does not signal the door to be opened or the door has
|         |    no limit switches at all.
|         |
|         +- Door closing time span [CO:4172-4] - (Service)
|         |    This object defines the time span the door need usually to close. This time is
|         |    used if the limit switch does not signal the door to be closed or the door has
|         |    no limit switches at all.
|         |
|         +- More…
|              |
|              +- Door locking time span [CO:4174-4] - (Service)
|              |    This object defines the time span the door/cam lock needs to lock the
|              |    landing door mechanically.
|              |
|              +- Door unlocking time span [CO:4173-4] - (Service)
|              |    This object defines the time span the door/cam lock needs to unlock the
|              |    landing door mechanically.
|              |
|              +- Door lock engage delay [CO:4069-4] - (Service)
|              |    This object defines the delay time between the door lock policy being
|              |    fulfilled (typically the landing door being closed) and the door lock
|              |    output (magnet) being engaged.
|              |
|              +- Door lock dropping delay [CO:406E-4] - (Service)
|              |    This object defines the delay time between the moment the door lock output
|              |    (magnet) could be released and the output really dropping the power. This
|              |    might be useful if the mechanics of the door require the magnet being
|              |    dropped belated, while the car door is already opening.
|              |
|              +- More…
|                   |
|                   +- Close door D at idle [CO:4009-4] - (Service)
|                   |    Use this object to define the time span for closing the lift doors
|                   |    automatically, if no load, dwell or allocation time is running.
|                   |
|                   +- Close door at idle after last car call [CO:4093-4] - (Service)
|                   |    Use this object to define if after the last car call the dwell time
|                   |    or idle time shall close the door.
|                   |
|                   +- Open door before unlocking [CO:406F-4] - (Service)
|                   |    This object defines if the automatic car door shall and can be
|                   |    opened, before the landing door has been unlocked, usually via a cam
|                   |    lock magnet.
|                   |
|                   +- Much more…
|                        |
|                        +- Safety light curtain usage [CO:403A-4] - (on site only) -
|                        |  (Setup)
|                        |    This object defines if the cabin/car features safety light
|                        |    curtains. Those safety light curtains may be used instead of
|                        |    car/cabin doors on older lifts having swing/manual doors.
|                        |
|                        +- Finger protector timeout [CO:403B-4] - (Service)
|                             This object defines the timeout for a permanent active finger
|                             protector, before the door will start to re-close again
|                             automatically.
|
+- Door Options & Times
|    |
|    +- Door Times
|    |    |
|    |    +- Dwell time values
|    |    |    |
|    |    |    +- Car call dwell time [CO:4113-1] - (Service)
|    |    |    |    This object defines the dwell time used by the lift after having stopped
```

```
|    |    |    |    because of a car call.
|    |    |    |
|    |    |    +- Landing call dwell time [CO:4113-2] - (Service)
|    |    |    |    This object defines the dwell time used by the lift after having stopped
|    |    |    |    because of a landing call.
|    |    |    |
|    |    |    +- Landing call lobby floor dwell time [CO:4113-3] - (Service)
|    |    |    |    This object defines the dwell time used by the lift after having stopped
|    |    |    |    at the lobby floor because of a landing call.
|    |    |    |
|    |    |    +- Priority & guest call dwell times
|    |    |    |    |
|    |    |    |    +- Low priority call dwell time [CO:4113-4] - (Service)
|    |    |    |    |    This object defines the dwell time used by the lift after having
|    |    |    |    |    stopped because of a low priority landing call.
|    |    |    |    |
|    |    |    |    +- High priority call dwell time [CO:4113-5] - (Service)
|    |    |    |    |    This object defines the dwell time used by the lift after having
|    |    |    |    |    stopped because of a high priority landing call.
|    |    |    |    |
|    |    |    |    +- Guest call dwell time [CO:4113-6] - (Service)
|    |    |    |         This object defines the dwell time used by the lift after having
|    |    |    |         stopped because of a guest landing call.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Cancel dwell time by car call [CO:4126] - (Service)
|    |    |         |    This object defines if the current dwell time should be cancelled by
|    |    |         |    a car call entered in the cabin.
|    |    |         |
|    |    |         +- Usage of barrier free door dwell times [CO:410D] - (Service)
|    |    |         |    This object defines how barrier free door dwell times (for passengers
|    |    |         |    using wheel chairs) are used.
|    |    |         |
|    |    |         +- Car call barrier free dwell time extension [CO:4113-7] - (Service)
|    |    |         |    This object defines the dwell time extension used by the lift after
|    |    |         |    having stopped because of a low priority car call, if being operated
|    |    |         |    in a 'barrier free' operating mode, typically for supporting wheel
|    |    |         |    chair passengers.
|    |    |         |
|    |    |         +- Landing call barrier free dwell time extension [CO:4113-8] -
|    |    |         |  (Service)
|    |    |         |    This object defines the dwell time extension used by the lift after
|    |    |         |    having stopped because of an extra landing call, if being operated in
|    |    |         |    a 'barrier free' operating mode, typically for supporting wheel chair
|    |    |         |    passengers.
|    |    |         |
|    |    |         +- Even more…
|    |    |              |
|    |    |              +- Door detector dwell time [CO:4113-9] - (Service)
|    |    |              |    This object defines the dwell time used if a door was re-opened
|    |    |              |    triggered by the door detector or force detector.
|    |    |              |
|    |    |              +- Wheel chair door open button dwell time [CO:4113-10] - (Service)
|    |    |                   This object defines the dwell time, used if a door was re-opened
|    |    |                   triggered by the door open button for wheel chairs. This button
|    |    |                   is usually using a longer dwell time, compared to the regular
|    |    |                   door open button.
|    |    |
|    |    +- Load time values & options
|    |    |    |
|    |    |    +- Load time span 1 [CO:4128] - (Service)
|    |    |    |    This object defines the time span of the load time, triggered by the
|    |    |    |    signal 'Load Time 1'.
|    |    |    |
|    |    |    +- Load time span 2 [CO:4129] - (Service)
|    |    |    |    This object defines the time span of the load time, triggered by the
|    |    |    |    signal 'Load Time 2'.
|    |    |    |
|    |    |    +- Load Time Activation & Deactivation [CO:4127] - (Service)
|    |    |    |    This object defines how the Load Time is activated & deactivated. Usually
|    |    |    |    the Load Time is activated by an impulse and deactivated by entering a car
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|    |    |    |    call. Instead you might want the car calls rendered non-operational and
|    |    |    |    the Load Time deactivated with another impulse of your card reader. Or you
|    |    |    |    simply want to use a classic key switch with a static signal.
|    |    |    |
|    |    |    +- Cancel car calls on load time activation [CO:412A] - (Service)
|    |    |    |    This object defines if the pending car calls should be cancelled, if a
|    |    |    |    load time operation has been activated.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Cancel landing calls on load time activation [CO:412B] - (Service)
|    |    |         |    This object defines if the pending landing calls should be canceled,
|    |    |         |    if a load time operation has been activated.
|    |    |         |
|    |    |         +- Load Time Warning Blinker [CO:42E1] - (Service)
|    |    |              This object defines that the load time acknowledge output shall
|    |    |              blink, if the remaining load time falls under the given value. For
|    |    |              example if you load time is 5 minutes and you setup this parameter to
|    |    |              30 seconds, the output will start to blink, if the remaining load
|    |    |              time is less or equal to 30 seconds.
|    |    |
|    |    +- Pre-Warning & Nudging Times
|    |    |    |
|    |    |    +- Door Preclose Warning [CO:4019] - (Service)
|    |    |    |    Use this object to warn passengers for the given time span, before the
|    |    |    |    doors actually start closing, being in normal operation mode, for instance
|    |    |    |    if the 'passengers' are fork-lift trucks.
|    |    |    |
|    |    |    +- Door Nudging Preclose Warning [CO:4020] - (Service)
|    |    |    |    Use this object to warn passengers for the given time span, before the
|    |    |    |    doors actually start closing, being in nudging operation mode, ignoring
|    |    |    |    the light curtain and motion detector.
|    |    |    |
|    |    |    +- Door Preopen Warning [CO:4021] - (Service)
|    |    |    |    Use this object to warn passengers for the given time span, before the
|    |    |    |    doors actually start to open, being in normal operation mode, for instance
|    |    |    |    if the 'passengers' are fork-lift trucks.
|    |    |    |
|    |    |    +- Door Close Nudging Timer [CO:4023] - (Service)
|    |    |    |    Use this object to start closing the door in nudging operation, if the
|    |    |    |    light curtain is continuously interrupted for the given time.
|    |    |    |
|    |    |    +- Signal 'Please close doors'
|    |    |         |
|    |    |         +- Usage of signal 'Please close doors' [CO:403C]
|    |    |         |    This object defines if the lift shall generate the signal 'Please
|    |    |         |    close doors', usually used for manually operated doors.
|    |    |         |
|    |    |         +- Timer 'Please close doors' signal [CO:402F] - (Service)
|    |    |         |    This object defines the time the (swing/manual) door has to be open,
|    |    |         |    before the 'Please close doors' signal indicates to close the doors
|    |    |         |    manually. This function is also called 'Doorbell' on older lift
|    |    |         |    installations.
|    |    |         |
|    |    |         +- Signal 'Please close doors' pulse length [CO:407A] - (Service)
|    |    |         |    This object defines the pulse length used to indicate to close the
|    |    |         |    door manually. This function is also called 'Doorbell' on older lift
|    |    |         |    installations. So this time defines how long the door bell is
|    |    |         |    indicated and then paused again before itis turned on again.
|    |    |         |
|    |    |         +- Policy 'Please close doors' signal [CO:4030] - (Service)
|    |    |              This object defines if calls must be pending in order to trigger the
|    |    |              'Please close doors' signal after the timer has expired, to indicate
|    |    |              to close the doors manually. This function is also called 'Doorbell'
|    |    |              on older lift installations.
|    |    |
|    |    +- Door motor idle off timer
|    |         |
|    |         +- Door motor idle off time, when closed [CO:402E] - (Service)
|    |         |    This object defines when to turn off the door motor/drive, when the door
|    |         |    has been closed, after the lift is idle for the given time.
|    |    |    |
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|    |         +- Door motor idle off time, when opened [CO:4092] - (Service)
|    |         |    This object defines when to turn off the door motor/drive, when the door
|    |         |    has been opened, after the lift is idle for the given time.
|    |         |
|    |         +- Door unlock motor idle off time [CO:4203] - (Service)
|    |         |    This object defines when to turn off the door unlock motor signal, when
|    |         |    the lift is idle. This signal is usually used to power a landing/swing
|    |         |    door unlocking device, mounted at the landings. When the lift is idle, it
|    |         |    might be turned off, in order to not burn it.
|    |         |
|    |         +- Door unlock motor maximum runtime [CO:4099] - (Service)
|    |              This object defines the maximum runtime of the door unlock motor. Normally
|    |              you define an idle time, that turns off the unlock motor, when the manual
|    |              door has been closed again. In order to not burn the motor, you can also
|    |              define an absolute maximum runtime, that will turn off the motor, even if
|    |              the manual landing door fails to close again.
|    |
|    +- Advance Door Opening
|    |    |
|    |    +- Advance Door Opening [CO:4143] - (Setup)
|    |    |    This object defines if the doors shall open while the lift is still approaching
|    |    |    to a floor. It requires a safety circuit (SZ). The door will open, if the car
|    |    |    is at the door zone with v<=0.8 m/s (157 ft/min). > Consider the maintenance
|    |    |    function 'SZ-Test Operation' too.
|    |    |
|    |    +- Advance door opening velocity [CO:4164] - (Setup)
|    |    |    This object defines the maximum allowed velocity to open the doors while
|    |    |    approaching to the floor. The value shall be given in multiples of 1 mm/s.
|    |    |
|    |    +- Keep retiring cam locked until stop [CO:4177] - (Setup)
|    |         This object defines if the door's retiring cam shall be kept in the locked
|    |         position until the lift has stopped at the floor level, even if 'Advance Door
|    |         Opening' is activated. This might only be useful for some old manual door types
|    |         (swing doors/gates).
|    |
|    +- Door Detectors & Buttons
|    |    |
|    |    +- Door Close Button Enabling [CO:4008] - (Service)
|    |    |    Use this object to define the 'Door Close Button' being enabled after the door
|    |    |    has fully opened or already when the door is opening.
|    |    |
|    |    +- Motion detector on door opening [CO:4124-1] - (Service)
|    |    |    This object defines the delay for enabling the motion detector when the door is
|    |    |    opening.
|    |    |
|    |    +- Motion detector on door closing [CO:4124-2] - (Service)
|    |    |    This object defines the delay for disabling the motion detector when the door
|    |    |    is closing.
|    |    |
|    |    +- Motion detector general timeout [CO:4124-3] - (Service)
|    |    |    This object defines the timeout used if the door detector is triggered again
|    |    |    and again and blocks the lift on that floor.
|    |    |
|    |    +- More…
|    |         |
|    |         +- Door light curtain
|    |         |    |
|    |         |    +- Light curtain permanently interrupted time [CO:406A] - (Service)
|    |         |    |    This object defines the time span that the light curtain has to be
|    |         |    |    permanently interrupted in order to generate a fault item in the log
|    |         |    |    book.
|    |         |    |
|    |         |    +- Light curtain reopens a fully closed door [CO:409C] - (Setup)
|    |         |         This object defines if triggering the light barrier shall reopen a
|    |         |         fully closed door. Usually this is not what you want but if the car
|    |         |         door in question is not a real door but more a fence or yellow/black
|    |         |         stripped frame, that is just operated like a door, your actually want
|    |         |         it to move back, when the light curtain has been tripped.
|    |         |
|    |         +- Door open/close button indicators (lights) [CO:419C] - (Service)
|    |         |    This object defines if the lift shall light up the door open and close
|    |         |    buttons in normal operation. Keep in mind, that they are in need to be
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|    |         |    wired for that purpose. In Fire Service operation, they will always be lit
|    |         |    up, independent from that option. The output function in question is
|    |         |    usually Special Functions > Request Door open/close.
|    |         |
|    |         +- Continuously pressed open button activates load time [CO:419D] - (Service)
|    |         |    Continuously pressed open button activates load time
|    |         |
|    |         +- Keep lift in operation, if the light curtain is faulty [CO:41BD] -
|    |            (Service)
|    |              This object defines, if the lift shall be kept operational, if the door's
|    |              light curtain has indicated to be defective. In that case the door will be
|    |              commanded to operate in nudging operation mode, using reduced force and an
|    |              acoustic indication.
|    |
|    +- Door Lock Activation Prerequisite [CO:4022] - (Setup)
|    |    Use this object to select the safety chain signal, that must be closed, in order to
|    |    activate the door lock signal - even if the door does not have a physical door lock
|    |    magnet. If this value is set to 'automatic', the program will select the appropriate
|    |    signal depending on the door type.
|    |
|    +- More…
|         |
|         +- Door reopenings by a landing call [CO:4125] - (Service)
|         |    This object defines the maximum count of door re-openings, caused by a landing
|         |    call on the very same floor and door side.
|         |
|         +- Doors being not automatically closed [CO:4122] - (Service)
|         |    This object holds the table declaring the doors that should not automatically
|         |    been closed, if the lift is being idle.
|         |
|         +- Swing door opener
|         |    |
|         |    +- Swing door opener delay time [CO:4037] - (Service)
|         |    |    This object defines when to turn on the swing door opener, after the door
|         |    |    has been unlocked, typically after the lift has arrived.
|         |    |
|         |    +- Swing door opener runtime [CO:4038] - (Service)
|         |    |    This object defines the runtime of the swing door opener, required to open
|         |    |    the swing door. Basically it defines how long the output, that activates
|         |    |    the swing door opener, shall be activated as those units don't have a
|         |    |    feedback signal, indicating when the swing door has been fully opened.
|         |    |
|         |    +- Swing door opener on arrival [CO:4302] - (Service)
|         |    |    This object defines if the swing door opener shall be triggered
|         |    |    automatically, when the lift arrives at a floor.
|         |    |
|         |    +- Cancel swing door opener runtime by car call [CO:4303] - (Service)
|         |    |    This option defines if the swing door opener (if activated) shall be
|         |    |    turned off, when any car call is pressed.
|         |    |
|         |    +- More…
|         |         |
|         |         +- Trigger swing door opener by call button [CO:430C] - (Service)
|         |         |    This option defines if the swing door opener shall be activated, if a
|         |         |    car or landing call is pressed on the current floor.
|         |         |
|         |         +- Activate swing door opener on closing by door detector [CO:42C2] -
|         |            (Service)
|         |              This option defines if the swing door opener shall be activated
|         |              again, if a door detector, like a light curtain, is tripped, when the
|         |              door is closing. If the landing door is already closed, by means of
|         |              the (S) contact, the swing door opener will not be activated again.
|         |
|         +- Interlocked door operation
|         |    |
|         |    +- Interlocked door operation [CO:4304] - (on site only) - (Setup)
|         |    |    This option defines if the doors shall operate interlocked. That means
|         |    |    that even the lift has several car/cabin doors, only one door shall be
|         |    |    unlocked/opened at the very same time. Keep in mind that this requires the
|         |    |    cam lock magnet to have 100% duty cycle, if the door has one.
|         |    |
|         |    +- Interlocked doors table (mutual exclude) [CO:406D] - (Service)
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|         |         This object holds the floors were the doors shall operate in interlocked
|         |         (mutual exclude) operation mode.
|         |
|         +- More…
|              |
|              +- Keep retiring cam locked outside floor level [CO:4176] - (Setup)
|              |    This object defines if the door's retiring cam shall be kept in the locked
|              |    position if the lift has stopped not at the floor level but in the door
|              |    zone. This might only be useful for some old manual door types (swing
|              |    doors/gates).
|              |
|              +- Keep doors closed if lift does not stop flush [CO:41FE] - (Setup)
|              |    This object defines if the doors shall be kept closed for an adjustable
|              |    time span, if the lift stopped not flush on floor level but still within
|              |    the door zone.
|              |
|              +- Unlock the landing door after the car door has been fully opened [CO:406B]
|              |  - (Setup)
|              |    This object defines if the landing door lock magnet shall be engaged after
|              |    the car/cabin door has been fully opened. Usually the door lock would be
|              |    engaged before the car doors open.
|              |
|              +- Automatic car doors on swing door opening [CO:430D] - (Service)
|              |    This option defines if the automatic car/cabin doors shall open/re-open,
|              |    if the manual landing door or swing door is opened by hand. As the lift
|              |    controller has only one single landing door contact, all of the car doors
|              |    may open then. As the car doors usually stay open after arrival, if having
|              |    manual landing doors, this will usually not be an issue. But for some lift
|              |    installations the customer may requests that the car doors being
|              |    automatically closed, even that the landing doors are manually operated,
|              |    especially when the car doors are mechanically locking the manual/swing
|              |    doors.
|              |
|              +- Much more…
|                   |
|                   +- Disable door open button, if all car calls are blocked [CO:4378] -
|                   |  (Service)
|                   |    This object defines if the door open button shall be blocked anyway,
|                   |    if all the car calls on that very floor are disabled, even if that
|                   |    means that the passenger could not leave the car via any door.
|                   |
|                   +- Do not open doors automatically after arrival [CO:4379] - (on site
|                      only) - (Service)
|                        This object defines if the doors shall stay shut closed, when the
|                        lift arrives at some floor. The doors are then in need to be opened
|                        manually, using the door open/close buttons in the car and at the
|                        landings.
|
+- Door Supervision
     |
     +- Door opening supervision timer [CO:4118] - (Setup)
     |    This object defines the time used for monitoring the doors being opened. This value
     |    is meant to be a timeout and should be long enough. Keep in mind that the door may
     |    need more time to open, if being in 'teaching/learning' operation mode or door
     |    nudging is turned on.
     |
     +- Door closing supervision timer [CO:4119] - (Setup)
     |    This object defines the time used for monitoring the doors being closed. This value
     |    is meant to be a timeout and should be long enough. Keep in mind that the door may
     |    need more time to open, if being in 'teaching/learning' operation mode or door
     |    nudging is turned on.
     |
     +- Door locking supervision timer [CO:411A] - (Setup)
     |    This object defines the time used for monitoring (supervision) the doors being
     |    locked, if requested by the lift application. This value is meant to be a timeout
     |    and should be long enough.
     |
     +- Extra Door Supervision Signals
     |    |
     |    +- Extra Door Supervision Signals [CO:4042] - (on site only) - (Setup)
     |    |    This object defines if some doors feature an extra supervision contact,
     |    |    indicating that the door has been opened unattended.
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|    |
|    +- Door Supervision Table [CO:4041] - (on site only) - (Setup)
|    |    This object holds the table declaring which doors feature an extra supervision
|    |    contact, indicating that the door has been opened unattended.
|    |
|    +- Extra Door Supervision Time Span [CO:4048] - (Setup)
|    |    This object defines the time the extra door supervision contacts must be low in
|    |    order to throw a supervision fault event.
|    |
|    +- Extra Door Supervision Contactor Monitoring [CO:4049] - (on site only) -
|    |  (Setup)
|    |    This object defines if a special contactor is monitored, that is used to turn
|    |    off the safety chain power, if one or more of the extra door supervision
|    |    contacts signal, that a door has been opened.
|    |
|    +- More…
|         |
|         +- Emergency electrical operation top distance, if shaft head door
|         |  supervision tripped [CO:4094] - (Setup)
|         |    This object defines the distance to stop before the last floor level
|         |    position, if driving on emergency electrical operation, if the extra door
|         |    supervision, usually used together with a low head or low pit solution,
|         |    has been tripped.
|         |
|         +- Emergency electrical operation bottom distance, if shaft pit door
|         |  supervision tripped [CO:4095] - (Setup)
|         |    This object defines the distance to stop before the last floor level
|         |    position, if driving on emergency electrical operation, if the extra door
|         |    supervision, usually used together with a low head or low pit solution,
|         |    has been tripped.
|         |
|         +- Even more…
|              |
|              +- Extra Door Supervision Landing Contact [CO:4068] - (Setup)
|              |    This object defines if the closed landing door contact shall be used
|              |    to decide, if the extra door supervision contact on the current
|              |    floor, shall be checked as well, before start or not.
|              |
|              +- Flash the hall calls, if tripping extra door supervision [CO:441A] -
|                 (Setup)
|                   This object defines if the landing call lamps shall flash at all
|                   landings, if the Extras Door Supervision function had been tripped.
|
+- More…
     |
     +- Separating door supervision [CO:41A1] - (Service)
     |    This object defines if the car/cabin has a separating door used for goods
     |    transportation. If yes, this door is only allowed to be open, if the car
     |    preference signal has been activated. In normal operation the separating door
     |    has to be always closed. Otherwise it would allow more passengers to step into
     |    the car as allowed. The supervision signal shall be active as long as the door
     |    is closed.
     |
     +- Hidden door contact chain supervision
     |    |
     |    +- Hidden door contact chain supervision [CO:42A5] - (Setup)
     |    |    This is a supervision used for old swing door solutions, typically in
     |    |    Northern Europe. A secondary (hidden) solenoid switch is basically
     |    |    verifying the function of the regularly door contact and has to follow its
     |    |    state changes.
     |    |
     |    +- Hidden door contact chain timeout [CO:42A6] - (Setup)
     |    |    This parameter controls the time span granted to the hidden/secondary door
     |    |    contact to follow the regularly door contact, when the door is opened or
     |    |    closed.
     |    |
     |    +- Emergency stop hidden door contact chain [CO:42A7] - (Setup)
     |         This object defines if the lift shall do an instant emergency stop if the
     |         hidden door contact has been triggered or if the lift shall drive to the
     |         next floor, releasing the passengers.
     |
     +- Limit switch 'closed' bridge detection [CO:4061] - (Setup)
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              |    This object defines if the door 'close' limit switches shall be monitored in
              |    order to detect, if they have been over-bridged. If the door is fully opened,
              |    indicated by the door opening time and door 'open' limit switches and the door
              |    safety chain is opened as well, the door 'close' limit switch must follow and
              |    shall not be operated.
              |
              +- Door light curtain continuously interrupted collective fault timer [CO:41C4] -
              |  (Service)
              |    This object defines the time used to activate the collective fault indicator,
              |    if the door's light curtains are continuously interrupted. Normally after 30
              |    seconds you will get a warning but at some point it might be good to throw a
              |    fault in order to activate the collective fault indicator as well.
              |
              +- Even more…
                   |
                   +- Car door opening supervision [CO:42AA] - (Setup)
                   |    This supervision function makes sure, that a swing door opening is always
                   |    followed by a car door opening, making sure that no passenger is stuck in
                   |    between the landing door and the car door. If the car door opening has not
                   |    been detected, the lift will not process calls. An output function
                   |    'Opening of the car door required' will be activated and a message at the
                   |    lift controllers screen.
                   |
                   +- Attempts to fully open the doors (US-ASME) [CO:405F] - (Service)
                   |    Use this object to define how many attempts to fully open the doors shall
                   |    be done, before the lift would block itself, regarding to US-ASME
                   |    regulations.
                   |
                   +- Attempts to fully close the doors (US-ASME) [CO:405E] - (Service)
                   |    Use this object to define how many attempts to fully close the doors shall
                   |    be done, before the lift would block itself, regarding to US-ASME
                   |    regulations.
                   |
                   +- Maximum number of door closing attempts [CO:425A] - (Service)
                        This object is used to define the maximum number of door closing attempts,
                        before throwing a warning and indicating the output for having a door
                        issue.

- More…
    |
    +- Positioning Unit
    |    |
    |    +- Type of Positioning Unit
    |    |    |
    |    |    +- Encoder type [CO:4250-6] - (on site only) - (Setup)
    |    |    |    This object defines if the encoder is a linearly or rotary encoder.
    |    |    |
    |    |    +- Orientation/direction [CO:4250-1] - (on site only) - (Setup)
    |    |    |    This object defines the mechanical orientation of the encoder to make sure,
    |    |    |    that the position values getting larger with the car/cabin moving upward.
    |    |    |
    |    |    +- Circumference/scale [CO:4250-2] - (on site only) - (Setup)
    |    |    |    This object defines the circumference of the pulley for rotary encoders and for
    |    |    |    linearly encoders the lengths per increment.
    |    |    |
    |    |    +- Position Supervisor Unit (PSU) on/off [CO:42A3] - (Setup)
    |    |    |    This object indicates if the lift installation is featuring a Position
    |    |    |    Supervisor Unit (PSU), ie a secure encoder system.
    |    |
    |    +- Distances & Parameter
    |    |    |
    |    |    +- Shaft pit [CO:4011] - (Setup)
    |    |    |    The height of the shaft pit in millimeter.
    |    |    |
    |    |    +- Shaft head room [CO:4012] - (Setup)
    |    |    |    The height of the shaft headroom in millimeter.
    |    |    |
    |    |    +- Level zone below [CO:4013] - (Service)
    |    |    |    This object holds the length of the level zone below the floor level.
    |    |    |
    |    |    +- Level zone above [CO:4014] - (Service)
    |    |    |    This object holds the length of the level zone above the floor level.
```

```
|    |    |
|    |    +- More Distances…
|    |         |
|    |         +- Door zone below [CO:4015] - (Setup)
|    |         |    This object holds the length of the door zone below the floor level.
|    |         |
|    |         +- Door zone above [CO:4016] - (Setup)
|    |         |    This object holds the length of the door zone above the floor level.
|    |         |
|    |         +- Re-levelling zone below [CO:4025] - (Service)
|    |         |    This object hold the length of the re-levelling zone below the floor
|    |         |    level.
|    |         |
|    |         +- Re-levelling zone above [CO:4024] - (Service)
|    |         |    This object hold the length of the re-levelling zone above the floor
|    |         |    level.
|    |         |
|    |         +- Even more…
|    |              |
|    |              +- Use extended re-leveling zone [CO:402D] - (Service)
|    |              |    This object defines if an extended 're-leveling zone below' shall be
|    |              |    featured, if the doors are closed and the lift is idle.  > Consider
|    |              |    the extended re-leveling zone value [mm] at 'Position & Distances'
|    |              |    too.
|    |              |
|    |              +- Extended Re-levelling zone below [CO:4026] - (Service)
|    |              |    This object hold the length of the extended re-levelling zone below
|    |              |    the floor level used in order to save energy.
|    |              |
|    |              +- Enter car roof operation distance [CO:403D] - (Service)
|    |              |    This object defines the distance to move the car downwards in order
|    |              |    to make it easy to step on the car's roof.
|    |              |
|    |              +- Enter shaft pit operation distance [CO:403E] - (Service)
|    |                   This object defines the distance to move the car upwards in order to
|    |                   make it easy to step into the shaft pit.
|    |
|    +- Floor Level Positions [CO:4010] - (on site only) - (Service)
|    |    This object holds the floor levels in millimeter.
|    |
|    +- Position supervisor unit (PSU)
|    |    |
|    |    +- Commands & Options (PSU)
|    |    |    |
|    |    |    +- Change operating mode (PSU) [CO:42A0] - (on site only) - (Setup)
|    |    |    |    This object holds the current operating mode of the Position Supervisor
|    |    |    |    Unit (PSU). Teaching mode is for setting up the floor positions,
|    |    |    |    configuration mode for adjustments and normal mode (having a valid
|    |    |    |    configuration) is for operating the lift.
|    |    |    |
|    |    |    +- Configure & Teach
|    |    |    |    |
|    |    |    |    +- 1.) Write/configure bottom/top floor value - (on site only)
|    |    |    |    |
|    |    |    |    +- 2.) Write/configure door zone values - (on site only)
|    |    |    |    |
|    |    |    |    +- 3.) Teach top/bottom limits
|    |    |    |    |    |
|    |    |    |    |    +- 1.) Teach top position absolute limit - (on site only)
|    |    |    |    |    |
|    |    |    |    |    +- 2.) Teach bottom position absolute limit - (on site only)
|    |    |    |    |    |
|    |    |    |    |    +- 3.) Limit switch positions (PSU)
|    |    |    |    |         |
|    |    |    |    |         +- Distance final limit switch top [CO:4031] - (Setup)
|    |    |    |    |         |    This object holds the distance of the final limit switch on
|    |    |    |    |         |    top. For the ELGO33CP that is measured from the top
|    |    |    |    |         |    reference point. Other PSU units might measure the value
|    |    |    |    |         |    from the top floor. Anyway the lift controller will show
|    |    |    |    |         |    you the difference from floor level at the bottom of the
|    |    |    |    |         |    dialogue.
|    |    |    |    |         |
```

```
|    |    |    |    |         +- Distance final limit switch bottom [CO:4032] - (Setup)
|    |    |    |    |         |    This object holds the distance of the final limit switch on
|    |    |    |    |         |    bottom. For the ELGO33CP that is measured from the bottom
|    |    |    |    |         |    reference point. Other PSU units might measure the value
|    |    |    |    |         |    from the bottom floor. Anyway the lift controller will show
|    |    |    |    |         |    you the difference from floor level at the bottom of the
|    |    |    |    |         |    dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection limit switch top [CO:4033] - (Setup)
|    |    |    |    |         |    This object holds the distance of the inspection limit
|    |    |    |    |         |    switch on top. For the ELGO33CP that is measured from the
|    |    |    |    |         |    top reference point. Other PSU units might measure the
|    |    |    |    |         |    value from the top floor. Anyway the lift controller will
|    |    |    |    |         |    show you the difference from floor level at the bottom of
|    |    |    |    |         |    the dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection limit switch bottom [CO:4034] - (Setup)
|    |    |    |    |         |    This object holds the distance of the inspection limit
|    |    |    |    |         |    switch on bottom. For the ELGO33CP that is measured from
|    |    |    |    |         |    the bottom reference point. Other PSU units might measure
|    |    |    |    |         |    the value from the bottom floor. Anyway the lift controller
|    |    |    |    |         |    will show you the difference from floor level at the bottom
|    |    |    |    |         |    of the dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection terminal (pre-limit) switches
|    |    |    |    |              |
|    |    |    |    |              +- Distance inspection terminal (pre-limit) switch top
|    |    |    |    |              |  [CO:4033] - (Setup)
|    |    |    |    |              |    This object holds the distance of the inspection limit
|    |    |    |    |              |    switch on top. For the ELGO33CP that is measured from
|    |    |    |    |              |    the top reference point. Other PSU units might measure
|    |    |    |    |              |    the value from the top floor. Anyway the lift
|    |    |    |    |              |    controller will show you the difference from floor
|    |    |    |    |              |    level at the bottom of the dialogue.
|    |    |    |    |              |
|    |    |    |    |              +- Distance inspection terminal (pre-limit) switch bottom
|    |    |    |    |                 [CO:4036] - (Setup)
|    |    |    |    |                   This object holds the distance of the inspection
|    |    |    |    |                   pre-limit switch on bottom. For the ELGO33CP that is
|    |    |    |    |                   measured from the bottom reference point. Other PSU
|    |    |    |    |                   units might measure the value from the bottom floor.
|    |    |    |    |                   Anyway the lift controller will show you the
|    |    |    |    |                   difference from floor level at the bottom of the
|    |    |    |    |                   dialogue.
|    |    |    |    |
|    |    |    |    +- 4.) Teaching Operation
|    |    |    |         |
|    |    |    |         +- 1.) Learning Trip
|    |    |    |         |    |
|    |    |    |         |    +- Manual Learning Trip - (on site only) - (Service)
|    |    |    |         |    |
|    |    |    |         |    +- Teach already learned floor levels to the PSU - (on site
|    |    |    |         |       only) - (Service)
|    |    |    |         |
|    |    |    |         +- 2.) Floor Level Positions [CO:4010] - (on site only) - (Service)
|    |    |    |         |    This object holds the floor levels in millimeter.
|    |    |    |         |
|    |    |    |         +- 3.) Adjustment Trip Operation
|    |    |    |              |
|    |    |    |              +- Automatic Adjustment Trip Operation - (on site
|    |    |    |              |  only) - (Service)
|    |    |    |              |
|    |    |    |              +- Manual Adjustment Trip Operation - (on site only) - (Service)
|    |    |    |
|    |    |    +- Reset a pending blocking event
|    |    |
|    |    +- Limit switch positions (PSU)
|    |    |    |
|    |    |    +- Distance final limit switch top [CO:4031] - (Setup)
|    |    |    |    This object holds the distance of the final limit switch on top. For the
|    |    |    |    ELGO33CP that is measured from the top reference point. Other PSU units
|    |    |    |    might measure the value from the top floor. Anyway the lift controller
```

```
|    |    |    |    will show you the difference from floor level at the bottom of the
|    |    |    |    dialogue.
|    |    |    |
|    |    |    +- Distance final limit switch bottom [CO:4032] - (Setup)
|    |    |    |    This object holds the distance of the final limit switch on bottom. For
|    |    |    |    the ELGO33CP that is measured from the bottom reference point. Other PSU
|    |    |    |    units might measure the value from the bottom floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection limit switch top [CO:4033] - (Setup)
|    |    |    |    This object holds the distance of the inspection limit switch on top. For
|    |    |    |    the ELGO33CP that is measured from the top reference point. Other PSU
|    |    |    |    units might measure the value from the top floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection limit switch bottom [CO:4034] - (Setup)
|    |    |    |    This object holds the distance of the inspection limit switch on bottom.
|    |    |    |    For the ELGO33CP that is measured from the bottom reference point. Other
|    |    |    |    PSU units might measure the value from the bottom floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection terminal (pre-limit) switches
|    |    |         |
|    |    |         +- Distance inspection terminal (pre-limit) switch top [CO:4033] -
|    |    |         |  (Setup)
|    |    |         |    This object holds the distance of the inspection limit switch on top.
|    |    |         |    For the ELGO33CP that is measured from the top reference point. Other
|    |    |         |    PSU units might measure the value from the top floor. Anyway the lift
|    |    |         |    controller will show you the difference from floor level at the
|    |    |         |    bottom of the dialogue.
|    |    |         |
|    |    |         +- Distance inspection terminal (pre-limit) switch bottom [CO:4036] -
|    |    |            (Setup)
|    |    |              This object holds the distance of the inspection pre-limit switch on
|    |    |              bottom. For the ELGO33CP that is measured from the bottom reference
|    |    |              point. Other PSU units might measure the value from the bottom floor.
|    |    |              Anyway the lift controller will show you the difference from floor
|    |    |              level at the bottom of the dialogue.
|    |    |
|    |    +- PSU Safety door bridging usage [CO:42A4] - (on site only) - (Setup)
|    |         This object defines if the position supervisor unit (PSU) shall be featured for
|    |         door bridging, typically used for advance door opening or re-levelling. Using
|    |         the PSU for bridging the door circuit is only possible, if the PSU actually
|    |         supports that feature. If not, this option does not have any effect.
|    |
|    +- More…
|         |
|         +- Inspection top floor stop distance [CO:401E] - (Setup)
|         |    This object defines the distance to stop before the top floor level position,
|         |    if driving on inspection operation.
|         |
|         +- Inspection bottom floor stop distance [CO:401F] - (Setup)
|         |    This object defines the distance to stop before the bottom floor level
|         |    position, if driving on inspection operation.
|         |
|         +- Dedicated Pit Inspection bottom floor stop distance [CO:4076] - (Setup)
|         |    This object defines the distance to stop before the bottom floor level
|         |    position, if driving on pit inspection operation.
|         |
|         +- Terminal (Pre-limit) Hoistway Switches [CO:4157] - (Setup)
|         |    This object defines if terminal (pre-limit) hoistway switches are regularly
|         |    used to ensure the lift decelerating to V0, before the very end of the hoistway
|         |    has been reached.
|         |
|         +- Even more…
|              |
|              +- Position-correction (Preset)
|              |    |
|              |    +- Position correction/preset switches [CO:4307] - (Setup)
```

```
|              |    |    Mainly used for inclining lifts, this feature provides tables
|              |    |    (up-/downward) containing the positions to which the special
|              |    |    correction (preset) switches trip. This method is typically used if
|              |    |    the absolute encoder is mechanically connected to a pulley and has to
|              |    |    deal with micro-slip.
|              |    |
|              |    +- Position-correction-switch table upward [CO:4305] - (Service)
|              |    |
|              |    +- Position-correction-switch table downward [CO:4306] - (Service)
|              |    |    Mainly used for inclining lifts, this feature provides tables
|              |    |    (up-/downward) containing the positions to which the special
|              |    |    correction (preset) switches trip. This method is typically used if
|              |    |    the absolute encoder is mechanically connected to a pulley and has to
|              |    |    deal with micro-slip.
|              |    |
|              |    +- Position-correction maximum distance [CO:4315] - (Service)
|              |         Mainly used for inclining lifts, this value describes the maximum
|              |         distance between the real position encoder value and the correction
|              |         values, taken from the table. If the distance is too high a fault
|              |         message will be thrown into the logbook.
|              |
|              +- Position Thresholds
|                   |
|                   +- Position Threshold 1
|                   |    |
|                   |    +- Position Upper Threshold 1 [CO:41F6-1] - (Service)
|                   |    |    This object defines position thresholds, used to control output
|                   |    |    signals, that can be used to indicate, if the car is in between
|                   |    |    a certain minimum and maximum position. These are the upper
|                   |    |    thresholds, that the car needs to pass downwards in order to
|                   |    |    turn the output on.
|                   |    |
|                   |    +- Position Lower Threshold 1 [CO:41F5-1] - (Service)
|                   |         This object defines position thresholds, used to control output
|                   |         signals, that can be used to indicate, if the car is in between
|                   |         a certain minimum and maximum position. These are the lower
|                   |         thresholds, that the car needs to pass upwards, in order to turn
|                   |         the output on.
|                   |
|                   +- Position Threshold 2
|                   |    |
|                   |    +- Position Upper Threshold 2 [CO:41F6-2] - (Service)
|                   |    |
|                   |    +- Position Lower Threshold 2 [CO:41F5-2] - (Service)
|                   |
|                   +- Position Threshold 3
|                   |    |
|                   |    +- Position Upper Threshold 3 [CO:41F6-3] - (Service)
|                   |    |
|                   |    +- Position Lower Threshold 3 [CO:41F5-3] - (Service)
|                   |
|                   +- Position Threshold 4
|                   |    |
|                   |    +- Position Upper Threshold 4 [CO:41F6-4] - (Service)
|                   |    |
|                   |    +- Position Lower Threshold 4 [CO:41F5-4] - (Service)
|                   |
|                   +- Indicate Position Thresholds only when calls are pending [CO:41F9] -
|                      (Service)
|                        Use this object to define if the Position Thresholds shall only trip,
|                        if the lift is running with passenger calls pending. If the lift
|                        would do a service trip, like parking or hydraulic homing, the
|                        position thresholds would not be indicated then.
|
+- Drive Unit
|    |
|    +- Type of Drive Unit & Properties
|    |    |
|    |    +- Lift drive system [CO:4133] - (on site only) - (Setup)
|    |    |    This object defines the basic drive system of the lift, like hydraulic lift or
|    |    |    traction/cable lift.
|    |    |
```

```
|    |    +- Drive type [CO:4131] - (on site only) - (Setup)
|    |    |    This object defines the type of the drive unit used to operate the traction
|    |    |    lift.
|    |    |
|    |    +- Drive options
|    |    |    |
|    |    |    +- Terminal mapping [CO:4138] - (on site only) - (Setup)
|    |    |    |    This object defines the mapping of the velocity signals, if the drive
|    |    |    |    features a classic terminal interface.
|    |    |    |
|    |    |    +- Drive mode (profile)
|    |    |    |    |
|    |    |    |    +- Drive mode (profile) [CO:4149] - (on site only) - (Setup)
|    |    |    |    |    This object defines in which profile mode the drive shall be
|    |    |    |    |    operated. The classic drive mode is the 'velocity mode'. For
|    |    |    |    |    operating without a 'creeping' distance, the more modern 'position
|    |    |    |    |    mode' should be featured, if the drive unit (inverter) supports that
|    |    |    |    |    profile.
|    |    |    |    |
|    |    |    |    +- Use Intermediate velocities in Position Profile [CO:4251] - (on site
|    |    |    |       only) - (Setup)
|    |    |    |         This object defines if the lift controller shall feature intermediate
|    |    |    |         velocities even in Position Profile Mode, if the travel time is
|    |    |    |         estimated so short, that no constant travel will happen. Normally V4
|    |    |    |         is always used for Position Profile Mode because the travel curve
|    |    |    |         calculator in the inverter itself avoids pointed travel curves, that
|    |    |    |         do not have any constant travelling, by lowering the target velocity.
|    |    |    |
|    |    |    +- Contactor Supervision
|    |    |    |    |
|    |    |    |    +- Contactor Supervision [CO:413A] - (on site only) - (Setup)
|    |    |    |    |    This object defines how the main contactors are monitored. If the
|    |    |    |    |    used drive unit is a contactorless model or controls the main
|    |    |    |    |    contactors internally, the contactor supervision can be done in the
|    |    |    |    |    drive unit. In that case the lift controller may not or just monitor
|    |    |    |    |    turning off the contactors. On classic drive units, the lift
|    |    |    |    |    controller directly turns the main contactors on and off.
|    |    |    |    |
|    |    |    |    +- Contactor stuck supervision Time [CO:417D] - (Setup)
|    |    |    |         This object defines how long the lift controller shall wait before
|    |    |    |         declaring the main contactors as being 'hung' or 'stuck', when having
|    |    |    |         turned the contactor off, after stop. This will usually put the lift
|    |    |    |         into blocking operation mode.
|    |    |    |
|    |    |    +- Brake Supervision
|    |    |    |    |
|    |    |    |    +- Brake Supervision [CO:413B] - (on site only) - (Setup)
|    |    |    |    |    This object defines if the lift features supervision on the brake
|    |    |    |    |    contacts.
|    |    |    |    |
|    |    |    |    +- Brake close supervision time [CO:404C] - (Setup)
|    |    |    |    |    This object defines the time span used in order to detect a stuck
|    |    |    |    |    brake supervision element or contact, when closing the brake after
|    |    |    |    |    stop.
|    |    |    |    |
|    |    |    |    +- Brake open supervision time [CO:404D] - (Setup)
|    |    |    |         This object defines the time span used in order to detect, that the
|    |    |    |         brake supervision element or contact does not signal that the brake
|    |    |    |         has actually opened, when the lift wants to start driving.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Drive unit control enable signal [CO:4134] - (Setup)
|    |    |         |    This object defines if an external input signal is used in order to
|    |    |         |    enable the drive unit control output signals.
|    |    |         |
|    |    |         +- Drive readiness signal usage [CO:404E] - (Setup)
|    |    |         |    This object defines if the drive unit features a classical external
|    |    |         |    readiness signal. Some hydraulic drives like the LRV provide such a
|    |    |         |    signal that the lift controller may monitor in order to detect the
|    |    |         |    drive unit being ready for driving or not.
|    |    |         |
```

```
|    |    |         +- Brake enable signal usage [CO:4096] - (Setup)
|    |    |         |    This object defines if an input signal is used in order to enable the
|    |    |         |    brake output signal. This signal is used for classic inverters with
|    |    |         |    terminal interface.
|    |    |         |
|    |    |         +- Traction sheave brake supervision
|    |    |         |    |
|    |    |         |    +- Traction sheave brake supervision [CO:4088] - (on site only) -
|    |    |         |    |  (Setup)
|    |    |         |    |    This object defines if the system features a separate traction
|    |    |         |    |    sheave brake, that is monitored via a supervision input by the
|    |    |         |    |    lift controller.
|    |    |         |    |
|    |    |         |    +- Traction sheave brake supervision time [CO:4089] - (Service)
|    |    |         |    |    This object defines the supervision time for monitoring a
|    |    |         |    |    separate traction sheave brake, that is checked via an input by
|    |    |         |    |    the lift controller. When the lift has stopped this supervision
|    |    |         |    |    input shall peak up again, when the brake has been released.
|    |    |         |    |
|    |    |         |    +- Traction sheave brake inspection policy [CO:408A] - (Service)
|    |    |         |         This object defines, if the lift can be driven with inspection
|    |    |         |         or emergency electrical operation, if the sheave brake
|    |    |         |         supervision has been tripped before.
|    |    |         |
|    |    |         +- Even more…
|    |    |              |
|    |    |              +- Main contactors afterrun time [CO:408F] - (Setup)
|    |    |              |    This object defines a short afterrun time of the main
|    |    |              |    contactors, after the brake has already been dropped. This can
|    |    |              |    be used to prevent the drive from reversing. This also allows
|    |    |              |    stopping with less jerk.
|    |    |              |
|    |    |              +- Brake drop/close delay time [CO:405D] - (Setup)
|    |    |              |    This object defines the time used to delay the moment, when the
|    |    |              |    brake is dropped/closed after stop. Setting up this time might
|    |    |              |    be useful, if the 'zero speed' indication from the drive comes a
|    |    |              |    bit early.
|    |    |              |
|    |    |              +- Drive unit afterrun time [CO:4084] - (Service)
|    |    |              |    This object defines a short delay, that the drive and brake will
|    |    |              |    be kept going, after the direction and velocity signals have
|    |    |              |    been dropped. That makes it possible for the drive unit to do
|    |    |              |    the last bit of stopping electrically.
|    |    |              |
|    |    |              +- Motor fan afterrun time [CO:4381] - (Service)
|    |    |                   This object defines an after-run time to keep the motor fan
|    |    |                   running after the lift has stopped. The value is given in
|    |    |                   seconds.
|    |    |
|    |    +- Drive unit hydraulic
|    |    |    |
|    |    |    +- Hydraulic pump power model [CO:4135] - (Setup)
|    |    |    |    This object defines the way/technique for electrically powering the
|    |    |    |    hydraulic pump.
|    |    |    |
|    |    |    +- Hydraulic pump delayed off [CO:4136] - (Setup)
|    |    |    |    This object defines if the hydraulic pump motor should be turned off
|    |    |    |    delayed in upward direction.
|    |    |    |
|    |    |    +- Hydraulic valve delayed off upward [CO:4137] - (Setup)
|    |    |    |    This object defines if the hydraulic valve should be turned off delayed in
|    |    |    |    upward direction.
|    |    |    |
|    |    |    +- Hydraulic valve downwards times
|    |    |    |    |
|    |    |    |    +- Delayed shut-off valve downwards [CO:418D] - (Setup)
|    |    |    |    |    This object defines the delay time after the main contactors have
|    |    |    |    |    been dropped and the signal 'Shut-off valve downwards' being dropped
|    |    |    |    |    as well. This is a requirement for the GMV valve blocks for example.
|    |    |    |    |    The signal will be turned on together with the downward pilot/main
|    |    |    |    |    contactor.
|    |    |    |    |
```

```
|    |    |    |    +- Open downward valves delayed [CO:4363] - (Setup)
|    |    |    |         This object defines a short delay time to make the lift start slower
|    |    |    |         in the downward direction to make it possible to make the passenger
|    |    |    |         experience for upward and downward more equal.
|    |    |    |
|    |    |    +- More…
|    |    |         |
|    |    |         +- Main contactor K1/2 delayed off (downward) [CO:418F] - (Setup)
|    |    |         |    This object defines if the main contactor 'downwards' (K12) should be
|    |    |         |    turned off delayed. This might be useful for some hydraulic drives,
|    |    |         |    like some LRV variants.
|    |    |         |
|    |    |         +- Hydraulic pump enable signal usage [CO:4065] - (Setup)
|    |    |         |    This object defines if the drive unit features a dedicated enable
|    |    |         |    signal to power up the pump in upward direction. An example is the
|    |    |         |    NGV/A3 valve block unit.
|    |    |         |
|    |    |         +- Motor Star/Delta time [CO:416F] - (Setup)
|    |    |         |    This object defines the time span between 'star' and 'delta'
|    |    |         |    activation for very old motors/pumps.
|    |    |         |
|    |    |         +- Hydraulic Homing Timer [CO:4147] - (Setup)
|    |    |         |    This object defines the time after the car/cabin does start a
|    |    |         |    hydraulic homing operation, sending the lift back to the bottom
|    |    |         |    floor.
|    |    |         |
|    |    |         +- Even more…
|    |    |              |
|    |    |              +- Valve block error/status via bus system [CO:418E-0] - (Service)
|    |    |              |    This object defines if the LRV valve block error/status signals
|    |    |              |    will be transmitted via the CANopen bus system or if they are
|    |    |              |    parallel wired to the status relays.
|    |    |              |
|    |    |              +- Low oil pressure supervision [CO:4045] - (Setup)
|    |    |              |    This object defines if a low pressure situation shall be
|    |    |              |    detected via an input by the lift controller. Depending on your
|    |    |              |    actual hydraulic system, this might be done by the hydraulic
|    |    |              |    drive itself. If required, the lift controller can do the
|    |    |              |    supervision via an oil pressure switch. The supervision signal
|    |    |              |    has by default to be electrically high if pressure is fine.
|    |    |              |
|    |    |              +- Oil overpressure supervision [CO:4046] - (Setup)
|    |    |              |    This object defines if a high pressure situation shall be
|    |    |              |    detected via an input by the lift controller. Depending on your
|    |    |              |    actual hydraulic system, this might be done by the hydraulic
|    |    |              |    drive itself. If required, the lift controller can do the
|    |    |              |    supervision via an oil pressure switch. The supervision signal
|    |    |              |    has by default to be electrically high if pressure is fine.
|    |    |              |
|    |    |              +- Low oil level protection [CO:4360] - (Setup)
|    |    |              |    This object defines if a dedicated input function is used to
|    |    |              |    sense that there is enough liquid/oil in the tank to drive the
|    |    |              |    lift in upward direction.
|    |    |              |
|    |    |              +- Oil tank temperature shutdown [CO:4361] - (Setup)
|    |    |                   This object defines, if a dedicated input for monitoring the
|    |    |                   temperature in the hydraulic oil tank is used. Those switches
|    |    |                   are usually closed if the temperature in normal and will open
|    |    |                   the circuit, when the temperature exceed the operation range.
|    |    |
|    |    +- Valve block specific
|    |         |
|    |         +- VMP/2CH/S soft stop distance [CO:4098] - (Service)
|    |              The bi-directional soft stop valve VMP/2CH/S, that can be found on some
|    |              (not all) GMV 3010 valve blocks, can be used to make the start and the
|    |              stop softer. It needs to be tweaked or fine-tuned on site. This distance
|    |              basically defines, when before stop, the valve shall be engaged.
|    |
|    +- Drive velocities
|    |    |
|    |    +- Drive velocities V0…V4
|    |    |    |
```

```
|    |    |    +- Velocity V0 (creeping) [CO:412D-1] - (on site only) - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity V1 (slow) [CO:412D-2] - (on site only) - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity V2 (medium) [CO:412D-3] - (on site only) - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity V3 (intermediate) [CO:412D-4] - (on site only) - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity V4 (rated) [CO:412D-5] - (on site only) - (Setup)
|    |    |         This object defines all the velocities the drive may use to move the
|    |    |         cabin/car.
|    |    |
|    |    +- Drive velocities VI…VN
|    |    |    |
|    |    |    +- Velocity VI (inspection) [CO:412D-11] - (on site only) - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity VR (emergency electrical operation) [CO:412D-12] - (on site only)
|    |    |    |  - (Setup)
|    |    |    |    This object defines all the velocities the drive may use to move the
|    |    |    |    cabin/car.
|    |    |    |
|    |    |    +- Velocity VN (re-levelling) [CO:412D-13] - (on site only) - (Setup)
|    |    |         This object defines all the velocities the drive may use to move the
|    |    |         cabin/car.
|    |    |
|    |    +- Overspeed threshold [CO:4083] - (on site only) - (Setup)
|    |    |    This object defines the maximum allowed velocity of the car, moving through the
|    |    |    hoistway. If this velocity value has been exceeded, the lift will be stopped
|    |    |    with an emergency unconditional stop of the braking system. This is *not* a
|    |    |    safety function. It will *not* replace your speed governor or SIL-3 position
|    |    |    supervisor unit. This feature is just meant to be an additionally supervision.
|    |    |    It has not been certified in any way.
|    |    |
|    |    +- Using separate velocity values for downwards [CO:4189] - (Setup)
|    |    |    This object defines, if the lift shall feature separate velocity values for the
|    |    |    downward direction. This means, that you can define the velocity values 'Vx'
|    |    |    differently for the upward and downward direction. This might be rarely used,
|    |    |    but can be useful and required for some older hydraulic lifts.
|    |    |
|    |    +- Rarely used…
|    |         |
|    |         +- Velocity Slow/Fast switching via input [CO:4316] - (on site only) -
|    |            (Setup)
|    |              This object enables a very rarely used function where a lever in the lift
|    |              car can be used to change the speed of the lift from slow to fast.
|    |
|    +- Drive deceleration distances
|    |    |
|    |    +- Deceleration distances V0…V4
|    |    |    |
|    |    |    +- Deceleration V0 (creeping)
|    |    |    |    |
|    |    |    |    +- upward [CO:412E-1] - (Setup)
|    |    |    |    |    This object defines the deceleration distances, needed to stop the
|    |    |    |    |    cabin, if using the corresponding velocity in upward direction.
|    |    |    |    |
|    |    |    |    +- downward [CO:412F-1] - (Setup)
|    |    |    |    |    This object defines the deceleration distances, needed to stop the
|    |    |    |    |    cabin, if using the corresponding velocity in downward direction.
|    |    |    |    |
|    |    |    |    +- Deceleration V0 distance table usage
|    |    |    |    |    |
```

```
|    |    |    |    |    +- Deceleration V0 distance table usage [CO:4085] - (on site only)
|    |    |    |    |    |  - (Setup)
|    |    |    |    |    |    This object defines if for the creeping velocity (V0)
|    |    |    |    |    |    deceleration distance (stopping), tables shall be used that
|    |    |    |    |    |    allows to specify the value for each floor for upward and
|    |    |    |    |    |    downward direction.
|    |    |    |    |    |
|    |    |    |    |    +- Deceleration distance V0 table upward [CO:4086-128] - (Setup)
|    |    |    |    |    |    This object defines for the creeping velocity (V0) deceleration
|    |    |    |    |    |    distances (stopping) for each floor in the upward direction.
|    |    |    |    |    |
|    |    |    |    |    +- Deceleration distance V0 table downward [CO:4087-128] - (Setup)
|    |    |    |    |         This object defines for the creeping velocity (V0) deceleration
|    |    |    |    |         distances (stopping) for each floor in the downward direction.
|    |    |    |    |
|    |    |    |    +- Deceleration V0 special parameter
|    |    |    |         |
|    |    |    |         +- Hydraulic Stop downwards correction value after intermediate
|    |    |    |         |  velocity usage [CO:4097] - (Service)
|    |    |    |         |
|    |    |    |         +- Hydraulic Stop upwards correction value after intermediate
|    |    |    |            velocity usage [CO:409B] - (Service)
|    |    |    |              This object defines, if the deceleration distance for V0 shall
|    |    |    |              be adjusted by using an offset [mm], when the lift was not
|    |    |    |              traveling with the nominal velocity. That might be required, if
|    |    |    |              the hydraulic drive in question is featuring an inverter/pump
|    |    |    |              setup downwards only, for the nominal velocity and not for
|    |    |    |              intermediate velocities. If that is the case, the stopping
|    |    |    |              distance is usually affected by that and needs to be fine-tuned
|    |    |    |              for the intermediate velocities.
|    |    |    |
|    |    |    +- Deceleration V1 (slow)
|    |    |    |    |
|    |    |    |    +- upward [CO:412E-2] - (Setup)
|    |    |    |    |    This object defines the deceleration distances, needed to stop the
|    |    |    |    |    cabin, if using the corresponding velocity in upward direction.
|    |    |    |    |
|    |    |    |    +- downward [CO:412F-2] - (Setup)
|    |    |    |         This object defines the deceleration distances, needed to stop the
|    |    |    |         cabin, if using the corresponding velocity in downward direction.
|    |    |    |
|    |    |    +- Deceleration V2 (medium)
|    |    |    |    |
|    |    |    |    +- upward [CO:412E-3] - (Setup)
|    |    |    |    |    This object defines the deceleration distances, needed to stop the
|    |    |    |    |    cabin, if using the corresponding velocity in upward direction.
|    |    |    |    |
|    |    |    |    +- downward [CO:412F-3] - (Setup)
|    |    |    |         This object defines the deceleration distances, needed to stop the
|    |    |    |         cabin, if using the corresponding velocity in downward direction.
|    |    |    |
|    |    |    +- Deceleration V3 (intermediate)
|    |    |    |    |
|    |    |    |    +- upward [CO:412E-4] - (Setup)
|    |    |    |    |    This object defines the deceleration distances, needed to stop the
|    |    |    |    |    cabin, if using the corresponding velocity in upward direction.
|    |    |    |    |
|    |    |    |    +- downward [CO:412F-4] - (Setup)
|    |    |    |         This object defines the deceleration distances, needed to stop the
|    |    |    |         cabin, if using the corresponding velocity in downward direction.
|    |    |    |
|    |    |    +- Deceleration V4 (rated)
|    |    |         |
|    |    |         +- upward [CO:412E-5] - (Setup)
|    |    |         |    This object defines the deceleration distances, needed to stop the
|    |    |         |    cabin, if using the corresponding velocity in upward direction.
|    |    |         |
|    |    |         +- downward [CO:412F-5] - (Setup)
|    |    |              This object defines the deceleration distances, needed to stop the
|    |    |              cabin, if using the corresponding velocity in downward direction.
|    |    |
|    |    +- Deceleration distances VI…VN
```

```
|    |         |
|    |         +- Deceleration VI (inspection)
|    |         |    |
|    |         |    +- upward [CO:412E-11] - (Setup)
|    |         |    |    This object defines the deceleration distances, needed to stop the
|    |         |    |    cabin, if using the corresponding velocity in upward direction.
|    |         |    |
|    |         |    +- downward [CO:412F-11] - (Setup)
|    |         |         This object defines the deceleration distances, needed to stop the
|    |         |         cabin, if using the corresponding velocity in downward direction.
|    |         |
|    |         +- Deceleration VR (emergency electrical operation)
|    |         |    |
|    |         |    +- upward [CO:412E-12] - (Setup)
|    |         |    |    This object defines the deceleration distances, needed to stop the
|    |         |    |    cabin, if using the corresponding velocity in upward direction.
|    |         |    |
|    |         |    +- downward [CO:412F-12] - (Setup)
|    |         |         This object defines the deceleration distances, needed to stop the
|    |         |         cabin, if using the corresponding velocity in downward direction.
|    |         |
|    |         +- Deceleration VN (re-levelling)
|    |              |
|    |              +- upward [CO:412E-13] - (Setup)
|    |              |    This object defines the deceleration distances, needed to stop the
|    |              |    cabin, if using the corresponding velocity in upward direction.
|    |              |
|    |              +- downward [CO:412F-13] - (Setup)
|    |                   This object defines the deceleration distances, needed to stop the
|    |                   cabin, if using the corresponding velocity in downward direction.
|    |
|    +- Drive minimum travelling distances
|    |    |
|    |    +- Minimum distances V0…V4
|    |    |    |
|    |    |    +- Minimum distance V0 (creeping) [CO:4130-1] - (Setup)
|    |    |    |    This object specifies the minimum travelling distances, which are needed
|    |    |    |    to use the corresponding velocity. The overall travelling distance is the
|    |    |    |    sum of minimum travelling distance and deceleration distance and must be
|    |    |    |    less than the distance to travel.
|    |    |    |
|    |    |    +- Minimum distance V1 (slow) [CO:4130-2] - (Setup)
|    |    |    |    This object specifies the minimum travelling distances, which are needed
|    |    |    |    to use the corresponding velocity. The overall travelling distance is the
|    |    |    |    sum of minimum travelling distance and deceleration distance and must be
|    |    |    |    less than the distance to travel.
|    |    |    |
|    |    |    +- Minimum distance V2 (medium) [CO:4130-3] - (Setup)
|    |    |    |    This object specifies the minimum travelling distances, which are needed
|    |    |    |    to use the corresponding velocity. The overall travelling distance is the
|    |    |    |    sum of minimum travelling distance and deceleration distance and must be
|    |    |    |    less than the distance to travel.
|    |    |    |
|    |    |    +- Minimum distance V3 (intermediate) [CO:4130-4] - (Setup)
|    |    |    |    This object specifies the minimum travelling distances, which are needed
|    |    |    |    to use the corresponding velocity. The overall travelling distance is the
|    |    |    |    sum of minimum travelling distance and deceleration distance and must be
|    |    |    |    less than the distance to travel.
|    |    |    |
|    |    |    +- Minimum distance V4 (rated) [CO:4130-5] - (Setup)
|    |    |         This object specifies the minimum travelling distances, which are needed
|    |    |         to use the corresponding velocity. The overall travelling distance is the
|    |    |         sum of minimum travelling distance and deceleration distance and must be
|    |    |         less than the distance to travel.
|    |    |
|    |    +- Minimum distances VI…VN
|    |         |
|    |         +- Minimum distance VI (inspection) [CO:4130-11] - (Setup)
|    |         |    This object specifies the minimum travelling distances, which are needed
|    |         |    to use the corresponding velocity. The overall travelling distance is the
|    |         |    sum of minimum travelling distance and deceleration distance and must be
|    |         |    less than the distance to travel.
```

```
|    |         |
|    |         +- Minimum distance VR (emergency electrical operation) [CO:4130-12] -
|    |         |  (Setup)
|    |         |    This object specifies the minimum travelling distances, which are needed
|    |         |    to use the corresponding velocity. The overall travelling distance is the
|    |         |    sum of minimum travelling distance and deceleration distance and must be
|    |         |    less than the distance to travel.
|    |         |
|    |         +- Minimum distance VN (re-levelling) [CO:4130-13] - (Setup)
|    |              This object specifies the minimum travelling distances, which are needed
|    |              to use the corresponding velocity. The overall travelling distance is the
|    |              sum of minimum travelling distance and deceleration distance and must be
|    |              less than the distance to travel.
|    |
|    +- More…
|         |
|         +- PTC Temperature monitoring [CO:414B] - (on site only) - (Setup)
|         |    The drive temperature (PTC) monitoring is using a special input on the safety
|         |    board to detect an overheating issue using a typical PTC. The input is extra
|         |    debounced and galvanically isolated for stability reasons.
|         |
|         +- Drive Supervision Times
|         |    |
|         |    +- Driving supervision time
|         |    |    |
|         |    |    +- Driving supervision time [CO:411C] - (Setup)
|         |    |    |    This object defines the time used for monitoring (supervision) the
|         |    |    |    drive running, if requested by the lift application. This value is
|         |    |    |    meant to be an overall timeout and should be long enough, for the lift
|         |    |    |    to complete the longest possible trip.
|         |    |    |
|         |    |    +- Re-trigger driving run-timer [CO:4047] - (Setup)
|         |    |         This object defines if the runtime supervision shall be re-triggered
|         |    |         if the current floor has changed or the lift having moved a defined
|         |    |         distance.
|         |    |
|         |    +- Drive start supervision time [CO:411B] - (Setup)
|         |    |    This object defines the time used for monitoring (supervision) the drive
|         |    |    starting, if requested by the lift application. This value is meant to be
|         |    |    a timeout and should be long enough. The time ends, if the car leave the
|         |    |    door zone.
|         |    |
|         |    +- Drive deceleration supervision time [CO:411D] - (Setup)
|         |         This object defines the time used for monitoring (supervision) the drive
|         |         stopping, if requested by the lift application. This value is meant to be
|         |         a timeout and should be long enough. The time starts when the lifts
|         |         decelerate and ends if it has stopped.
|         |
|         +- Re-leveling
|         |    |
|         |    +- Re-leveling on/off [CO:4028] - (Service)
|         |    |    This object defines if re-leveling shall be featured or not.
|         |    |
|         |    +- Featuring a separate re-level unit [CO:402A] - (Setup)
|         |    |    This object defines if re-leveling is implemented via an external separate
|         |    |    re-levelling unit rather than the main drive.
|         |    |
|         |    +- Re-leveling attempts per floor/hour [CO:4029] - (Service)
|         |    |    This object defines how many attempts to re-level the car will be made
|         |    |    within one hour on the very same floor.
|         |    |
|         |    +- Re-leveling with closed doors only [CO:4027] - (Service)
|         |    |    This object defines if re-leveling shall only be done, having the doors
|         |    |    closed, without need for the safety circuit (SZ).
|         |    |
|         |    +- More…
|         |         |
|         |         +- Re-leveling timeout [CO:402B] - (Setup)
|         |         |    This object defines the timeout used for a re-leveling operation.
|         |         |
|         |         +- Re-leveling operation delay [CO:402C] - (Service)
|         |         |    This object defines the delay before a re-leveling operation starts,
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|          |          |    if necessary to move the car back to level.
|          |          |
|          |          +- Maximum re-leveling attempts error handling [CO:428A] - (Service)
|          |          |    This object defines what shall happen, if the maximum count of
|          |          |    re-levelling attempts per hour/floor has been exceeded.
|          |          |
|          |          +- Slow valve after pump start via timer [CO:4362] - (Setup)
|          |          |    This object defines, if the slow valve for re-levelling shall be
|          |          |    opened via a timer, when the softstarter reving up the pump, rather
|          |          |    than waiting for the feedback signal of the softstarter, indicating,
|          |          |    that the pump is on full power. This might be useful, if you want to
|          |          |    smooth the re-levelling operation by opening the slow valve early for
|          |          |    example already at 80% of the ramp being done.
|          |          |
|          |          +- Use extended re-leveling zone [CO:402D] - (Service)
|          |               This object defines if an extended 're-leveling zone below' shall be
|          |               featured, if the doors are closed and the lift is idle.  > Consider
|          |               the extended re-leveling zone value [mm] at 'Position & Distances'
|          |               too.
|          |
|          +- Drop Protection
|          |    |
|          |    +- Drop Protection on/off [CO:4159] - (Setup)
|          |    |    This object enables the usage of a drop protection unit, usually blocking
|          |    |    with a bolt the pulley of the speed governor, after the lift has stopped.
|          |    |
|          |    +- Operation timeout (bolt) [CO:415A] - (Setup)
|          |    |    This object sets the timeout (time monitoring) to be used when the bolt is
|          |    |    to be moved to the actuated or unactuated position.
|          |    |
|          |    +- Deactivation delay [CO:415F] - (Setup)
|          |    |    This object defines the time span after stop (delay), before the bolt will
|          |    |    be put back into the blocking position.
|          |    |
|          |    +- More…
|          |         |
|          |         +- Safety Chain enables Drop Protection operation [CO:41CA] - (Setup)
|          |         |    This object defines, if the drop protection bolt can only be engaged
|          |         |    with the safety chain being closed. If so, the supervision of the
|          |         |    feedback signal will take the end of the safety chain in account, in
|          |         |    order to decide if the drop protection works correctly or is faulty.
|          |         |
|          |         +- Drop Protection under Inspection Operation [CO:420B] - (Setup)
|          |              This object defines, if being in inspection operation mode, the drop
|          |              protection shall be operated as usual. But some variants, that are
|          |              mounted on the rail ends need to stay powerless, when being in
|          |              inspection operation mode in order to catch the car when driving into
|          |              the safe space.
|          |
|          +- Even more…
|               |
|               +- Reduced velocity for low shaft head & pit
|               |    |
|               |    +- Low shaft head, reduced velocity
|               |    |    |
|               |    |    +- Low shaft head, reduced velocity [CO:4309-1] - (Setup)
|               |    |    |    This object defines if a reduced nominal velocity shall be
|               |    |    |    featured when driving towards the reduced hoistway head.
|               |    |    |
|               |    |    +- Reduced shaft head velocity distance [CO:4309-2] - (Setup)
|               |    |    |    This object defines the point for reducing the nominal velocity,
|               |    |    |    when driving towards the reduced hoistway head.
|               |    |    |
|               |    |    +- Reduced shaft head velocity selection [CO:4309-3] - (Setup)
|               |    |         This object defines the reduced velocity to use, when driving
|               |    |         towards the reduced hoistway head.
|               |    |
|               |    +- Low shaft pit, reduced velocity
|               |         |
|               |         +- Low shaft pit, reduced velocity [CO:430A-1] - (Setup)
|               |         |    This object defines if a reduced nominal velocity shall be
|               |         |    featured when driving towards the reduced hoistway pit.
```

```
|              |         |
|              |         +- Reduced shaft pit velocity distance [CO:430A-2] - (Setup)
|              |         |    This object defines the distance for reducing the nominal
|              |         |    velocity, when driving towards the reduced hoistway pit.
|              |         |
|              |         +- Reduced shaft pit velocity selection [CO:430A-3] - (Setup)
|              |              This object defines the reduced velocity to use, when driving
|              |              towards the reduced hoistway pit.
|              |
|              +- Quickstart
|              |    |
|              |    +- Drive Quickstart feature [CO:415C] - (Setup)
|              |    |    This object defines if the drive shall feature 'Quickstart'. That
|              |    |    means it will already power-up the drive unit, while the doors are
|              |    |    still closing, in order to reduce the delay on starting the lift
|              |    |    driving.
|              |    |
|              |    +- Quickstart timeout [CO:415D] - (Setup)
|              |    |    This object defines how long (maximum) the drive unit may be kept
|              |    |    continuously in 'Quickstart' operation, while waiting for the
|              |    |    passengers to have finished boarding. That means the drive will
|              |    |    already be powered-up while the doors are still closing, in order to
|              |    |    reduce the delay on starting the lift driving.
|              |    |
|              |    +- Quickstart delay [CO:41D2] - (Service)
|              |    |    This object defines a delay time, starting with the doors closing,
|              |    |    before the quick start sequence will be engaged and the drive is
|              |    |    powered up, while the doors are still closing.
|              |    |
|              |    +- Drive Quickstart door closing width [CO:41D3] - (Service)
|              |         This object defines how wide the doors have to be closed, before the
|              |         quick start sequence will be engaged and the drive is powered up,
|              |         while the doors are still closing. To use this feature a CANopen door
|              |         machine is required that is capable of transmitting the door opening
|              |         width via the bus system.
|              |
|              +- Lubrication Function
|              |    |
|              |    +- Lubrication Timer [CO:41E1] - (Service)
|              |    |    This object defines the time span between two lubrication cycles. The
|              |    |    duration of the lubrication impulse is set via another object.
|              |    |
|              |    +- Lubrication Trips [CO:41FC] - (Service)
|              |    |    This object defines the count of trips before the next lubrication
|              |    |    impulse. If this is set to off, only the timer will trigger a
|              |    |    lubrication impulse. If this parameter is used, the timer or the
|              |    |    count of trips will create the next lubrication impulse and restart
|              |    |    the timer.
|              |    |
|              |    +- Lubrication Duration (impulse) [CO:41E2] - (Service)
|              |    |    This object defines the duration of the lubrication impulse. The time
|              |    |    span between two impulses is set via another object.
|              |    |
|              |    +- Lubrication runtime warning threshold [CO:41E3] - (Setup)
|              |    |    This object defines the time span of engaging the oil pump
|              |    |    (lubrication) in seconds that need to have passed, before the lift
|              |    |    controller throw a warning about the remaining oil in the oil
|              |    |    reservoir to be low.
|              |    |
|              |    +- Lubrication runtime error threshold [CO:41E4] - (Setup)
|              |         This object defines the time span of engaging the oil pump
|              |         (lubrication) in seconds that need to have passed, before the lift
|              |         controller throw an error about the oil reservoir being empty. This
|              |         will then actually turn the lift to Out Of Order operation mode.
|              |
|              +- Lift/Drive start interlocking
|              |    |
|              |    +- Lift start interlock usage [CO:430F] - (Service)
|              |    |    This options is used to interlock the start of several lifts at the
|              |    |    very same time by connecting one output and one input signal from
|              |    |    every lift to the very same line. The lift will only start when the
|              |    |    line is low. For the output signal a timeout can be defined. When the
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|              |    |    lift stops again before the timeout has been expired, the output is
|              |    |    dropped as well.
|              |    |
|              |    +- Lift start interlock timeout [CO:4310] - (Service)
|              |         This options is used to interlock the start of several lifts at the
|              |         very same time by connecting one output and one input signal from
|              |         every lift to the very same line. The lift will only start when the
|              |         line is low. For the output signal a timeout can be defined. When the
|              |         lift stops again before the timeout has been expired, the output is
|              |         dropped as well.
|              |
|              +- Further more…
|                   |
|                   +- Brake Testing
|                   |    |
|                   |    +- Brake Test Circuit Supervision [CO:4311] - (Setup)
|                   |    |    This object defines if a special input shall be featured in
|                   |    |    order to detect, that the brake testing circuit is in the right
|                   |    |    state and not by mistake activated or hung. The input function
|                   |    |    'Brake test circuit monitoring' must be at 24V in normal
|                   |    |    operation and may only drop to 0V when the brake test is
|                   |    |    activated. This ensures that the lift cannot change to normal
|                   |    |    operation if one of the contactors, used to hold the brake open,
|                   |    |    has got stuck.
|                   |    |
|                   |    +- Count of discrete brake test circuits [CO:4312] - (Setup)
|                   |    |    This object defines how many discrete brake circuits will or can
|                   |    |    be tested. One brake circuit may contain exact one brake element
|                   |    |    or several. So basically this parameter defines, how may outputs
|                   |    |    are available to test the discrete brake elements on a drive. If
|                   |    |    your drive has two brakes with discrete wiring, you will need
|                   |    |    two test outputs, in order to test each of those brakes. In that
|                   |    |    case one circuit contains exactly one brake. These outputs are
|                   |    |    used for the brake test, that is usually done once per year.
|                   |    |
|                   |    +- Automatic cyclic main brake test
|                   |         |
|                   |         +- Automatic cyclic main brake test usage [CO:41F4-1] -
|                   |         |  (Setup)
|                   |         |    Some brake systems need a cyclic automatic test in order to
|                   |         |    fulfill their certifications. Usually this test is done,
|                   |         |    when the lift is idle, has the doors closed and no
|                   |         |    passengers have boarded the cabin. The test includes
|                   |         |    opening one brake pad at a time and checking if the car
|                   |         |    stays in position. If the car starts to slide away, the
|                   |         |    test will fail and the lift is entering blocked operation
|                   |         |    mode.
|                   |         |
|                   |         +- Automatic brake test repeat timer [CO:41F4-2] - (Service)
|                   |         |    Some brake systems need a cyclic automatic test in order to
|                   |         |    fulfill their certifications. Usually this test is done,
|                   |         |    when the lift is idle, has the doors closed and no
|                   |         |    passengers have boarded the cabin. The test includes
|                   |         |    opening one brake pad at a time and checking if the car
|                   |         |    stays in position. If the car starts to slide away, the
|                   |         |    test will fail and the lift is entering blocked operation
|                   |         |    mode.
|                   |         |
|                   |         +- Automatic brake test floor [CO:41F4-3] - (Service)
|                   |         |    Some brake systems need a cyclic automatic test in order to
|                   |         |    fulfill their certifications. You can either define the
|                   |         |    floor for performing the brake test or set the parameter to
|                   |         |    'off' indicating, that the test can be performed at the
|                   |         |    floor were the car currently is.
|                   |         |
|                   |         +- Trigger automatic cyclic main brake test - (on site only)
|                   |
|                   +- Rope Brake external circuit usage [CO:41F1-1] - (Setup)
|                   |    This object defines if an external circuit is used to trigger a rope
|                   |    brake (rope gripper) in an UCM situation. Refer to the manual for
|                   |    details about the circuit.
|                   |
```

```
|                   +- Hydraulic jack resync function
|                   |    |
|                   |    +- Hydraulic jack resync function usage [CO:41BC-1] - (Service)
|                   |    |    This parameter defines, if the hydraulic jack (cylinder)
|                   |    |    resynchronization shall be featured by the lift or not. If being
|                   |    |    turned on, the function can be triggered via an input, via the
|                   |    |    user interface (Maintenance Menu) or via a time planner
|                   |    |    function.
|                   |    |
|                   |    +- Maximum buffer distance from floor level [CO:41BC-2] - (Service)
|                   |    |    This parameter defines the maximum distance between the bottom
|                   |    |    floor level position and the pit buffer. This value should be
|                   |    |    defined gratefully as the car will anyway stop before, when
|                   |    |    having finally reached the buffer. This parameter is meant to
|                   |    |    stop the lift in the case of a mechanical fault.
|                   |    |
|                   |    +- Supervision time for the operation [CO:41BC-3] - (Service)
|                   |         This parameter defines the timeout for the hydraulic jacks
|                   |         (cylinder) re-synchronization. If this timeout has been expired,
|                   |         without the lift being able to reach the buffer in order to
|                   |         resync the jacks, the lift will throw an error for the
|                   |         maintenance mechanics into the logbook and then drives back to
|                   |         the lowest floor level.
|                   |
|                   +- ASME Hydro-ACR Relay Supervision [CO:409A] - (Setup)
|                   |    This object defines the usage of an external ACR Relay used for
|                   |    bridging the door safeties on ASME residential hydraulic lifts. A
|                   |    forcible guided feedback input does reflect the correct state of the
|                   |    relay.
|                   |
|                   +- Automatic cyclic safety gear test
|                        |
|                        +- Automatic cyclic safety gear test usage [CO:41FA-1] - (Setup)
|                        |    Some safety gear systems need a cyclic automatic test in order
|                        |    to fulfill their certifications. Usually this test is done, when
|                        |    the lift is idle, has the doors closed and no passengers have
|                        |    boarded the cabin. The test will engage the safety gear
|                        |    electrically. A sensor then checks the mechanical operation and
|                        |    feeds back that information to the controller.
|                        |
|                        +- Automatic safety gear test repeat timer [CO:41FA-2] - (Service)
|                        |    Some safety gear systems need a cyclic automatic test in order
|                        |    to fulfill their certifications. Usually this test is done, when
|                        |    the lift is idle, has the doors closed and no passengers have
|                        |    boarded the cabin. The test will engage the safety gear
|                        |    electrically. A sensor then checks the mechanical operation and
|                        |    feeds back that information to the controller.
|                        |
|                        +- Automatic safety gear test floor [CO:41FA-3] - (Service)
|                        |    Some safety gear systems need a cyclic automatic test in order
|                        |    to fulfill their certifications. Usually this test is done, when
|                        |    the lift is idle, has the doors closed and no passengers have
|                        |    boarded the cabin. The test will engage the safety gear
|                        |    electrically. A sensor then checks the mechanical operation and
|                        |    feeds back that information to the controller.
|                        |
|                        +- Trigger automatic cyclic safety gear test - (on site only)
|
+- Car load & Traction Cable measuring
|    |
|    +- Cabins load thresholds
|    |    |
|    |    +- Download values from load measuring unit - (Service)
|    |    |
|    |    +- No load parameter value [CO:4260-2] - (Service)
|    |    |    This object defines the 'no load' parameter value of the car load measuring
|    |    |    unit.
|    |    |
|    |    +- Full load parameter value [CO:4260-3] - (Service)
|    |    |    This object defines the 'full load' parameter value of the car load measuring
|    |    |    unit.
|    |    |
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|    |    +- Overload parameter value [CO:4260-4] - (Setup)
|    |    |    This object defines the 'overload' parameter value of the car load measuring
|    |    |    unit.
|    |    |
|    |    +- Upload values to load measuring unit - (Setup)
|    |
|    +- Set cabin load to zero
|    |
|    +- Number load measuring sensors [CO:4260-6] - (Service)
|    |    This object contains the count of sensors that the car load measuring unit uses to
|    |    determine the car load.
|    |
|    +- Cable diameter & Suspension Ratio
|    |    |
|    |    +- Rope/cable diameter [CO:4260-10] - (Service)
|    |    |    This object contains the diameter of a single rope/cable, required by some load
|    |    |    measuring units operating with sensors, mechanically connected to the traction
|    |    |    cables.
|    |    |
|    |    +- Load suspension ratio [CO:4260-11] - (Service)
|    |         This object contains the ratio of the traction cable suspension, for example
|    |         1:1 or 2:1. Setting this value is a hint for the load measuring to calculate
|    |         the correct weight from the sensor values.
|    |
|    +- More…
|         |
|         +- Load Measuring Calibration
|         |    |
|         |    +- Zero/empty cabin weight [CO:4260-7] - (Service)
|         |    |    This object is used to teach the empty cabin weight in order to calibrate
|         |    |    the load measuring unit.
|         |    |
|         |    +- Known cabin weight [CO:4260-8] - (Service)
|         |         This object is used to teach a known weight in order to calibrate the load
|         |         measuring unit.
|         |
|         +- No-Load & Occupied signal [CO:4106] - (Service)
|         |    Defines if the car no-load signal should be taken in account in creating the
|         |    occupied signal.
|         |
|         +- Load unit supervision [CO:4160] - (Setup)
|         |    This object defines if the lift shall enter 'Out Of Order' state, if the cabin
|         |    load measuring unit signals a failure or its heartbeat gets lost, indicating
|         |    that the unit does not communicate anymore.
|         |
|         +- Compensation of weight changes [CO:41A2] - (Service)
|         |    This object defines if the car load measuring unit shall try to compensate the
|         |    weight change caused by the traction cables, depending were the car currently
|         |    is. For that purpose the unit detects when the lift is driving and in which
|         |    direction.
|         |
|         +- Even more…
|              |
|              +- Rope/cable load difference limit [CO:4260-9] - (Service)
|              |    This object contains the allowed load difference per rope/cable, before
|              |    the car load measuring unit will throw an fault/alarm.
|              |
|              +- Slack Rope threshold (single cable) [CO:4260-12] - (Service)
|              |    This object contains the threshold value per rope for detecting a slack
|              |    rope before the load measuring unit issues an error/alarm.
|              |
|              +- Slack Rope overall threshold (display value) [CO:4260-13] - (Service)
|              |    This object contains the overall threshold for the whole load measuring
|              |    unit, based on the display value, used for detecting a slack rope before
|              |    the load measuring unit issues an error/alarm. This value might be
|              |    negative.
|              |
|              +- Traction Belt/Rope Monitoring
|                   |
|                   +- Traction Belt/Rope Monitoring usage [CO:4261-1] - (Setup)
|                   |    If you have installed a device, that is monitoring the steel cores of
|                   |    your traction belts or plastic coated cables, you can turn the
```

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|                   |    supervision of that unit and its status word on, by means of this
|                   |    object.
|                   |
|                   +- Overall Belt/Rope Wear Out Threshold [CO:4261-2] - (Service)
|                   |    If you have installed a device, that is monitoring the steel cores of
|                   |    your traction belts or plastic coated cables, you can adjust the
|                   |    sensor value threshold here, that would indicate, that those steel
|                   |    cores are worn out. Usually this is measured by means of the
|                   |    electrical resistance, that changes when those cores break or are
|                   |    broken.
|                   |
|                   +- Traction belt/rope Monitoring Configuration [CO:4261-3] - (Service)
|                   |    If you have installed a device, that is monitoring the steel cores of
|                   |    your traction belts or plastic coated cables, you can define which of
|                   |    the possible sensors is monitoring a single steel core. You can also
|                   |    indicate, if you have replaced a belt or cable.
|                   |
|                   +- Traction belt/rope Monitoring Renovation [CO:4261-4] - (Service)
|                        If you have installed a device, that is monitoring the steel cores of
|                        your traction belts or plastic coated cables, you can tell the
|                        device, which traction belts or cables you have just replaced/renewed
|                        for the supervision device to re-calibrate its wear sensing.
|
+- Pawl Device
|    |
|    +- Pawl device usage [CO:4050] - (Setup)
|    |    This object defines if the lift installation is featuring a pawl device unit. A pawl
|    |    device is a mechanical locking device for seating the car safely after having
|    |    stopped in a floor, to prevent the cabin from falling. It is often used with
|    |    hydraulic drives but can also be combined with traction lifts.
|    |
|    +- Pawl device operating supervision time [CO:4051] - (Setup)
|    |    This object defines the time span used, in order to detect a hung pawl device unit
|    |    (bolt), that has not retracted or extended as requested.
|    |
|    +- Pawl/bolt limit switches
|    |    |
|    |    +- Use pawl/bolt retracted limit switch
|    |    |    |
|    |    |    +- Use pawl/bolt retracted limit switch [CO:4052] - (Setup)
|    |    |    |    This object defines if the pawl device features a limit switch, signalling
|    |    |    |    that the pawl/bolt has been fully retracted, enabling the car/cabin to
|    |    |    |    move downwards.
|    |    |    |
|    |    |    +- Pawl device retracting afterrun time [CO:4078] - (Service)
|    |    |         This object defines if the pawl device shall still be powered for a given
|    |    |         time span, even if the bolt has reached the fully retracted position,
|    |    |         indicated via the dedicated limit switch. This option makes only sense, if
|    |    |         the option for keeping the pawl device peaked high, even if the bolt has
|    |    |         been fully retracted, has been turned off in the first place.
|    |    |
|    |    +- Use pawl/bolt extended limit switch
|    |    |    |
|    |    |    +- Use pawl/bolt extended limit switch [CO:4053] - (Setup)
|    |    |    |    This object defines if the pawl device features a limit switch, signalling
|    |    |    |    that the pawl/bolt has been fully extended, blocking the car/cabin from
|    |    |    |    moving downwards.
|    |    |    |
|    |    |    +- Pawl device extending afterrun time [CO:4079] - (Service)
|    |    |         This object defines if the pawl device shall still be powered for a given
|    |    |         time span, even if the bolt has reached the fully extended position,
|    |    |         indicated via the dedicated limit switch.
|    |    |
|    |    +- Count of pawl device limit switch pairs [CO:41FF] - (Setup)
|    |         This object defines, if the pawl device has one or more pairs of limit
|    |         switches. If the pawl device consists of several motors, you might are in need
|    |         of several pairs of limit switches.
|    |
|    +- Pawl device lifting point [CO:4055] - (Setup)
|    |    This object holds the distance above the floor level used as a lifting/lowering
|    |    point for the pawl device, when arriving in a floor or starting from a floor.
|    |
```

```
|    +- More…
|         |
|         +- Keep 'retract pawl/bolt' signal powered [CO:4054] - (Setup)
|         |    This object defines if the pawl device needs to have the signal for retracting
|         |    (releasing) the pawl/bolt powered, even if having reached the 'unlocked'
|         |    position, especially when driving.
|         |
|         +- Pawl device lifting/lowering timeout [CO:4058] - (Setup)
|         |    This object defines the time-out used for lowering or lifting the car, when
|         |    approaching from or starting to another floor.
|         |
|         +- Pawl device 'car seated' input [CO:4057] - (Setup)
|         |    This object defines if the pawl device provides a signal telling the lift
|         |    controller that the car/cabin has properly seated. If such a signal is not
|         |    provided by the pawl device, the lift will drive the car to floor level and
|         |    stops then.
|         |
|         +- Pawl device floor table [CO:4056] - (Setup)
|         |    This object holds the floors that shall feature the pawl device in order to
|         |    seat the car/cabin, if the lift arrives there. This table makes it possible to
|         |    define exceptions for certain floors easily, by removing the black dot.
|         |
|         +- Even more…
|              |
|              +- Car lifting/lowering velocity [CO:4066] - (Setup)
|              |    Use this object to define the velocity (V0..V4/VI/VN) that the drive shall
|              |    feature, if lifting or lowering the car on pawl device operation.
|              |
|              +- Pawl device external re-pumping unit [CO:4067] - (Setup)
|              |    Use this object to define if the pawl device is featuring an external
|              |    hydraulic unit to re-pump oil pressure, while the car has been seated.
|              |    Otherwise the main drive will be used with re-levelling velocity (VN) for
|              |    keeping the pressure.
|              |
|              +- Lifting featuring a separate re-level unit [CO:407B] - (Setup)
|              |    This object defines if the car shall be lifted, featuring an external
|              |    separate lifting unit rather than the main drive.
|              |
|              +- Block lift, if pawl device could not be un-/locked [CO:406C] - (Setup)
|              |    Use this object to define if the lift shall enter blocked operation mode,
|              |    if the pawl-device (bolt) could not be locked and the car/cabin can't be
|              |    safely seated.
|              |
|              +- Lock pawl device only if being at floor level [CO:40D2] - (Setup)
|                   Use this object to define if the bolt of the pawl device shall only be
|                   engaged for locking the car, if the car is right at the floor level.
|
+- Basics
     |
     +- Lift Identification Number [CO:400A] - (Service)
     |    This object holds the vendor/manufacturer specific lift identification number as a
     |    string.
     |
     +- Single/Team settings
     |    |
     |    +- Single/Team lift [CO:4000] - (on site only) - (Setup)
     |    |    Declares this lift to be a single or a team lift. If setting this lift up to be
     |    |    a team member, double check the selection to avoid duplicates in the lift team.
     |    |
     |    +- Team operation strategy [CO:41B0-1] - (Service)
     |    |    This option defines, if the passenger call processing in the team, shall put
     |    |    the main focus on energy consumption or performance.
     |    |
     |    +- Reflect on-board landing calls to the bus system [CO:41B0-2] - (Service)
     |    |    This option is rarely used and defines if landing calls, that are just
     |    |    addressed to one single lift, shall be reflected/broadcast back to the bus
     |    |    system having set the lift mask to 'All Lifts'. This feature might be used, if
     |    |    a lift team needs to be split up into smaller teams via key switch.
     |    |
     |    +- Even more…
     |         |
     |         +- Time-span to leave the group, when the swing door has been left open
```

```
|         |  [CO:41B0-3] - (Service)
|         |    This option define the time span the swing/manual door has to be left open
|         |    by a passenger, before the lift will leave the group/team.
|         |
|         +- When full load in lobby floor, send another team lift [CO:41B0-4] -
|            (Service)
|              This option defines that another team lift shall automatically travel to
|              the lobby floor, if another team lift is leaving the lobby floor with a
|              full car (full load).
|
+- Floors
|    |
|    +- Top floor [CO:4002] - (on site only) - (Setup)
|    |    The top (upper) floor of the lift hoistway.
|    |
|    +- Bottom floor [CO:4001] - (on site only) - (Setup)
|    |    The bottom (lowest) floor of the lift hoistway.
|    |
|    +- Floor names [CO:4270] - (Service)
|    |    This object holds the floor names or labels.
|    |
|    +- Lobby floor/main entrance [CO:4107-2] - (Service)
|    |    Defines the lobby floor, which is the main entrance of the building.
|    |
|    +- More…
|         |
|         +- Broadcast Floor Names via CANbus [CO:4179] - (Service)
|         |    This object defines if the lift controller shall broadcast the floor names
|         |    via the CANopen bus system.
|         |
|         +- 7-Segment Display Terminals via CANbus [CO:4178] - (Service)
|         |    This object defines if the lift controller shall generate 7-segment
|         |    display signals and transmit them via the CANbus.
|         |
|         +- Gray/Bin Code offset for On-Board Terminals [CO:42B5]
|         |    This object defines an optional offset for the gray and binary code
|         |    terminals, when you define them directly on the lift controller's
|         |    hardware. This offset will *only* effect the on-board terminals and not
|         |    terminals on some bus driven IO panels.
|         |
|         +- Transmit car direction arrows to the landings [CO:40D1] - (Service)
|         |    This object defines if the direction arrows for the car shall be send to
|         |    the landings as well. Some display might feature those to create some
|         |    animation, while the passengers are waiting to indicate, that the lift is
|         |    actually moving.
|         |
|         +- More…
|              |
|              +- Direction indication at the landings [CO:40D0] - (Service)
|              |    This object defines if both or no direction indication arrows will be
|              |    shown at the landings, when the lift is stationary.
|              |
|              +- Transmit the Estimated Time to Arrival for the landing calls
|                 [CO:4220] - (Service)
|                   This object defines whether the lift controller should transmit an
|                   estimated arrival time for the pending landing calls. This value is
|                   an estimation and can change at any time due to the current
|                   situation. As the calculation also includes statistical values, the
|                   accuracy improves over time.
|
+- Interfaces
|    |
|    +- Terminals
|    |    |
|    |    +- On-Board IO-Terminals
|    |    |    |
|    |    |    +- Inputs
|    |    |    |
|    |    |    +- Outputs
|    |    |    |
|    |    |    +- Calls
|    |    |    |
```

```
|    |    +- CAN1 (car) interface
|    |    |
|    |    +- CAN2 (hoistway) interface
|    |
|    +- CAN1 (car) interface [CO:4201-1] - (on site only) - (Setup)
|    |    This object defines the function of the CAN1 interface, connecting the
|    |    car/cabin.
|    |
|    +- CAN2 (hoistway) interface [CO:4202-1] - (on site only) - (Setup)
|    |    This object defines the function of the CAN2 interface, connecting the
|    |    hoistway/shaft.
|    |
|    +- CAN Interface Settings
|         |
|         +- CAN1 (car) bitrate [CO:4201-2] - (on site only) - (Setup)
|         |    This object selects the bitrate used for the CAN interface. The standard
|         |    bitrate is 250kBit/s.
|         |
|         +- CAN2 (hoistway) bitrate [CO:4202-2] - (on site only) - (Setup)
|              This object selects the bitrate used for the CAN interface. The standard
|              bitrate is 250kBit/s.
|
+- More…
     |
     +- Weights & Payload
     |    |
     |    +- Rated car load [CO:6465-1] - (Service)
     |    |    This object contains the rated car load - the load that the car is made
     |    |    for. The value shall be given in multiples of [kg].
     |    |
     |    +- Car weight [CO:6465-2] - (Service)
     |    |    This object contains the actual weight of the car/cabin itself. The value
     |    |    shall be given in multiples of [kg].
     |    |
     |    +- Counter weight [CO:6465-3] - (Service)
     |         This object contains the actual weight of the counter weight. The value
     |         shall be given in multiples of [kg].
     |
     +- Inspection & Emergency Electrical Operation
     |    |
     |    +- Inspection control panel in the pit, usage [CO:403F] - (Setup)
     |    |    This object defines if an inspection control panel in the hoistway pit
     |    |    (EN81-20) is used or if the lift is installed without such an inspection
     |    |    control panel. If such a panel is used and has been turned on once, keep
     |    |    in mind that after having it turned off again, the operation has to be
     |    |    reset via a separate input the user interface as well.
     |    |
     |    +- Inspection control panel in the pit, policy [CO:4044] - (Setup)
     |    |    This object defines if unlocking the inspection pit operation shall be
     |    |    possible via the user interface (display) or via pulsing the lowest
     |    |    landing door call button, after the inspection pit switch has been turned
     |    |    off again and the landing door has been cycled. Otherwise it will only be
     |    |    possible via the electrical input function 'Inspection in the pit reset
     |    |    signal'.
     |    |
     |    +- Inspection Pit Reset Door Side [CO:4205] - (on site only) - (Setup)
     |    |    This object defines, which door side is the one, that leads entry to the
     |    |    pit. This parameter can be used by the lift controller, if the pit
     |    |    inspection operation is reset via landing call button pulse code, instead
     |    |    of a proper key switch.
     |    |
     |    +- Inspection/Emergency Electrical Operation 'fast' usage
     |    |    |
     |    |    +- Inspection 'fast' usage [CO:405C] - (Setup)
     |    |    |    This object defines if for inspection operation a 'fast' button is
     |    |    |    featured to drive with inspection velocity. If a 'fast' is used but
     |    |    |    not pressed, creeping velocity would be used instead.
     |    |    |
     |    |    +- Distance from top floor, were slow inspection velocity is required
     |    |    |  [CO:42C0] - (Setup)
     |    |    |    This object defines a distance from the final stops, within only slow
     |    |    |    velocity is allowed for inspection operation. This will disable any
```

```
|    |    |    pressed 'INSPECTION FAST' button.
|    |    |
|    |    +- Distance from bottom floor, were slow inspection velocity is required
|    |    |  [CO:42C1] - (Setup)
|    |    |    This object defines a distance from the final stops, within only slow
|    |    |    velocity is allowed for inspection operation. This will disable any
|    |    |    pressed 'INSPECTION FAST' button.
|    |    |
|    |    +- Emergency electrical operation 'fast' usage [CO:405B] - (Setup)
|    |         This object defines if for emergency electrical operation a 'fast'
|    |         button is featured to drive with emergency electrical operation
|    |         velocity (VR). If a 'fast' is used but not pressed, creeping velocity
|    |         (V0) would be used instead.
|    |
|    +- More…
|         |
|         +- Emergency electrical operation ignores passive safety chain [CO:404F]
|         |  - (Setup)
|         |    This object defines if the emergency electrical operation shall
|         |    ignore the state of the safety board input for the passive safety
|         |    chain. This can be useful for retrieving the lift back after some
|         |    testing operations, if the emergency electrical operation supplies
|         |    power again to the emergency stop input in the safety chain, but the
|         |    input of the passive safety chain on the SB board remains dropped,
|         |    due to two open contacts in the chain.
|         |
|         +- Inspection neutralize Emergency Electrical Operation [CO:4075] -
|         |  (Setup)
|         |    This object defines that turning on the inspection control panel will
|         |    neutralize the emergency electrical operation. This is what the
|         |    normative normally asks. But there might be reasons and installations
|         |    were this could cause an extra risk, that can be eliminated by
|         |    interlocking both operation modes.
|         |
|         +- Immediate stop on Inspection & Emergency Electrical Operation
|         |  [CO:4077] - (Setup)
|         |    This object defines if on stopping with the inspection or emergency
|         |    electrical operation being turned on, the lift shall stop immediately
|         |    (hard) or try to stop soft with a short ramp, if the safety chain is
|         |    staying closed.
|         |
|         +- Reset inspection car top requires landing door lock cycle [CO:407D] -
|         |  (Setup)
|         |    This object can be used to indicate to the lift controller, that
|         |    resetting the inspection car top operation, requires the landing door
|         |    lock being cycled, after inspection had been turned off again. The
|         |    door lock cycle is used as an indication, that the techncian has
|         |    actually left the car top.
|         |
|         +- Even more…
|              |
|              +- Waiting for inspection being activated, caused by landing door
|              |  opening [CO:41BE] - (Setup)
|              |    This object can be used to define, that on an unattended door
|              |    safety chain opening, the lift is waiting for the inspection
|              |    operation to be turned on by the technician.
|              |
|              +- Inspection Overspeed threshold [CO:42C3] - (on site only) -
|                 (Setup)
|                   This object defines the maximum allowed velocity under
|                   inspection operation mode. If this velocity value has been
|                   exceeded, the lift will be stopped by means of a soft stop via
|                   the drive system. This is not a safety function. This feature is
|                   just meant to be an additionally supervision.
|
+- Platform lift mode
|    |
|    +- Platform lift operation on/off [CO:4080-1] - (Setup)
|    |    This object defines if the platform lift support shall be used or not. In
|    |    this operating mode the calls are usually operated in dead-mans-grip,
|    |    requiring constant-pressure to drive the lift.
|    |
```

```
|    +- Automatic re-levelling of the platform [CO:4080-2] - (Setup)
|    |    This object defines if the platform lift shall automatically re-level the
|    |    platform, without the operator using the call buttons.
|    |
|    +- Car call timeout for Hold2Run mode [CO:4080-3] - (Service)
|         This object defines a timeout used to cancel registered car calls, if the
|         platform lift solution is featuring a Hold-To-Run button, that needs
|         constant pressure for driving. When the button has been released while
|         driving, the car calls stay registered for the given time span. The
|         timeout is stopped again, when the Hold-To-Run button is pressed again
|         within the given time.
|
+- Time Planner
|    |
|    +- Week Planner 1 [CO:40B0-1] - (Service)
|    |    This object holds the week planner entries, used to turn on/off functions
|    |    based on weekdays, start and stop time. You can define a time span where
|    |    the start time is lower than the stop time, like 08:00..17:00 or the other
|    |    way around like for turning off the arrival indicators over night from
|    |    17:00 to 08:00 on the next morning.
|    |
|    +- Week Planner 2..4 [CO:40B0-2] - (Service)
|    |
|    +- More…
|
+- Even more…
     |
     +- Lift Standard/Code [CO:4400] - (on site only) - (Setup)
     |    This option defines which lift/elevator standard/code the lift controller
     |    shall make use of. The EN81-20 standard is usually applied for Europe and
     |    the ASME code for the North American market.
     |
     +- Standard/Code Version [CO:4401] - (on site only) - (Setup)
     |    This option defines which version of the lift/elevator standard/code the
     |    lift controller shall make use of.
     |
     +- In-Car Stop-Switch Usage [CO:41ED] - (Setup)
     |    This object defines if the lift shall feature a 'Stop Switch' in the car,
     |    that is normally closed when the lift is operational and will open, when
     |    the lift shall do a quick stop.
     |
     +- Passive Safety Chain blocks lift operation [CO:4188] - (on site only) -
     |  (Setup)
     |    This object defines if the lift shall enter the 'blocked operation' mode,
     |    when the passive safety chain has been tripped.
     |
     +- Check car top I/O module (LXC) at start [CO:4380] - (Service)
          This option defines if the lift at startup shall assume a LXC, CLK or
          other car top electronic I/O panel being present.
```

108.2 System Menu

```
- Language
    |
    +- Primary language [CO:42FA]
    |    Select the primary language used for the user interface.
    |
    +- Alternative language [CO:42FB]
    |    Select the alternative language used for the user interface, for being able to turn the
    |    user interface temporarily to this language.
    |
    +- Optional third language [CO:42F4]
         This object declares a third optional language used for the user interface, for being
         able to turn the user interface temporarily to this language.

- Security
    |
    +- New Setup Password [CO:4280] - (on site only) - (Setup)
    |    This object stores the 'Setup Password'. This password is used to grant access to
    |    fundamentally parameters that are used to setup the lift.
```

```
    |
    +- New Service Password [CO:4281] - (on site only) - (Service)
    |    This object holds the 'Service Password'. This password is used to grant access to
    |    parameters that are used to define properties of the lift.
    |
    +- Lift Parameter Change Log

- Internal Settings
    |
    +- Training Board Mode [CO:42FF] - (on site only) - (Setup)
    |    This object declares this board to be a training board having a simulated safety chain
    |    behaviour. You may set the doors to emulation mode too in order to have a full working
    |    training board. Do not use the 'training board' features on a real operating lift.
    |
    +- Safety Chain Emulation for training boards [CO:42F6] - (on site only) - (Setup)
    |    This object declares if the board being in training board mode, shall emulate the safety
    |    chain as well.
    |
    +- Create virtual floor positions - (on site only) - (Setup)
    |
    +- Erase floor positions - (on site only) - (Setup)
    |
    +- More…
         |
         +- Factory Defaults
         |    |
         |    +- Reset to Factory Defaults - (on site only) - (Setup)
         |    |
         |    +- Reset on-board terminals - (on site only) - (Setup)
         |
         +- Factory password warning [CO:5056] - (Setup)
         |    This object is used to enable or turn off the factory password warning. Keep in
         |    mind, that you always should setup at least a SETUP password for Cyber Security.
         |
         +- Screenshot Mode [CO:42F8] - (Service)
         |    The 'Screenshot Mode' may be used for creating photos of the lift controller's
         |    display that will be stored on a plugged-in USB-mass storage. Those screenshots will
         |    be saved as compressed PNG files, usually suitable for manuals and instructions.
         |
         +- SZ-Board detection (safety circuit)
         |    |
         |    +- SZ-Board detection (safety circuit) [CO:42F7] - (on site only) - (Setup)
         |    |    This object declares, if an on-board SZ safety circuit (door bridging) shall be
         |    |    automatically detected, if being present. If turned off, on-board SZ boards
         |    |    will generally not be detected and therefore not be used. Optionally this
         |    |    parameter can be used, to declare, that a classical external SZ board is
         |    |    featured instead. This does *not* apply to SIL-3 encoders with integrated
         |    |    safety circuits. These types are automatically detected.
         |    |
         |    +- SZ-Board Manufacturer [CO:42F3] - (on site only) - (Setup)
         |    |    This object defines the manufacturer of the SZ board in use.
         |    |
         |    +- Count of SZ-module switching cycles - (on site only) - (Setup)
         |
         +- Even more…
              |
              +- Printouts
              |    |
              |    +- Printout menu structure
              |    |    |
              |    |    +- Printout menu structure - (on site only)
              |    |    |
              |    |    +- Printout menu structure without help texts - (on site only)
              |    |
              |    +- Printout event reference - (on site only)
              |    |
              |    +- Printout JSON lists
              |         |
              |         +- Printout event JSON list - (on site only)
              |         |
              |         +- Printout object JSON list - (on site only)
              |
```

```
            +- Drive display theme selection
            |    |
            |    +- Drive display theme testing [CO:5048]
            |    |    Object to select the drive display customization for internal testing.
            |    |    These customization exist to mimic the user interface of the real device.
            |    |
            |    +- Drive Unit Display - (on site only)
            |
            +- Preset statistical values
            |    |
            |    +- Trip counter - (Setup)
            |    |
            |    +- Operation Time Meter - (Setup)
            |    |
            |    +- Direction changes - (Setup)
            |    |
            |    +- Main Contactors Cycles
            |         |
            |         +- Main contactors cycle count upward - (Service)
            |         |
            |         +- Main contactors cycle count downward - (Service)
            |
            +- Delete old backup files - (on site only)
            |
            +- Much more…
                 |
                 +- Reset non-volatile operation states
                 |    |
                 |    +- Reset non-volatile fire alarm, fire service and chemical operation states
                 |    |
                 |    +- Reset non-volatile cloud and app operation states
                 |    |
                 |    +- Elevate temporarily App State - (Setup)
                 |
                 +- Service/Setup recovery - (on site only)
                 |
                 +- Purchase a license online
                 |
                 +- USB Mass Storage Dongle [CO:4289] - (Setup)
                      This object defines, if a special prepaired USB mass storage is used as a
                      dongle, instead of a numerical SETUP code. Be very careful with this
                      parameter as it requires a dongle in order to be turned off again!

- Network
    |
    +- Cloud (JSON/REST) Service
    |    |
    |    +- Cloud (JSON/REST) mode [CO:4300-5] - (Setup)
    |    |    This option enables the communication with a web/cloud based service using a JSON
    |    |    based API.
    |    |
    |    +- Cloud server host [CO:4300-7] - (Setup)
    |    |    This object defines the host name of the cloud service server. This is usually the
    |    |    URL used by the lift controller to automatically connect to the cloud.
    |    |
    |    +- Cloud service port [CO:4300-8] - (Setup)
    |    |    This object defines the host port number of the cloud service server.
    |    |
    |    +- Cloud domain token [CO:4300-9] - (Setup)
    |    |    This object defines a public token used to pre-declare a new lift installation to be
    |    |    installed/assembled by a specific company. This makes it easier to integrate new
    |    |    lifts into the cloud provider's database.
    |    |
    |    +- More…
    |         |
    |         +- Show cloud statistics
    |         |
    |         +- Install/update CA certificate - (Service)
    |         |
    |         +- Show installed CA certificate - (Service)
    |         |
    |         +- Remove all manually installed certificates - (Service)
```

```
|         |
|         +- Even more…
|              |
|              +- Developer mode - accept any certificate [CO:4300-12] - (on site only) -
|              |  (Setup)
|              |    This object defines, if for development purposes, any possible server
|              |    certificate shall be accepted by the lift controller. Beware that
|              |    accepting any certificate make a 'Man in the Middle' attack possible.
|              |
|              +- Cloud Event Push Filter [CO:4300-17] - (Service)
|              |    This object defines if for the trivial events, like parking or turning the
|              |    car illumination off, turning the floor displays off or keeping a swing
|              |    door long open and other likewise events, a default filter shall prevent,
|              |    that they are pushed automatically all the time.
|              |
|              +- Cloud based generic I/O
|                   |
|                   +- Generic Input Terminals
|                   |
|                   +- Cloud based generic outputs
|                   |
|                   +- Names of generic remote inputs [CO:4274] - (Service)
|                   |    This object can be used to label the generic remote input terminals.
|                   |    This text array can be read by the cloud to label the corresponding
|                   |    user interface.
|                   |
|                   +- Names of generic remote outputs [CO:4275] - (Service)
|                        This object can be used to label the generic remote output terminals.
|                        This text array can be read by the cloud to label the corresponding
|                        user interface.
|
+- Server (HTML5/JS) mode
|    |
|    +- Server (HTML5/JS) mode [CO:4300-6] - (on site only) - (Setup)
|    |    This option enables the communication with the on-board web server service using
|    |    HTML5 and JavaScript.
|    |
|    +- Frontend Code [CO:4300-22] - (on site only) - (Service)
|    |    This object defines the code that has to be entered in order to enter the web
|    |    frontend.
|    |
|    +- Enter Calls enabling code [CO:4300-15] - (on site only) - (Setup)
|    |    This object defines the code that has to be entered on the web page in order to give
|    |    calls to the lift.
|    |
|    +- Timeout Web Server Inactivity [CO:4300-21] - (on site only) - (Setup)
|    |    This object can be used to define a timeout for using the build-in web server. The
|    |    timeout is re-triggered with any user activity.
|    |
|    +- More…
|         |
|         +- Use the last digits of the UID as ticket [CO:4300-18] - (on site only) -
|         |  (Setup)
|         |    This object defines, if the last six digits of the unique board identifier
|         |    (UID) shall be used as a ticket code for the local web server, that can be used
|         |    for maintenance purposes, with the technician being on side. The UID can be
|         |    found in the System Information dialogue.
|         |
|         +- Enable page for call disabling/blocking [CO:4300-16] - (on site only) - (Setup)
|              This object defines if the technician shall be able to disable/block car and
|              landing calls using the build-in web interface. This requires entering the
|              ticket code for accessing calls.
|
+- DHCP Mode [CO:4300-4] - (on site only) - (Setup)
|    The Dynamic Host Configuration Protocol (DHCP) is a communication network protocol used
|    to automatically distribute network configuration parameter to clients from a server.
|
+- Show network configuration
|
+- More…
     |
     +- IP-address [CO:4300-1] - (on site only) - (Setup)
```

```
|    This object defines the IP-address used for network based communication.
|
+- Subnet-mask [CO:4300-2] - (on site only) - (Setup)
|    This object defines the sub-net mask used for network based communication. A typical
|    value for class-C network would be '255.255.255.0'.
|
+- Gateway-address [CO:4300-3] - (on site only) - (Setup)
|    This object defines the gateway address used for network based communication.
|    Typically the address of the gateway is in the same address range like the device
|    but ends with '.1'.
|
+- DNS-server-address [CO:4300-10] - (on site only) - (Setup)
|    This object defines the DNS-server address (domain name server) used for network
|    based communication.
|
+- Even more…
     |
     +- Special Network Settings
     |    |
     |    +- Using fixed MAC-address [CO:4300-19] - (on site only) - (Setup)
     |    |    This object defines if the network adapter of the lift controller shall
     |    |    use a fixed (static) MAC-address. By default for security reasons, the MAC
     |    |    address of the lift controller shall be randomized.
     |    |
     |    +- ETH PHY power control [CO:504E] - (on site only) - (Service)
     |         This object is used to temporarily turn power off or on of the Ethernet
     |         physical interface.
     |
     +- SSH Activation (4 h) [CO:5013] - (on site only) - (Setup)
     |    The Secure Shell (SSH) network protocol is used for securely cryptographic
     |    operating of services over an unsecured network. It is most common used to
     |    remotely operate the command line shell. This object can be used to activate
     |    SSH temporarily for about four hours.
     |
     +- NTP Server (Net Time Protocol)
     |    |
     |    +- NTP Usage (Net Time Protocol) [CO:4300-14] - (Service)
     |    |    This object defines the NTP server, which is short for Net Time Protocol
     |    |    server. These servers usually are connected to a trustful time source and
     |    |    can be used to keep the system time of local device up-to-date.
     |    |
     |    +- NTP Server (Net Time Protocol) [CO:4300-13] - (Service)
     |         This object defines the NTP server, which is short for Net Time Protocol
     |         server. These servers usually are connected to a trustful time source and
     |         can be used to keep the system time of local device up-to-date.
     |
     +- BACnet server support
     |    |
     |    +- BACnet server usage [CO:4320-1] - (on site only) - (Setup)
     |    |    This options defines if the lift controller shall provide a BACnet server
     |    |    instance.
     |    |
     |    +- BACnet Device ID [CO:4320-2] - (Service)
     |    |    This option defines the BACnet instance number, that this lift controller
     |    |    shall use when performing BACnet network communication.
     |    |
     |    +- BACnet server port [CO:4320-3] - (Service)
     |    |    This option defines the BACnet/IP port number used for the network
     |    |    interface. This is usually 0xBAC0 but may change due to customer network
     |    |    requirements. The value shall not be lower than 1023 as those ports are
     |    |    defined by IANA, the Internet Assigned Numbers Authority.
     |    |
     |    +- BACnet object name [CO:4320-7] - (Service)
     |    |    This option defines the BACnet object name, a string typically telling
     |    |    that this is a kind of lift controller application.
     |    |
     |    +- More…
     |         |
     |         +- BACnet device location [CO:4320-4] - (Service)
     |         |    This option defines the BACnet location, a string describing in which
     |         |    building or street or city the unit has been installed.
     |         |
```

```
|         +- BACnet description [CO:4320-5] - (Service)
|         |    This option defines the BACnet description, a string typically
|         |    telling what kind of device or station it is.
|         |
|         +- BACnet model name [CO:4320-6] - (Service)
|         |    This option defines the BACnet model name, a string typically telling
|         |    what kind lift controller model the system actually is.
|         |
|         +- BACnet present values
|              |
|              +- BACnet Analogue Values
|              |
|              +- BACnet Binary Values
|              |
|              +- BACnet String Values
|
+- Much more…
     |
     +- MQTT support
     |    |
     |    +- MQTT usage [CO:4338-1] - (on site only) - (Setup)
     |    |    This option defines if the lift controller shall provide a MQTT
     |    |    interface and connect to a broker.
     |    |
     |    +- MQTT broker host name [CO:4338-2] - (on site only) - (Setup)
     |    |    This option defines the host name of the MQTT Broker.
     |    |
     |    +- MQTT broker service port [CO:4338-3] - (on site only) - (Setup)
     |    |    This option defines the service port of the MQTT Broker.
     |    |
     |    +- MQTT Socket Mode [CO:4338-13] - (on site only) - (Setup)
     |    |    This option defines if a classic MQTT-socket mode, a web-socket-MQTT
     |    |    mode or an encrypted and secure TLS-web-socket-MQTT mode shall be
     |    |    used for connecting to the broker (server). The secure socket is the
     |    |    preferred connection mode, when connecting via the internet. If you
     |    |    run the system in a factory or hospital environment, were a secure
     |    |    network is used for technical facilities, like lifts, you might go
     |    |    for the simple connection mode.
     |    |
     |    +- More…
     |         |
     |         +- MQTT Publish path [CO:4338-5] - (Setup)
     |         |    This option defines were to publish the lift related topics
     |         |    (process data).
     |         |
     |         +- MQTT Subscribe path [CO:4338-6] - (Setup)
     |         |    This option defines were to subscribe for lift related topics
     |         |    (commands).
     |         |
     |         +- MQTT User Name [CO:4338-7] - (Setup)
     |         |    Some broker want a user name for login. This option defines the
     |         |    user name, used when connecting to the broker.
     |         |
     |         +- MQTT Password [CO:4338-8] - (Setup)
     |         |    Some broker want a password for login. This option defines the
     |         |    password, used when connecting to the broker.
     |         |
     |         +- Even more…
     |              |
     |              +- MQTT Client Identifier [CO:4338-4] - (Setup)
     |              |    This option defines the client identifier (name) of the
     |              |    lift controller. The ID is a string of up to 23 characters,
     |              |    that is used to identify an MQTT client. Each ID must be
     |              |    unique so that only one connection is established to one
     |              |    client at a time.
     |              |
     |              +- MQTT Protocol Name [CO:4338-9] - (Setup)
     |              |    This option defines the protocol name, used when connecting
     |              |    to the broker. Typically the name is a short string 'MQTT'
     |              |    in capital letters. The name may vary, depending on the
     |              |    broker (server) settings. If the protocol name is incorrect
     |              |    the broker (server) may disconnect the client.
```

```
|              |
|              +- MQTT Will Topic [CO:4338-10] - (Setup)
|              |    This option defines the topic name of the 'last will
|              |    message' of the lift controller, that is forwarded to other
|              |    clients, when the connection is interrupted. Therefore,
|              |    these recipients can take actions, such as sending users
|              |    notifications.
|              |
|              +- MQTT Will Message [CO:4338-11] - (Setup)
|              |    This option defines the content of the 'last will message'
|              |    of the lift controller, that is forwarded to other clients,
|              |    when the connection is interrupted. Therefore, these
|              |    recipients can take actions, such as sending users
|              |    notifications.
|              |
|              +- Much more…
|                   |
|                   +- MQTT QoS Level [CO:4338-12] - (on site only) -
|                   |  (Service)
|                   |    This option defines the quality of protocol level
|                   |    [0..2]. A level of zero (At-most-once delivery) needs
|                   |    the lowest bandwidth but is less secure. A level of
|                   |    one (At-lest-once delivery) is usually good enough and
|                   |    features a single <acknowledge> message for every
|                   |    message published. A level of two (Exactly-once
|                   |    delivery) uses a double handshake to make sure, the
|                   |    message is delivered just once.
|                   |
|                   +- Install/update CA certificate
|                        |
|                        +- Install/update CA certificate - (Service)
|                        |
|                        +- Show installed CA certificate - (Service)
|
+- MODbus server support
     |
     +- MODbus server usage [CO:4330-1] - (on site only) - (Setup)
     |    This options defines if the lift controller shall provide a MODbus
     |    server instance.
     |
     +- MODbus server port [CO:4330-3] - (on site only) - (Service)
     |    This option defines the MODbus port number used for the network
     |    interface. This is usually 502 or 802(TLS) but can be altered to suit
     |    customer needs. The values are defined by IANA, the Internet Assigned
     |    Numbers Authority.
     |
     +- MODbus idle line detection [CO:4330-4] - (Service)
     |    This option defines a timeout in seconds used to detect a broken/idle
     |    connection. This time is triggered when the connection is opened and
     |    then re-triggered with every correct received MODbus frame. If a
     |    timeout situation happens, the connected is closed and the MODbus
     |    port is freed again.
     |
     +- MODbus registers
          |
          +- MODbus Input registers
          |
          +- MODbus Holding registers
          |
          +- MODbus Discrete Inputs & Coils
          |
          +- More…
               |
               +- MODbus input register offset [CO:4330-5] - (Service)
               |    This option can be used to shift the MODbus input registers
               |    within the MODbus address space.
               |
               +- MODbus holding register offset [CO:4330-6] - (Service)
                    This option can be used to shift the MODbus holding
                    registers within the MODbus address space.

- System
```

```
|
+- Software Backup/Update
|    |
|    +- Software Update - (on site only) - (Service)
|    |
|    +- Software Backup - (on site only) - (Service)
|    |
|    +- Check for the latest software version - (on site only) - (Service)
|
+- Parameter Backup/Update
|    |
|    +- Parameter-Set Update - (on site only) - (Setup)
|    |
|    +- Parameter-Set Backup - (on site only) - (Service)
|    |
|    +- Parameter, Printout, Logbook & Statistic - (on site only) - (Service)
|    |
|    +- Structured Parameter Printout (Text)
|    |    |
|    |    +- Structured Parameter Printout (Text)
|    |    |
|    |    +- Compressed Structured Parameter Printout (Text)
|    |
|    +- Simple Parameter Printout (Text)
|         |
|         +- Parameter Printout (Text)
|         |
|         +- Compressed Parameter Printout (Text)
|
+- Date & Time
|    |
|    +- Date & Time [CO:42FE]
|    |    This object declares the current date and time represented by the on-board realtime
|    |    clock.
|    |
|    +- Automatic Daylight Saving Time [CO:407E] - (Service)
|    |    This object defines if the lift controller shall automatically change between winter
|    |    and summer (Daylight Saving) time.
|    |
|    +- Local Time Zone [CO:42F5] - (Setup)
|         This object defines the local time zone of the lift installation, defined relative
|         to UTC/GMT.
|
+- About & Copyright
|    |
|    +- About & Copyright
|    |
|    +- Hash (SHA)
|
+- More…
     |
     +- Display Settings
     |    |
     |    +- Display Backlight & Orientation
     |    |    |
     |    |    +- Display-Off Timer [CO:42FD] - (Service)
     |    |    |    This object defines the time after the display background light is turned
     |    |    |    off, if there is no user input.
     |    |    |
     |    |    +- Display orientation [CO:42F9] - (Setup)
     |    |    |    This object declares the orientation (landscape or portrait) of the
     |    |    |    display and the user interface.
     |    |    |
     |    |    +- Display Background Light Runtime Meter [CO:504F] - (Setup)
     |    |         This object is used to count the operating hours of the display background
     |    |         light, being turned on. The value is given in minutes.
     |    |
     |    +- Startup Banner Image usage [CO:5030] - (Service)
     |    |    This object defines if a custom/company specific image banner shall be shown on
     |    |    the startup screen. The start banner graphics file shall be a PNG file being
     |    |    480x128 pixels in dimension and less than 120 KB in size. The file might
     |    |    feature alpha channel driven transparency effects.
```

```
        |    |
        |    +- Startup Banner Image (*.png)
        |    |
        |    +- System of physical units [CO:42EC] - (on site only) - (Setup)
        |         This object defines, which system of physical units the lift controller shall
        |         feature for its user interface. This setting does not affect how the positon,
        |         the velocity or a temperature value are stored internally.
        |
        +- Audio Settings
        |    |
        |    +- Audio volume for the user interface [CO:4411] - (Service)
        |    |    This parameter defines, the volume for the user interface audio effects.
        |    |
        |    +- Use on-board audio for voice announcements in the car [CO:4414] - (Service)
        |    |    This option defines, if the on-board audio shall also be used for the voice
        |    |    announcement in the car.
        |    |
        |    +- Audio volume for the floor/direction/door announcements in the car [CO:4412] -
        |    |  (Service)
        |    |    This parameter defines, the volume for the voice announcements in the car, if
        |    |    featuring the on-board audio for that purpose. The floor announcements are
        |    |    usually lower in volume than special announcements, like 'Overload' or 'Fire
        |    |    Alarm'.
        |    |
        |    +- Audio volume for the special announcements in the car [CO:4413] - (Service)
        |         This parameter defines, the volume for the voice announcements in the car, if
        |         featuring the on-board audio for that purpose. The floor announcements are
        |         usually lower in volume than special announcements, like 'Overload' or 'Fire
        |         Alarm'.
        |
        +- Ambient Temperatures
        |    |
        |    +- Lowest Ambient Temperature [CO:4165] - (Setup)
        |    |    This object defines the lowest ambient temperature that the lift controller is
        |    |    allowed to operate at.
        |    |
        |    +- Highest Ambient Temperature [CO:4166] - (Setup)
        |    |    This object defines the highest ambient temperature that the lift controller is
        |    |    allowed to operate at.
        |    |
        |    +- Board Temperature Sensor Offset - (Setup)
        |
        +- Controller Identification [CO:6501] - (Setup)
        |    This object holds the vendor/manufacturer specific controller identification number
        |    as a string.
        |
        +- Even more…
             |
             +- System Information
             |
             +- Application Restart (Warm Start)
             |
             +- System Reboot (Cold Start) - (Setup)
```

108.3 Service & Assembling

```
- Maintenance
    |
    +- Maintenance [CO:5003]
    |    This object holds the current maintenance mode. If the maintenance mode has been turned
    |    on, no faults will be recorded or forwarded to any kind of data gateway.
    |
    +- Random Calls Operation
    |    |
    |    +- Random Calls Operation [CO:5010]
    |    |    This object is used to turn on or off random call operation. Random calls are
    |    |    typically used to verify with some test drives, that the lift is properly working,
    |    |    before passenger will use the lift regularly.
    |    |
    |    +- Random calls, exclusion table for floors [CO:41C9]
```

```
|    |    This object holds a table containing the floors that shall be crossed out when
|    |    performing random calls operation for maintenance or after having done repairs.
|    |
|    +- Extra delay time between random calls [CO:41F3] - (Service)
|         The Random Calls function is very useful and is used regularly in the field for
|         testing and troubleshooting. However, there might be times where the calls
|         activating immediately one after another is counterproductive as this does not
|         always represent the usage of the lift. Using this object it is possible to add a
|         delay between random calls.
|
+- Keep Doors Closed [CO:5004]
|    This object reflects if the doors are being commanded to stay closed, usually in
|    combination with some kind of maintenance work, being in progress.
|
+- Drive beyond top/bottom floor [CO:411E] - (on site only)
|    This object defines if the car is allowed to drive beyond the top or bottom floor level
|    position. If being activated, this option will automatically be turned off, after the
|    lift being in normal operation for a while.
|
+- More…
     |
     +- Manual door operation [CO:412C] - (Service)
     |    This option defines, if the technician on the car top can activate the 'Inspection
     |    switch' and hold the direction buttons together pressed for 10 s in order to turn
     |    those buttons into 'door open' and 'door close'. To turn them back he/she can redo
     |    the process or just toggle the inspection switch. Alternatively the existing 'door
     |    open/close' buttons can be used to steer the door.
     |
     +- Trigger SZ-Test Operation
     |
     +- Maintenance intervals
     |    |
     |    +- Maintenance interval trip counter [CO:4298] - (Service)
     |    |    This object defines the trip counter threshold to signal, that the lift
     |    |    installation requires maintenance. With this counter it is possible that the
     |    |    lift signals a maintenance requirement, when the specified number of trips has
     |    |    been reached.
     |    |
     |    +- Maintenance interval operation time meter [CO:4299] - (Service)
     |    |    This object defines the operating hour meter threshold to signal, that the lift
     |    |    installation requires maintenance. With this counter it is possible that the
     |    |    lift signals a maintenance requirement, when the operating hours exceed the
     |    |    given value.
     |    |
     |    +- Maintenance interval Date & Time [CO:429A] - (Service)
     |    |    This object defines the date and time that has to be reached, to indicate, that
     |    |    the lift installation requires maintenance. With this date and time being
     |    |    setup, it is possible that the lift signals a maintenance requirement, when the
     |    |    actual date and time has exceed the given value. To turn this interval off,
     |    |    enter '01.01.2999' as date.
     |    |
     |    +- Out of Order Maintenance intervals usage
     |         |
     |         +- Out of Order Maintenance intervals usage [CO:429E] - (on site only) -
     |         |  (Setup)
     |         |    This object defines, if dedicated maintenance thresholds shall be used, in
     |         |    order to render the lift out of order, if those have been reached.
     |         |
     |         +- Out of Order Maintenance interval trip counter [CO:429B] - (Service)
     |         |    This object defines the trip counter threshold, that will turn the lift
     |         |    out of order. Be careful when using this parameter as it will render the
     |         |    lift unusable to passengers.
     |         |
     |         +- Out of Order Maintenance interval operation time meter [CO:429C] -
     |         |  (Service)
     |         |    This object defines the operating hour meter threshold that will turn the
     |         |    lift out of order, when being reached. Be careful when using this
     |         |    parameter as it will render the lift unusable to passengers.
     |         |
     |         +- Out of Order Maintenance interval Date & Time [CO:429D] - (Service)
     |              This object defines the date and time that has to be reached, to turn the
     |              lift out of order. Be careful when using this parameter as it will render
```

```
|             the lift unusable for passengers. To turn this interval off, enter
|             '01.01.2999' as date.
|
+- Service trip operation
|    |
|    +- Enter car roof service operation - (Service)
|    |
|    +- Enter shaft pit service operation - (Service)
|    |
|    +- Test smoke detector service operation - (Service)
|    |
|    +- Service Trip requires second input impulse after stopover [CO:41F8] - (Service)
|         This object defines if on a Service Trip operation, in order to enter the car
|         roof or shaft pit, you need to engage the dedicated input a second time, when
|         the lift has performed the stopover, in order to check if the car is actually
|         empty.
|
+- Even more…
     |
     +- Direction change counter
     |    |
     |    +- Reset direction change counter - (Setup)
     |    |
     |    +- Direction change counter warning threshold [CO:4170-1] - (Setup)
     |    |    If the lift is using plastic coated cables, the manufacturer of the cables
     |    |    defines a maximum count of direction changes allowed. There is a parameter
     |    |    for defining a 'warning' and an 'out of order' threshold. You can alter
     |    |    the thresholds and reset the counter if having 'Setup' password privileges
     |    |    granted.
     |    |
     |    +- Direction change counter out of order threshold [CO:4170-2] - (Setup)
     |         If the lift is using plastic coated cables, the manufacturer of the cables
     |         defines a maximum count of direction changes allowed. There is a parameter
     |         for defining a 'warning' and an 'out of order' threshold. You can alter
     |         the thresholds and reset the counter if having 'Setup' password privileges
     |         granted.
     |
     +- Lubrication Function
     |    |
     |    +- Lubrication runtime oilpump [CO:5037] - (Service)
     |    |    This object hold the summed up runtime of the oil pump (lubrication) in
     |    |    seconds used to check against the warning and error runtime threshold.
     |    |
     |    +- Trigger Lubrication Oilpump manually - (Service)
     |
     +- Enable the floor indicators on inspection operation [CO:4171]
     |    This object defines if the floor displays shall be enabled, if being in
     |    inspection operation. Normally they are blanked. Turning them on again might be
     |    useful in some situations, when checking the displays to operate properly.
     |
     +- Re-enable disabled calls temporary
     |    |
     |    +- Re-enable disabled car calls temporary [CO:5014] - (Service)
     |    |    This object defines if disabled car calls shall be re-enabled for
     |    |    maintenance purposes, for about 30 minutes.
     |    |
     |    +- Re-enable disabled landing calls temporary [CO:5015] - (Service)
     |         This object defines if disabled landing calls shall be re-enabled for
     |         maintenance purposes, for about 30 minutes.
     |
     +- Much more…
          |
          +- Temporarily disable inspection stop before floor level [CO:5047] -
          |  (Service)
          |    This object can be used to temporarily zero the distance, that the lift
          |    will stop on inspection operation before top or bottom floor level
          |    (terminal stops). This option will be deactivated automatically after two
          |    hours or if the unit is power cycled.
          |
          +- Hydraulic jack resync trigger
```

108.4 Diagnosis

```
- Diagnosis Menu
    |
    +- Pending
    |
    +- Logbook
    |
    +- Drive Unit Display
    |
    +- CANopen Node-List
    |    |
    |    +- CAN1 (car) interface
    |    |
    |    +- CAN2 (hoistway) interface
    |    |
    |    +- Create backup of node configuration
    |    |    |
    |    |    +- CAN1 (car) interface
    |    |    |    |
    |    |    |    +- Create local backup of node configuration - (Service)
    |    |    |    |
    |    |    |    +- Backup node configuration to mass storage - (Service)
    |    |    |
    |    |    +- CAN2 (hoistway) interface
    |    |         |
    |    |         +- Create local backup of node configuration - (Service)
    |    |         |
    |    |         +- Backup node configuration to mass storage - (Service)
    |    |
    |    +- CANopen Logging
    |         |
    |         +- CAN1 (car) interface
    |         |
    |         +- CAN2 (hoistway) interface
    |
    +- More…
         |
         +- Team Status
         |    |
         |    +- Team Overview
         |    |
         |    +- Team Information
         |
         +- Statistics & Counters
         |
         +- Quantity List of Faults
         |
         +- Door Status
         |    |
         |    +- Door Status
         |    |
         |    +- Floor and door blocking table [CO:5051-128]
         |    |    This is a ready-only table, that reflects the pending blocked floors and doors
         |    |    in the form of a table. Those landings have been usually blocked by means of an
         |    |    input terminal.
         |    |
         |    +- Extra Door Supervision Signal States [CO:504A-128]
         |         This object holds the table indicating the state of each extra door supervision
         |         input.
         |
         +- Even more…
              |
              +- Distances & Deceleration
              |
              +- Drive curve view
              |
              +- Car load & Traction Cable measuring
              |    |
              |    +- Car load measuring unit
```

```
|    |
|    +- Traction Belt/Rope Monitoring
|
+- Position supervisor unit status
|
+- Further more…
     |
     +- Fire Alarm/Service and Evacuation
     |    |
     |    +- Fire Alarm/Service Signals
     |    |
     |    +- Emergency power
     |    |
     |    +- Emergency Evacuation
     |    |
     |    +- Rescue/Salvage operation
     |
     +- Parking statistics / Self learning parking
     |    |
     |    +- Parking statistics floor table Monday [CO:503C]
     |    |    This object holds the parking levels which were determined by
     |    |    recording the travel statistics of the lift for every 15 minutes of
     |    |    each week day. For each weekday there is one floor table.
     |    |
     |    +- Parking statistics floor table Tuesday [CO:503D]
     |    |
     |    +- Parking statistics floor table Wednesday [CO:503E]
     |    |
     |    +- Parking statistics floor table Thursday [CO:503F]
     |    |
     |    +- More…
     |         |
     |         +- Parking statistics floor table Friday [CO:5040]
     |         |
     |         +- Parking statistics floor table Saturday [CO:5041]
     |         |
     |         +- Parking statistics floor table Sunday [CO:5042]
     |         |
     |         +- Reset the self learning parking statistics - (Service)
     |
     +- Pawl Device
     |
     +- Drop Protection
     |
     +- Special Functions…
          |
          +- Smart Power Supply Status
          |    |
          |    +- Smart Power Supply Status
          |    |
          |    +- VVVF DC bus enable
          |    |
          |    +- Inverter software reset
          |
          +- Position correction
          |
          +- Low Pit/Head Barrier Supervision
          |
          +- USB Mass Storage Logging
               |
               +- USB Mass Storage Logging [CO:5052] - (Service)
                    This object contains the current mode for logging to a connected
                    mass storage device. If the logging mode has been activated,
                    runtime data, messages, warnings and errors are saved in a
                    JSON-based log file that is created daily.
```

108.5 Assembling & Repair

```
- Assembling & Repair
    |
    +- Assembling/Installation operation mode
    |    |
    |    +- Assembling/Installation operation mode [CO:411F] - (on site only) - (Service)
    |    |    The Assembling/Installation Operation mode allows driving the lift via inspection or
    |    |    emergency electrical operation without a positioning unit. Additional terminal
    |    |    (pre-limit) switches shall be used to limit the driving distance.
    |    |
    |    +- Installation Pre-limit (Terminal) Hoistway Switches [CO:4158] - (Service)
    |    |    This object defines if terminal (pre-limit) hoistway switches are used for
    |    |    Assembling/Installation Operation to ensure the lift decelerating to V0, before the
    |    |    very end of the hoistway is reached, even if having no absolute position encoder
    |    |    installed yet.
    |    |
    |    +- Deactivate pawl device for assembly [CO:505A] - (on site only) - (Service)
    |    |    If the pawl device needs to be temporarily deactivated for assembly or repair, this
    |    |    can be done using this object. The lift will then retract the pawl device.
    |
    +- Learning Trip
    |    |
    |    +- Simple position encoder
    |    |    |
    |    |    +- Manual Learning Trip - (on site only) - (Service)
    |    |    |
    |    |    +- Automatic Learning Trip - (on site only) - (Service)
    |    |    |
    |    |    +- Floor Level Positions [CO:4010] - (on site only) - (Service)
    |    |    |    This object holds the floor levels in millimeter.
    |    |    |
    |    |    +- Erase floor positions - (on site only) - (Setup)
    |    |
    |    +- Position supervisor unit (PSU)
    |    |    |
    |    |    +- Commands & Options (PSU)
    |    |    |    |
    |    |    |    +- Change operating mode (PSU) [CO:42A0] - (on site only) - (Setup)
    |    |    |    |    This object holds the current operating mode of the Position Supervisor
    |    |    |    |    Unit (PSU). Teaching mode is for setting up the floor positions,
    |    |    |    |    configuration mode for adjustments and normal mode (having a valid
    |    |    |    |    configuration) is for operating the lift.
    |    |    |    |
    |    |    |    +- Configure & Teach
    |    |    |    |    |
    |    |    |    |    +- 1.) Write/configure bottom/top floor value - (on site only)
    |    |    |    |    |
    |    |    |    |    +- 2.) Write/configure door zone values - (on site only)
    |    |    |    |    |
    |    |    |    |    +- 3.) Teach top/bottom limits
    |    |    |    |    |    |
    |    |    |    |    |    +- 1.) Teach top position absolute limit - (on site only)
    |    |    |    |    |    |
    |    |    |    |    |    +- 2.) Teach bottom position absolute limit - (on site only)
    |    |    |    |    |    |
    |    |    |    |    |    +- 3.) Limit switch positions (PSU)
    |    |    |    |    |         |
    |    |    |    |    |         +- Distance final limit switch top [CO:4031] - (Setup)
    |    |    |    |    |         |    This object holds the distance of the final limit switch on
    |    |    |    |    |         |    top. For the ELGO33CP that is measured from the top
    |    |    |    |    |         |    reference point. Other PSU units might measure the value
    |    |    |    |    |         |    from the top floor. Anyway the lift controller will show
    |    |    |    |    |         |    you the difference from floor level at the bottom of the
    |    |    |    |    |         |    dialogue.
    |    |    |    |    |         |
    |    |    |    |    |         +- Distance final limit switch bottom [CO:4032] - (Setup)
    |    |    |    |    |         |    This object holds the distance of the final limit switch on
    |    |    |    |    |         |    bottom. For the ELGO33CP that is measured from the bottom
    |    |    |    |    |         |    reference point. Other PSU units might measure the value
```

```
|    |    |    |    |         |    from the bottom floor. Anyway the lift controller will show
|    |    |    |    |         |    you the difference from floor level at the bottom of the
|    |    |    |    |         |    dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection limit switch top [CO:4033] - (Setup)
|    |    |    |    |         |    This object holds the distance of the inspection limit
|    |    |    |    |         |    switch on top. For the ELGO33CP that is measured from the
|    |    |    |    |         |    top reference point. Other PSU units might measure the
|    |    |    |    |         |    value from the top floor. Anyway the lift controller will
|    |    |    |    |         |    show you the difference from floor level at the bottom of
|    |    |    |    |         |    the dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection limit switch bottom [CO:4034] - (Setup)
|    |    |    |    |         |    This object holds the distance of the inspection limit
|    |    |    |    |         |    switch on bottom. For the ELGO33CP that is measured from
|    |    |    |    |         |    the bottom reference point. Other PSU units might measure
|    |    |    |    |         |    the value from the bottom floor. Anyway the lift controller
|    |    |    |    |         |    will show you the difference from floor level at the bottom
|    |    |    |    |         |    of the dialogue.
|    |    |    |    |         |
|    |    |    |    |         +- Distance inspection terminal (pre-limit) switches
|    |    |    |    |              |
|    |    |    |    |              +- Distance inspection terminal (pre-limit) switch top
|    |    |    |    |              |  [CO:4033] - (Setup)
|    |    |    |    |              |    This object holds the distance of the inspection limit
|    |    |    |    |              |    switch on top. For the ELGO33CP that is measured from
|    |    |    |    |              |    the top reference point. Other PSU units might measure
|    |    |    |    |              |    the value from the top floor. Anyway the lift
|    |    |    |    |              |    controller will show you the difference from floor
|    |    |    |    |              |    level at the bottom of the dialogue.
|    |    |    |    |              |
|    |    |    |    |              +- Distance inspection terminal (pre-limit) switch bottom
|    |    |    |    |                 [CO:4036] - (Setup)
|    |    |    |    |                   This object holds the distance of the inspection
|    |    |    |    |                   pre-limit switch on bottom. For the ELGO33CP that is
|    |    |    |    |                   measured from the bottom reference point. Other PSU
|    |    |    |    |                   units might measure the value from the bottom floor.
|    |    |    |    |                   Anyway the lift controller will show you the
|    |    |    |    |                   difference from floor level at the bottom of the
|    |    |    |    |                   dialogue.
|    |    |    |    |
|    |    |    |    +- 4.) Teaching Operation
|    |    |    |         |
|    |    |    |         +- 1.) Learning Trip
|    |    |    |         |    |
|    |    |    |         |    +- Manual Learning Trip - (on site only) - (Service)
|    |    |    |         |    |
|    |    |    |         |    +- Teach already learned floor levels to the PSU - (on site
|    |    |    |         |       only) - (Service)
|    |    |    |         |
|    |    |    |         +- 2.) Floor Level Positions [CO:4010] - (on site only) - (Service)
|    |    |    |         |    This object holds the floor levels in millimeter.
|    |    |    |         |
|    |    |    |         +- 3.) Adjustment Trip Operation
|    |    |    |              |
|    |    |    |              +- Automatic Adjustment Trip Operation - (on site
|    |    |    |              |  only) - (Service)
|    |    |    |              |
|    |    |    |              +- Manual Adjustment Trip Operation - (on site only) - (Service)
|    |    |    |
|    |    |    +- Reset a pending blocking event
|    |    |
|    |    +- Limit switch positions (PSU)
|    |    |    |
|    |    |    +- Distance final limit switch top [CO:4031] - (Setup)
|    |    |    |    This object holds the distance of the final limit switch on top. For the
|    |    |    |    ELGO33CP that is measured from the top reference point. Other PSU units
|    |    |    |    might measure the value from the top floor. Anyway the lift controller
|    |    |    |    will show you the difference from floor level at the bottom of the
|    |    |    |    dialogue.
|    |    |    |
|    |    |    +- Distance final limit switch bottom [CO:4032] - (Setup)
```

```
|    |    |    |    This object holds the distance of the final limit switch on bottom. For
|    |    |    |    the ELGO33CP that is measured from the bottom reference point. Other PSU
|    |    |    |    units might measure the value from the bottom floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection limit switch top [CO:4033] - (Setup)
|    |    |    |    This object holds the distance of the inspection limit switch on top. For
|    |    |    |    the ELGO33CP that is measured from the top reference point. Other PSU
|    |    |    |    units might measure the value from the top floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection limit switch bottom [CO:4034] - (Setup)
|    |    |    |    This object holds the distance of the inspection limit switch on bottom.
|    |    |    |    For the ELGO33CP that is measured from the bottom reference point. Other
|    |    |    |    PSU units might measure the value from the bottom floor. Anyway the lift
|    |    |    |    controller will show you the difference from floor level at the bottom of
|    |    |    |    the dialogue.
|    |    |    |
|    |    |    +- Distance inspection terminal (pre-limit) switches
|    |    |         |
|    |    |         +- Distance inspection terminal (pre-limit) switch top [CO:4033] -
|    |    |         |  (Setup)
|    |    |         |    This object holds the distance of the inspection limit switch on top.
|    |    |         |    For the ELGO33CP that is measured from the top reference point. Other
|    |    |         |    PSU units might measure the value from the top floor. Anyway the lift
|    |    |         |    controller will show you the difference from floor level at the
|    |    |         |    bottom of the dialogue.
|    |    |         |
|    |    |         +- Distance inspection terminal (pre-limit) switch bottom [CO:4036] -
|    |    |            (Setup)
|    |    |              This object holds the distance of the inspection pre-limit switch on
|    |    |              bottom. For the ELGO33CP that is measured from the bottom reference
|    |    |              point. Other PSU units might measure the value from the bottom floor.
|    |    |              Anyway the lift controller will show you the difference from floor
|    |    |              level at the bottom of the dialogue.
|    |    |
|    |    +- PSU Safety door bridging usage [CO:42A4] - (on site only) - (Setup)
|    |         This object defines if the position supervisor unit (PSU) shall be featured for
|    |         door bridging, typically used for advance door opening or re-levelling. Using
|    |         the PSU for bridging the door circuit is only possible, if the PSU actually
|    |         supports that feature. If not, this option does not have any effect.
|    |
|    +- Braking distance assistant - (on site only) - (Service)
|    |
|    +- Floor level tune assistant - (on site only)
|    |
|    +- Trigger door teaching operation
|         |
|         +- Door A..D - (Service)
|
+- Condition Monitoring
|    |
|    +- Condition Monitoring Warnings [CO:4340] - (Setup)
|    |    This object defines if the lift controller shall throw a warning, if some condition
|    |    monitoring objects indicate the need of maintenance.
|    |
|    +- Controller/Piloting
|    |
|    +- Doors
|    |    |
|    |    +- Door A..D
|    |
|    +- Drive Unit
|    |
|    +- More…
|         |
|         +- Positioning Unit
|         |
|         +- Load Measuring Unit
|         |
```

```
    |         +- Smart Power Supply Status
    |
    +- Positioning encoder replacement - (on site only) - (Service)
    |
    +- Drive Auto-Tuning Operation - (on site only) - (Service)
```

108.6 Testing & Inspection

```
- Testing & Inspection
    |
    +- UCM-Testing Assistant
    |    |
    |    +- UCM-Testing Door Operation [CO:4155] - (on site only)
    |    |    This object defines if the doors shall be physically open for an UCM-testing
    |    |    operation or if (for safety reason) they shall stay closed and the technician or
    |    |    inspection operator opens the safety chain electrically instead, simulating the
    |    |    doors being opened.
    |    |
    |    +- UCM-Testing GV/Drop Protection [CO:417C] - (on site only) - (Service)
    |    |    This object defines, if the drop protection bolt at the speed governor shall be kept
    |    |    engaged or shall be released while doing the test. In the moment UCM is detected the
    |    |    bolt will always drop and engage the speed governor. This option basically defines,
    |    |    if the bolt shall be released at all, when doing the test.
    |    |
    |    +- UCM-Testing Assistant - (on site only)
    |
    +- Runtime Testing-Assistant - (on site only)
    |
    +- Limit-Switch-Testing Assistant
    |    |
    |    +- Top-limit-switch testing distance [CO:4161] - (Service)
    |    |    This object defines the distance used to 'shift' the top floor position in order to
    |    |    make the lift driving controlled into the top-limit driveway switch to test its
    |    |    function.
    |    |
    |    +- Bottom-limit-switch testing distance [CO:4162] - (Service)
    |    |    This object defines the distance used to 'shift' the bottom floor position in order
    |    |    to make the lift driving controlled into the bottom-limit driveway switch to test
    |    |    its function.
    |    |
    |    +- Limit-Switch-Testing Assistant - (on site only)
    |
    +- Buffer Testing-Assistant
    |    |
    |    +- Buffer Testing-Assistant - (on site only)
    |    |
    |    +- Buffer testing velocity [CO:40A0] - (on site only) - (Service)
    |    |    This object defines the velocity used for the buffer testing operation. It defines
    |    |    which velocity shall be featured when driving the car onto the driveway buffers.
    |    |
    |    +- Activate buffer testing in the inverter [CO:5060] - (on site only) - (Service)
    |         This object defines if the inverter unit shall be turned to Buffer Testing mode.
    |         Some inverters do actually support a special testing mode for performing the buffer
    |         or traction testing.
    |
    +- More…
         |
         +- Speed Governor Testing-Assistant
         |    |
         |    +- Speed Governor Testing-Assistant - (on site only)
         |    |
         |    +- Speed Governor testing velocity [CO:4082] - (on site only) - (Setup)
         |    |    This object defines the velocity commanded to the drive unit, when performing
         |    |    the speed governor testing operation.
         |    |
         |    +- Speed Governor testing velocity [CO:40A2] - (on site only) - (Service)
         |         This object defines the velocity commanded to the drive unit, when performing
         |         the speed governor testing operation.
         |
         +- Brake Testing-Assistant
```

```
        |    |
        |    +- Brake testing velocity [CO:40A1] - (on site only) - (Service)
        |    |    This object defines the velocity used for the brake testing operation. It
        |    |    defines which velocity shall be featured when driving in order to check
        |    |    stopping with a single brake circuit.
        |    |
        |    +- Brake Testing-Assistant - (on site only)
        |
        +- Overload Indication Testing-Assistant - (on site only)
        |
        +- Safety circuit bridge Testing-Assistant - (on site only)
        |
        +- Even more…
             |
             +- Automatic Daily (24 h) Tests
             |    |
             |    +- Trigger automatic cyclic main brake test - (on site only)
             |    |
             |    +- Trigger automatic cyclic Drop Protection test - (on site only)
             |    |
             |    +- Trigger automatic cyclic safety gear test - (on site only)
             |
             +- Electrical safety gear testing
             |    |
             |    +- Electrical safety gear testing - (on site only)
             |    |
             |    +- Speed Governor testing velocity [CO:40A2] - (on site only) - (Service)
             |    |    This object defines the velocity commanded to the drive unit, when
             |    |    performing the speed governor testing operation.
             |    |
             |    +- Test Reduced Safety Space Gear Tripping - (on site only)
             |    |
             |    +- Reduced Safety Space Gear testing velocity [CO:409F] - (on site only) -
             |       (Service)
             |         This object defines the velocity at which the electric safety gear is
             |         tested when checking whether the car can be safely stopped when driving
             |         into the safety area. This is a requirement for lifts with reduced shaft
             |         headroom and/or reduced shaft pit.
             |
             +- Hardware Watchdog Testing - (on site only) - (Service)
             |
             +- Checksums & Software Versions
             |
             +- Lift Parameter Change Log

- More…
    |
    +- Enter Calls
    |    |
    |    +- Enter Car Calls
    |    |
    |    +- Enter Upward Landing Calls
    |    |
    |    +- Enter Downward Landing Calls
    |    |
    |    +- Enter Landing Calls
    |
    +- Lift Attendant
         |
         +- Lift Attendant Status
         |
         +- Door-open button monitoring [CO:4430-1] - (Service)
         |    If 100 trips with any passenger calls have been done, with the exception of random
         |    calls and time planner calls, but there has been no pressing of the door open
         |    button, a warning is generated in the lift attendant status. In addition, the date
         |    of the last door-open button operation is always stored.
         |
         +- Door light barrier monitoring [CO:4430-2] - (Service)
         |    If no light barrier change has been detected after 20 trips featuring car calls,
         |    excluding random calls and time planner calls, a warning is generated in the lift
         |    attendant status. In addition, the date of the last time the light barrier has
         |    changed its state is always stored.
```

```
|
+- Floor Levelling monitoring [CO:4430-3] - (Service)
|    This error counter is triggered by stopping not flush on level and by monitoring the
|    recorded positions of the external zone signals when approaching to a floor. If the
|    recorded zone signals deviates by more than 50 mm (2 inch), the error counter is
|    increased by one counter value. Depending on the threshold it then leads to a
|    warning.
|
+- Car lighting monitoring [CO:4430-4] - (Service)
     Monitoring takes place via an input 'Car Lighting/Illuminant supervision [NC]'. If
     the light bulbs are OK, the input is 24V. The input reacts to failure with a delay
     time of 5 seconds. It does not react if the lift controller has detected a general
     undervoltage. Under the emergency power settings you can specify whether monitoring
     remains active under emergency power conditions.
```

109 Reference List of Faults, Warnings and Messages

Wednesday, 12.03.2025 - 10:18:34, 19 °C

Version: 01.40.04 (Mar 12 2025, 08:45:52)

109.1 Messages

The lift drives to the parking floor. [0001]

Because of being idle, the lift has entered the parking operating mode.

The lift is parking at floor x. [0002]

Because of being idle, the lift has entered the parking operating mode.

The lift is re-levelling. [0003]

Because of the car being not flush on level, the lift has started to re-level the cabin/car slowly.

Car illumination turned off. [0004]

Because of the lift being idle, the car/cabin illumination had been turned off. If the car load signals are included into the 'occupied' signal, the car has to be empty too.

Lift had been unblocked. [0005]

The lift was in blocking operation mode and had been unblocked by a technician via the user interface or an input terminal.

Landing control enabled via the UI [0006]

The landing control has been re-enabled via the user interface (menu) at the lift controller unit.

Landing control enabled via input [0007]

The landing control has been re-enabled via an input signal.

Landing control remotely enabled [0008]

The landing control has been re-enabled via a command from a remote monitoring application.

Keeping the doors closed deactivated [0009]

The operation mode for 'keeping the doors closed' has been turned off. The lift doors shall now open when approaching to a floor.

Maintenance deactivated via UI [0010]

The maintenance operation mode has been turned off via the user interface. Faults will now be recorded or forwarded again. Parking is basically enabled.

Maintenance deactivated via input [0011]

The maintenance operation mode has been turned off via an input signal. Faults will now be recorded or forwarded again. Parking is basically enabled.

Car preference activated [0012]

The car preference (VIP) has been activated. Depending on the 'Car Preference' settings, landing calls may be stored but will not be processed. So the passenger in the car/cabin has exclusive control.

Inspection turned off [0013]

The inspection control operation has been turned off via the inputs assigned to the hoistway (shaft) pit and car top inspection control box.

Emergency electrical operation turned off [0014]

The emergency electrical operation has been turned off via an input assigned to the emergency electrical operation panel.

Loadtime 1 activated door x [0015]

The load time has been activated. The doors stays open to allow the passenger loading the car/cabin with goods. Two different load-time values can be setup to support a short and a long load-timer operation.

Loadtime 2 activated door x [0016]

The load time has been activated. The doors stays open to allow the passenger loading the car/cabin with goods. Two different load-time values can be setup to support a short and a long load-timer operation.

Standby operation turned off [0017]

The standby operation has been turned off. The lift will turn on the peripherals again and is after a short while operational again.

Driving to check/stop-over floor [0018]

The lift is driving to the check/stop-over floor. If arrived there, the lift will open/close the doors once to ensure that the cabin is empty. This is typically done in a lobby/hotel environment.

Lift arrived at check/stopover floor [0019]

The lift has arrived at the check/stop-over floor. The lift will open/close the doors once to ensure that the cabin is empty. This is typically done in a lobby/hotel environment.

Driving to standby floor [0020]

The lift is driving to the standby floor. If arrived there, the lift will switch off peripherals in order to reduce the energy consumption.

Lift arrived at standby floor [0021]

The lift has arrived at the standby floor. The lift will now switch off peripherals in order to reduce the energy consumption.

Assembling/Installation mode turned off [0022]

The Assembling/Installation Operation mode has been turned off. This mode allows driving the lift via inspection or emergency electrical operation without a positioning unit. Additional terminal (pre-limit) switches shall be used to limit the driving distance.

Low priority call operation [0023]

A low priority call operation has been activated, usually by a low priority landing call. This call may be on the current or any other floor. See low priority call options for handing pending car calls and setting up allocation time.

High priority call operation [0024]

A high priority call operation has been activated, usually by a high priority landing call. This call may be on the current or any other floor. See high priority call options for handing pending car calls and setting up allocation time.

Fire Alarm operation has been turned off [0025]

The fire alarm operation mode has been activated, because the corresponding input 'Fire Alarm' has been turned on. Usually this input is inverted, so that a zero signal trigger the function. But anyhow, you should look at the schematics to make sure.

Driving to fire alarm floor [0026]

The fire alarm operation mode has been activated, because the corresponding input 'Fire Alarm' has been turned on. Usually this input is inverted, so that a zero signal trigger the function. But anyhow, you should look at the schematics to make sure.

Arrived at fire alarm floor [0027]

The fire alarm operation mode has been activated, because the corresponding input 'Fire Alarm' has been turned on. Usually this input is inverted, so that a zero signal trigger the function. But anyhow, you should look at the schematics to make sure.

Drive beyond top/bottom floor turned off [0028]

The option 'Drive beyond top/bottom floor' let the technician move the cabin/car beyond the top floor and below the bottom floor positions. This means to risk to drive into the limit switches. But it can be quite handy for inspection or testing operations.

```
Random calls turned on [0029]

    Random calls have been turned on or off via the user interface.
    Random calls are typically used to verify with some test drives,
    that the lift is properly working, before passenger will use the
    lift regularly.


Random calls turned off [0030]

    Random calls have been turned on or off via the user interface.
    Random calls are typically used to verify with some test drives,
    that the lift is properly working, before passenger will use the
    lift regularly.


Learning trip finished [0031]

    The 'Learning Trip Operation' has been finished successfully. That
    may cause the 'Assembling/Installation Operation Mode' being
    turned off automatically as well.


Floor displays turned off [0032]

    The floor displays have been turned off, because the 'display-off'
    timer has been expired, while the lift was being idle.


Floor displays reduced [0033]

    The floor displays have been reduced in brightness, because the
    'display-reducing' timer has been expired, while the lift was
    being idle.


Hydraulic homing [0034]

    The 'Hydraulic Homing' feature send the lift back to the bottom
    floor after the time-span being setup has expired. You find the
    hydraulic homing time-span under 'Settings' > 'More' > 'Drive
    Unit' > 'Type of Drive Unit' > 'Drive Unit options' > 'Hydraulic
    Homing'. If you have setup a parking floor as well, the lift may
    oscillate between those two floors.


Limit-switch testing assistant closed [0035]

    The assistant used to perform a limit-switch-test operation has
    been finished. The lift controller enters usually the 'blocked'
    operation mode and has be unblocked via the user interface.


UCM testing finished [0036]

    The assistant used to perform an UCM-test operation has been
    finished. The lift controller enters usually the 'blocked'
    operation mode and has be unblocked via the user interface.


Safe encoder self test running [0037]

    The safe position encoder system may need a self test regularly.
    This is usually done automatically by the unit and takes a few
    seconds. The lift will takes calls but will not drive while the
    self test is ongoing.


Direction change counter/threshold reset [0038]

    The direction change counter/threshold has been reset manually by
```

a technician. This should only be done, if the plastic coated cables, that hold the cabin weight, had been properly renewed.

Pawl device activated again [0039]

The pawl device has been activated again via an input terminal or the dedicated floor table, that defines on which floor the pawl device shall be featured. That means that the cabin/car will be seated the next time the lift approaches to a floor.

Emergency Power operation finished [0040]

The Emergency Power operation has been turned off again, usually via the input function 'Emergency Power'.

Travel to Emergency Power floor [0041]

The lift is traveling to the Emergency Power floor, defined in the Emergency Power settings. The doors that shall be operated in that floor can be setup as well.

Lift arrived at Emergency Power floor [0042]

After having activated the 'Emergency Power' input, the lift has finally arrived at the 'Emergency Power' floor, defined in the 'Emergency Power' settings. The doors that shall be operated can be defined there as well.

Safety light curtain activated door x [0043]

The safety light curtains can be deactivated and activated per door, via input signals. Consider possible security issue if the safety light curtains are disabled.

Finished trip to service position [0044]

To enter the car roof or the shaft pit easily, this automated operation will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will moved to the service position by the distance given for entering the car roof or the shaft pit. You find those distances under 'Settings Menu' > 'More' > 'Position Unit' > 'Distances & Parameter' > 'More' > 'Even more'.

Canceled trip to service position [0045]

To enter the car roof or the shaft pit easily, this automated operation will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will moved to the service position by the distance given for entering the car roof or the shaft pit. You find those distances under 'Settings Menu' > 'More' > 'Position Unit' > 'Distances & Parameter' > 'More' > 'Even more'.

Guest calls waiting for the lift to become idle. [0046]

In order to transport the guest to the destination, the guest call feature is waiting for the lift to finish its current tasks. If all passenger have deboarded and the lift is idle, it will finally start to pick-up the guest.

Guest calls, lift is driving to the source floor. [0047]

In order to pick the guest up, the guest call feature steers the lift to the source floor.

Guest calls, lift is waiting for the guest to step into the car. [0048]

In order to transport the guest to the destination, the guest call feature is waiting for the guest to enter the car.

Guest calls, lift is driving the guest to the destination floor. [0049]

In order to deliver the guest, the guest call feature steers the lift to the destination floor.

Guest call operation is finished. [0050]

The guest has been successfully transported from the source floor to the destination floor. The guest call operation is finished.

Fire service turned off [0051]

The fire service operation has been turned off, usually via a key switch at a landing. You can find the related settings under 'Settings' > 'Controller/Piloting' > 'More' > 'Fire Brigade/Service'.

Emergency evacuation finished [0052]

The Emergency Evacuation operation has been finished. This operating mode is used to move the car to the very next floor by opening the brake and limiting the velocity to typically 0.3 m/s maximum.

Platform lift operation turned off [0053]

In the platform lift operating mode the calls are usually operated in dead-mans-grip, requiring constant-pressure to drive the lift or the platform to the defined level positions.

Arrival indicator turned off via time planner [0054]

The arrival indicator (gong) has been turned off via one of the time planner functions. This is typically used in hospitals or hotels to avoid the people in the night time being disturbed by the sound of the lifts.

Car call unlocked via time planner [0055]

A car call has been unlocked or enabled via a time planner function. To disable or lock a car call in the first place, you can use the 'Car call disabling table' in the first place.

Landing call unlocked via time planner [0056]

A landing call has been unlocked or enabled via a time planner function. To disable or lock a landing call in the first place, you can use the 'Landing call disabling table' in the first place.

Parking floor set via time planner [0057]

The parking floor has been set via a time planner function. This means that the parameterized parking floor or the zone parking function has been overruled.

Daylight saving time (+1 h) [0058]

If having turned on the option 'Automatic Daylight Saving Time' the unit will automatically switch between regular (winter) time and daylight saving (summer) time. Daylight Saving Time (DST) is the practice of setting the clocks forward 1 hour from standard time during the summer months, and back again in the fall, in order to make better use of natural sunlight.

Regular (winter) time (-1 h) [0059]

If having turned on the option 'Automatic Daylight Saving Time' the unit will automatically switch between regular (winter) time and daylight saving (summer) time. Daylight Saving Time (DST) is the practice of setting the clocks forward 1 hour from standard time during the summer months, and back again in the fall, in order to make better use of natural sunlight.

Floor level tune assistant finished [0060]

The assistant used to simplify fine tuning of the floor level positions has been finished.

Team operation re-enabled via input terminal [0061]

The team or group operation has been re-enabled again via an input terminal. This lift is now running again in team lift operation mode, sharing the landing calls with the other lifts, using a voting system.

Manual door inspection operation [0062]

If the option 'Manual door operation' has been turned on in the Maintenance menu, the technician on the car top may activate the 'Inspection car top operation switch' and hold the 'Inspection car top upward' and 'Inspection car top downward' together pressed for 10 s in order to turn those buttons into 'door open' and 'door close'. To turn them back he/she can redo the process or just toggle the inspection switch.

Manual door operation turned off [0063]

If the option 'Manual door operation' has been turned on in the Maintenance menu, the technician on the car top may activate the 'Inspection car top operation switch' and hold the 'Inspection car top upward' and 'Inspection car top downward' together pressed for 10 s in order to turn those buttons into 'door open' and 'door close'. To turn them back he/she can redo the process or just toggle the inspection switch.

Speed governor testing assistant closed [0064]

The assistant used to perform a speed-governor-test operation has been finished. The lift controller enters usually the 'blocked' operation mode and has to be unblocked via the user interface.

Brake distance learning assistant closed [0065]

The braking distance assistant is used to automatically determine the required deceleration distances required to stop the lift, when driving V1…Vn. Usually this assistant is used for classical drive systems, running in velocity rather than position profile mode.

Second alternative door table active [0066]

An alternative landing door table has been activated via the dedicated input function. You find the landing door tables following 'Settings' > 'Doors' > 'Landing Door Tables'.

Third alternative door table active [0067]

An alternative landing door table has been activated via the dedicated input function. You find the landing door tables following 'Settings' > 'Doors' > 'Landing Door Tables'.

Fourth alternative door table active [0068]

An alternative landing door table has been activated via the dedicated input function. You find the landing door tables following 'Settings' > 'Doors' > 'Landing Door Tables'.

Standard door table active [0069]

The standard landing door table has been activated by dropping all input functions, that had activated an alternative landing door table before. You find the landing door tables following 'Settings' > 'Doors' > 'Landing Door Tables'.

Rescue operation mode turned off [0070]

The rescue operation mode has been activated, because the corresponding input 'Rescue operation' has been activated.

Driving to rescue operation floor [0071]

The rescue operation mode has been activated, because the corresponding input 'Rescue operation' has been activated.

Arrived at rescue operation floor [0072]

The rescue operation mode has been activated, because the corresponding input 'Rescue operation' has been activated.

Circulating operation turned off [0073]

The Circulating operation has been turned off. This operation mode had made the lift stop at every floor, open and close the doors and finally altering the direction at the top and bottom floor.

Main contactor cycle counters have been reset [0074]

The cycle counters (activation cycles) of the main contactors have been reset via the user interface. This should be done, when the contactors have been replaced.

Re-levelling cycle counters have been reset [0075]

The counters (activation cycles) for the re-levelling operation up/down have been reset via the user interface.

Chemical operation finished [0076]

The Chemical/Hazard goods operation mode has been finished, usually via a key switch at the landings. This operation mode let a technician at the landings drive the car to any floor, were such a key switch is mounted. Usually those key switches have three positions. A neutral position, one for activating and one for resetting the operation mode.

Smoke detector service operation finished [0077]

In order to test the smoke detector in the shaft head, an automated procedure had be used to enter the car roof. Driving to the shaft head is done via the inspection control. The smoke detector can now be tested with a spray. A buzzer is activated when the smoke detector is tripped.

Smoke detector has been tested [0078]

In order to test the smoke detector in the shaft head, an automated procedure had be used to enter the car roof. Driving to the shaft head is done via the inspection control. The smoke detector can now be tested with a spray. A buzzer is activated when the smoke detector is tripped.

Lift has entered normal operation mode [0079]

After being in any kind of special operation mode or being on inspection/testing or any kind of error operation mode, the lift has finally entered the normal operation mode again.

Brake testing assistant closed [0080]

The assistant used to perform a brake-test operation has been finished. The lift controller enters usually the 'blocked' operation mode and has to be unblocked via the user interface.

Buffer Testing finished [0081]

The buffer testing operation has been finished by leaving the test assistant.

Overload indication test finished [0082]

The overload indication testing operation has been finished by leaving the test assistant.

Electrical safety gear test assistant closed [0083]

The assistant used to perform a test of the electrical safety gear has been finished. The lift controller enters usually the 'blocked' operation mode and has to be unblocked via the user interface.

Peak-up/down operation finished [0084]

The 'peak-up/down' operation is used, if a large group of passengers is in need of transportation to the lower or upper

floors, for example when employees enter an office building in the morning or later leave the building in the evening again.

Swing door closed again [0085]

After the manual swing door was kept open for a while continuously, it was finally closed again.

Safety chain bridging test assistant finished [0086]

The assistant for testing the safety chain bridging supervision function has been finished. This assistant is usually used to emulate a bridge in the safety chain in order to check, if the lift would get blocked.

Random calls active via time planner [0087]

Random calls have been turned on via a time planner function. You find the time planner in the Settings Menu > More >Basics >More > Time Planner. Random calls are typically used to verify with some test drives, that the lift is properly working, before passenger will use the lift regularly.

Arrived at the telescopic toe guard push-in position [0088]

These special toe guards are usually spring loaded and hold by an electromagnet. On a power drop they are pushed out and when the power comes back, the lift has to push them in again, by driving below the lowest floor, so that the toe guard will touch the ground. The lift will stop, if the input indicates, that the toe guard has been pushed in again or the maximum given travel distance has been reached.

Driving to Shuttle Service/Snow cleaning floor [0089]

This message indicates that the lift is travelling to one end of the hoistway and then the next time to the other end. This might be used for snow cleaning, if the lift in question is an inclining lift or there is the risk of the car freezing to the rails. This function is usually activated via an input terminal.

Shuttle Service (snow cleaning) activated [0090]

This message indicates that the lift is travelling to one end of the hoistway and then the next time to the other end. This might be used for snow cleaning, if the lift in question is an inclining lift or there is the risk of the car freezing to the rails. This function is usually activated via an input terminal.

Shuttle Service (snow cleaning) turned off [0091]

This message indicates that the lift is travelling to one end of the hoistway and then the next time to the other end. This might be used for snow cleaning, if the lift in question is an inclining lift or there is the risk of the car freezing to the rails. This function is usually activated via an input terminal.

Time planner generic output 1 on [0092]

One or more of the time planner output terminals have been activated via the time planner functions. The terminals will be turned off again, if no more timer planner is holding them activated. You find the time planner functions under 'Settings > More… > Basics > More… > Time Planner'.

Time planner generic output 2 on [0093]
Time planner generic output 3 on [0094]
Time planner generic output 4 on [0095]

Time planner generic output 1 off [0096]

One or more of the time planner output terminals have been activated via the time planner functions. The terminals will be turned off again, if no more timer planner is holding them activated. You find the time planner functions under 'Settings > More… > Basics > More… > Time Planner'.

Time planner generic output 2 off [0097]
Time planner generic output 3 off [0098]
Time planner generic output 4 off [0099]

Runtime supervision test has been finished [0100]

The runtime supervision testing operation has been activated via the dedicated testing assistant.

Stops per floor statistics had been reset [0101]

The recorded statistic for stops per floor has been reset via the user interface.

Maintenance deactivated remotely [0102]

The maintenance operation mode has been turned off remotely (fieldbus/cloud). Faults will now be recorded or forwarded again. Parking is basically enabled.

Keeping the doors closed deactivated remotely [0103]

The operation mode for 'keeping the doors closed' has been deactivated remotely (fieldbus/cloud). The lift doors shall not open when approaching to a floor.

Docking Service operation turned off [0104]

The docking service operation has been activated, used to level the lift to a truck bed, with the doors being open. Leveling is usually done with the doors being opened and the door's safeties being bridged within a defined work space.

Enabled the inspection stop before floor level again [0105]

The option to temporarily zero the distance, that the lift will stop on inspection operation before top or bottom floor level (terminal stops), has been turned off again.

Hydraulic Jack resync executed [0106]

If the lift is equipped with twin or triple hydraulic jacks (cylinders), then they might require re-synchronization after a certain run time. Otherwise, the cylinders will no longer extend evenly, so that one cylinder already reaches the end stop before the others do. To resynchronize the cylinders, the lift will move to the buffer below the lowest floor, featuring creeping velocity and remain there for some time with open valves, until all cylinders are fully retracted again.

Arrived at hydraulic jack resync position [0107]

If the lift is equipped with twin or triple hydraulic jacks (cylinders), then they might require re-synchronization after a certain run time. Otherwise, the cylinders will no longer extend evenly, so that one cylinder already reaches the end stop before the others do. To resynchronize the cylinders, the lift will move to the buffer below the lowest floor, featuring creeping velocity and remain there for some time with open valves, until all cylinders are fully retracted again.

Cleaning operation turned off [0108]

The cleaning operation has been activated, that will keep the lift stationary at some floor with the possibility to operate the doors via the door open/close buttons. Landing calls and car calls will be cancelled and rendered non-operational. This function is usually activated via a key switch.

Passenger User Group active [0109]

The Passenger user groups feature is active. The idea is that those passenger groups will only be able to enter car calls on the given floors/doors, when they have entered the lift from one of those landings as well. In order to make this work, those car calls have to be disabled for normal passengers, via the car call disabling table in the first place.

Parking floor x set via input function [0110]

The parking floor had been set via an input function to a dedicated floor. That overwrites the parking floor defined in the user interface. It also overwrites the parking floor set by a time planner function.

Security Door Opening Active [0111]

A feature is active that keep the doors closed, when arriving at a floor by means of a car call. Which doors shall be kept closed, can be defined in a dedicated door table.

Automatic brake testing finished [0112]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the car starts to slide away, the test will fail and the lift is entering blocked operation mode.

Automatic Drop Protection testing finished [0113]

This lift is equipped with a Drop Protection device, that is permanently activated. In order to ensure it is in working condition, it will be tested once in a day. This is done by turning the contactor off, that controls the bolt and then checking, if the bolt has actually been released, via the feedback signal.

Lift attendant mode turned off [0114]

The Lift Attendant or Elevator Operator mode has been activated. The lift is now controlled via special buttons in the car panel by an assistant instead of the passengers.

First trip done after light curtain was blocked [0115]

If the light curtain had been blocked continuously and is finally released, the lift usually ends up at the floor where the person, that has blocked the lift is living, if dealing with residential buildings. This event shall help you finding out, who had blocked the lift in the first place.

Arrived at Earthquake floor [0116]

The Earthquake operation mode will drive the lift to the dedicated floor and release the passengers. If no dedicated floor had been parameterized, the lift will drive to a floor above the middle of the hoistway, to make sure that the counterweight is below the car, if the lift actually has one.

Earthquake operation has been turned off [0117]

The Earthquake operation mode will drive the lift to the dedicated floor and release the passengers. If no dedicated floor had been parameterized, the lift will drive to a floor above the middle of the hoistway, to make sure that the counterweight is below the car, if the lift actually has one.

Floors have been unlocked via input [0118]

One or more floors have been unlocked/enabled again by means of an input function, usually a key switch being turned off again. To check which floors are effected, check the 'Floor Locked' table in the Diagnosis Menu.

Time Planner 1 enabled again via input function [0119]
Time Planner 2 enabled again via input function [0120]
Time Planner 3 enabled again via input function [0121]
Time Planner 4 enabled again via input function [0122]

A time planner entry has been enabled again via an input function, usually a key switch.

Automatic safety gear testing finished [0123]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

PSU Safety Space Gear Triggering finished [0124]

The PSU safety-space gear-tripping testing operation has been activated via the dedicated testing assistant.

Loadtime 3 activated door x [0125]

The load time has been activated. The doors stays open to allow the passenger loading the car/cabin with goods. Two different load-time values can be setup to support a short and a long load-timer operation.

The lift has re-levelled succesfully. [0126]

Re-levelling of the car/cabin has been done successfully. The car has been moved back into the level zone.

109.2 Warnings

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Landing control disabled via the UI [1001]

    The landing control has been disabled via the user interface
    (menu) at the lift controller unit.


Landing control disabled via input [1002]

    The landing control has been disabled via an input signal.


Landing control remotely disabled [1003]

    The landing control has been disabled via a command from a remote
    monitoring application.


Keeping the doors closed activated [1004]

    The operation mode for 'keeping the doors closed' has been
    activated. The lift doors shall not open when approaching to a floor.


Maintenance activated via UI [1005]

    The maintenance operation mode has been turned on via the user
    interface. Faults will not be recorded or forwarded. Parking is
    being disabled.


Maintenance activated via input [1006]

    The maintenance operation mode has been turned on via an input
    signal. Faults will not be recorded or forwarded. Parking is being
    disabled.


Inspection turned on in the pit [1007]

    The inspection control operation has been activated via an input
    assigned to the hoistway (shaft) pit inspection control box.


Inspection turned on at car top [1008]

    The inspection control operation has been activated via an input
    assigned to the cabin/car top inspection control box.


Emergency electrical operation activated [1009]

    The emergency electrical operation has been activated via an input
    assigned to the emergency electrical operation panel.


Standby operation activated [1010]

    The standby operation has been activated. The lift will first
    drive to a check/stop-over floor (if parameterized) and open/close
    the doors once. Then finally, it will drive to the standby floor,
    keeping the doors closed.


Assembling/Installation mode activated [1011]

    The Assembling/Installation Operation mode has been activated.
    This mode allows driving the lift via inspection or emergency
```

electrical operation without a positioning unit. Additional terminal (pre-limit) switches shall be used to limit the driving distance.

Drive is not ready, still waiting… [1012]

The drive is not ready yet, so the lift is still waiting for readiness. If this happens regularly, please check the fault log of the drive for further details. Check communication, temperature and power issues.

Waiting for 'zero-load' signalization [1013]

The lift is waiting for 'zero-load' signalization, because the option for picking up the passenger on priority call operation only with an empty car has been turned on.

Light curtain continuously interrupted at door A [1014]

The light curtain has been continuously interrupted for more than 30s. The lift stores this event in the log-book, because it slows down call processing and ends up in a bad performance.

Light curtain continuously interrupted at door B [1015]

The light curtain has been continuously interrupted for more than 30s. The lift stores this event in the log-book, because it slows down call processing and ends up in a bad performance.

Light curtain continuously interrupted at door C [1016]

The light curtain has been continuously interrupted for more than 30s. The lift stores this event in the log-book, because it slows down call processing and ends up in a bad performance.

Light curtain continuously interrupted at door D [1017]

The light curtain has been continuously interrupted for more than 30s. The lift stores this event in the log-book, because it slows down call processing and ends up in a bad performance.

Fire Alarm Mode [1018]

The fire alarm operation mode has been activated, because the corresponding input 'Fire Alarm' has been turned on. Usually this input is inverted, so that a zero signal trigger the function. But anyhow, you should look at the schematics to make sure.

Door A in nudging operation [1019]

The doors are in nudging operation and do close even if the light curtain is interrupted. The door machine shall close with limited force, signaled via an output or status word. This may be caused by the 'nudging timer' being expired or fire alarm/service operation.

Door B in nudging operation [1020]

The doors are in nudging operation and do close even if the light curtain is interrupted. The door machine shall close with limited force, signaled via an output or status word. This may be caused by the 'nudging timer' being expired or fire alarm/service operation.

Door C in nudging operation [1021]

The doors are in nudging operation and do close even if the light curtain is interrupted. The door machine shall close with limited force, signaled via an output or status word. This may be caused by the 'nudging timer' being expired or fire alarm/service operation.

Door D in nudging operation [1022]

The doors are in nudging operation and do close even if the light curtain is interrupted. The door machine shall close with limited force, signaled via an output or status word. This may be caused by the 'nudging timer' being expired or fire alarm/service operation.

Drive beyond top/bottom floor active [1023]

The option 'Drive beyond top/bottom floor' let the technician move the cabin/car beyond the top floor and below the bottom floor positions. This means to risk to drive into the limit switches. But it can be quite handy for inspection or testing operations.

Landing door bypass is active [1024]

For maintenance/repair of the door safety chain contacts, a device (switch) shall provide a safe way of bypassing these contacts. This is signaled to the lift controller via two monitoring inputs.

Car door bypass is active [1025]

For maintenance/repair of the door safety chain contacts, a device (switch) shall provide a safe way of bypassing these contacts. This is signaled to the lift controller via two monitoring inputs.

Drop protection activation delayed [1026]

The drop protection could not be activated properly. That means that the feedback contact of the bolt, blocking the speed governour, did not signal that the bolt is free and therefore enabling the speed governour pulley to spin.

Learning trip operation started [1027]

The 'Learning Trip Operation' has been started via the user interface. The current floor position will be replaced with the new taught ones.

Learning trip operation aborted [1028]

The 'Learning Trip Operation' has been aborted. The old floor position will be restored.

Limit-switch testing assistant active [1029]

The assistant used to perform a limit-switch-test operation has been started. The lift controller enters usually the 'Out of Order' operation mode.

UCM testing started [1030]

The assistant used to perform a UCM-test operation has been started. The lift controller enters usually the 'Out of Order' operation mode.

Limit switch-test executed [1031]

The limit-switch test has been done. Check the details, like the velocity or reached position, by simply opening the event by touching the table row.

UCM-test executed [1032]

The UCM test has been done. Check the details, like the velocity or reached position, by simply opening the event by touching the table row.

Inspection pit reset signal required [1033]

Regarding to the EN81 regulations, an inspection pit reset signal is required in order to turn the lift back to normal operation, if the inspection control panel in the hoistway-pit was once activated.

Door x teach-in operation [1034]

The door unit is in 'teach-in' operation mode. In this mode the door will determine the closed and opened position, the needed force to operate the door and calculates the optimized curve for operating the door engine.

Direction change counter pre-warning [1035]

The direction change counter has reached the warning limit. If the lift is using plastic coated cables, the manufacturer of the cables defines a maximum count of direction changes allowed. There is a parameter for defining a 'pre-warning' and an 'out of order' threshold. You can alter the thresholds and reset the counter if having 'Setup' password privileges granted.

PSU Teaching Mode [1036]

The safe encoder or position supervisor unit (PSU) is in teach mode, ready to get the floor level positions trained. In this mode the lift can usually only be operated in emergency electrical operation.

PSU Configuration Mode [1037]

The safe encoder or position supervisor unit (PSU) is in configuration mode, ready to get the floor level positions fine tuned. In this mode the lift can usually be operated in normal operation, so the technician can adjust the floor levels.

Floor positions not ascending [1038]

The floor level positions are not sorted in ascending order, beginning from bottom to top. You may review them via the floor level table. You find the floor level table in the 'Settings Menu' > 'More' > 'Positioning Unit' > 'Floor Level Positions'.

Separate 'door x safely closed' switch fault [1039]

The option for supporting a separate 'door safely closed' switch is parameterized, but that signal did not respond, when the door had been closed. In order to comply with the EN81-20, some doors provide an separate position switch, signalling that the car door is safely (mechanically) closed. This signal is used to ensure that the lift can be safely driven in car door bypass operation.

Calls re-enabled for maintenance [1040]

Disabled calls have been re-enabled for maintenance purposes using the 'Service & Assembling' menu. They will be automatically disabled again after 30 minutes, if the option is not turned off manually.

Pawl device de-activated [1041]

The pawl device has been temporarily deactivated via an input terminal or the dedicated floor table, that defines on which floor the pawl device shall be featured. That means that the cabin/car will not be seated the next time the lift approaches to a floor.

Emergency Power operation activated [1042]

The Emergency Power operation has been activated, usually via the input function 'Emergency Power'.

Emergency Power lift stays operational [1043]

The lift has turned into 'Emergency Power lift stays operational' operation mode. This means it will process calls but with limitations, defined by the emergency power system. One limitation can be the nominal velocity the lift is running on. Turning into this mode is usually cause by the input function 'Emergency Power lift stays operational'.

Emergency Power evacuation delay [1044]

A delay (time span) has been setup that has to expire, before the lift drives to the emergency power floor. You find that option under 'Settings Menu' > 'Controller/Piloting' > 'More' > 'Emergency Power' > 'More'.

Emergency Power battery rescue [1045]

The lift has been turned to Emergency Power Battery Rescue operation. In this mode the lift will start driving to the nearest floor, but let the drive (inverter) choose the direction of the lowest resistance.

Safety light curtain deactivated door x [1046]

The safety light curtains can be deactivated and activated per door, via input signals. Consider possible security issue if the safety light curtains are disabled.

Safety light curtain interrupted door x [1047]

The safety light curtain has been interrupted while driving. The lift has been put to a halt, calls have been canceled. The lift now waits for a car call or the landing door to be opened, to start again.

Waiting for car call or door opening [1048]

Because of an emergency stop or safety light curtain indication, the lift is now waiting for car call or a door opening event to recover from the halt state.

Door x closing issue [1049]

The door has several times tried to close but failed. This can be

caused by the door being mechanically blocked.

Service trip operation [1050]

To enter the car roof or the shaft pit easily, this automated operation will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will moved to the service position by the distance given for entering the car roof or the shaft pit. You find those distances under 'Settings Menu' > 'More' > 'Position Unit' > 'Distances & Parameter' > 'More' > 'Even more'.

Driving to waiting floor [1051]

To enter the car roof or the shaft pit easily, this automated operation will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will moved to the service position by the distance given for entering the car roof or the shaft pit. You find those distances under 'Settings Menu' > 'More' > 'Position Unit' > 'Distances & Parameter' > 'More' > 'Even more'.

Driving to service position [1052]

To enter the car roof or the shaft pit easily, this automated operation will first drive the car to the floor where the technician is waiting, giving him/her a chance to peak into the car, ensuring that it is empty. Finally the car will moved to the service position by the distance given for entering the car roof or the shaft pit. You find those distances under 'Settings Menu' > 'More' > 'Position Unit' > 'Distances & Parameter' > 'More' > 'Even more'.

Waiting for inspection panel to be turned on [1053]

The service operation is waiting for the technician to turn on one of the the inspection control panels.

Service operation timed out [1054]

The service operation has timeout out, waiting for the technician to turn on one of the the inspection control panels.

Guest calls, lift arrived at the wrong floor. [1055]

During guest call operation the car arrived on a floor other than the source or destination floor.

Guest calls, an invalid guest call has been entered. [1056]

An invalid guest call has been entered. Check if the parameters match the actual floors and door tables.

Limit switch-test upward executed [1057]

The limit-switch test has been done. Check the details, like the velocity or reached position, by simply opening the event by touching the table row.

Limit switch-test downward executed [1058]

The limit-switch test has been done. Check the details, like the velocity or reached position, by simply opening the event by

touching the table row.

Check position encoder settings [1059]

The lift has detected a mismatch between the position encoder settings of the controller and the real/installed position encoder unit. Check if you are using a linearly or rotary encoder and check the settings found under 'Settings' > 'More' > 'Positioning Unit' > 'Type of Positioning Unit' > 'Encoder Type'.

PSU Validation Mode [1060]

The safe encoder or position supervisor unit (PSU) is in validation mode, ready to get the floor level positions adjusted and revisited. In this mode the lift can usually be operated in normal mode without advance door opening.

PSU Pre-commissioning Mode [1061]

The safe encoder or position supervisor unit (PSU) is in pre-commissioning mode. In this mode the lift can only be operated by means of the emergency electrical operation.

Travel to fire recall floor [1062]

Fire recall operation has been activated, usually via a key switch at a landing floor. The lift is now travelling to the fire recall floor, that had been setup to pickup the fire fighter. You can find the settings under 'Settings' > 'Controller/Piloting' > 'More' > 'Fire Brigade/Service'.

Lift arrived at fire recall floor [1063]

The lift has arrived at the fire recall floor, waiting for the fire fighter to enter the car. The lift is waiting for the second phase of the fire service operation to start. You can find the related settings under 'Settings' > 'Controller/Piloting' > 'More' > 'Fire Brigade/Service'.

Fire fighter operation activated [1064]

Fire fighter operation has been activated, usually via a key switch at a landing floor. The lift is now travelling to the fire recall floor, that had been setup to pickup the fire fighter. You can find the settings under 'Settings' > 'Controller/Piloting' > 'More' > 'Fire Brigade/Service'.

Fire service (car) operation [1065]

Fire service operation, having the fire fighter in the car, has been activated. The lift is now travelling via car calls, controlled by the fire fighter. You can find the settings under 'Settings' > 'Controller/Piloting' > 'More' > 'Fire Brigade/Service'.

Separating door not closed [1066]

This lift is equipped with a separating door used for goods transportation. The door is only allowed to be open, if the car preference signal has been activated. In normal operation the separating door has to be always closed. Otherwise it would allow more passengers to step into the car as allowed.

Emergency evacuation operation [1067]

The Emergency Evacuation operation has been activated. This operating mode is used to move the car to the very next floor by opening the brake and limiting the velocity to typically 0.3 m/s maximum.

Automatic Learning Trip active [1068]

The 'Learning Trip Operation' has been started via the user interface. The current floor position will be replaced with the new taught ones.

Lift standard/code turned to US-ASME-A17.1 [1069]

The standard/code that the lift is using to operate had been altered. Be careful to select the right code for the region the lift is operated. The EN81-20 standard is usually applied for Europe and the ASME code for the North American market.

Lift standard/code turned to EU-EN81-20 [1070]

The standard/code that the lift is using to operate had been altered. Be careful to select the right code for the region the lift is operated. The EN81-20 standard is usually applied for Europe and the ASME code for the North American market.

Both safety bypass device signals active [1071]

For maintenance/repair of the door safety chain contacts, a device (switch) shall provide a safe way of bypassing these contacts. This is signaled to the lift controller via two monitoring inputs.

Indication 'Overload' active [1072]

The car load measurement has signalled that the car is overloaded. The lift does not start a journey until the weight has been reduced. Normally there should be an acoustic signal in the car that tells the passengers that too many people have entered the car.

Automatic Emergency Evacuation operation disabled [1073]

The Automatic Emergency Evacuation feature has been disabled, due to the time span being expired, that had been setup as a timeout. Anyhow the Manual Emergency Evacuation feature is still being enabled. This operating mode is used to move the car to the very next floor by opening the brake and limiting the velocity to 0.3 m/s maximum.

Platform lift operation activated [1074]

In the platform lift operating mode the calls are usually operated in dead-mans-grip, requiring constant-pressure to drive the lift or the platform to the defined level positions.

System start/Power cycle [1075]

The system has been rebooted. This can be caused by a power failure.

Floor level tune assistant started [1076]

In order to simplify fine tuning of the floor level positions, an

assistant has been started that allows to level the car and confirming the adjusted level position, using nothing more than the existing car call buttons.

Maintenance deactivated via timeout [1077]

The maintenance operation mode has been automatically turned off via a timeout of the maintenance timer, typically after 4 hours. Faults will now be recorded or forwarded again. Parking is basically enabled.

Keeping the doors closed deactivated via time-out [1078]

The operation mode for 'keeping the doors closed' has been turned off automatically via a timeout of the maintenance timer, typically after 4 hours. The lift doors shall now open when approaching to a floor.

Landing control enabled via time-out [1079]

The landing control has been re-enabled automatically via a timeout of the maintenance timer, typically after 4 hours.

Max. re-leveling attempts per floor/hour [1080]

The lift has done as many attempts to re-level the car, within one hour on the very same floor, as stated in the parameter 'Settings Menu' > 'More…' > 'Drive unit' > 'More…' > 'Re-leveling' > 'Re-leveling attempts per floor/hour'.

Energy saving timer active [1081]

As the lift was idle for the given time span of the 'Energy Saving Timer', the lift has activated the dedicated output and has transmitted 'Energy Saving Level S4' via the CANopen bus. Usually the CANopen displays and drive units will react on this automatically, entering an energy saving operation mode.

Standby timer active [1082]

As the lift was idle for the given time span of the 'Standby Timer', the lift has activated the dedicated output and has transmitted 'Energy Saving Level S6' via the CANopen bus. Usually the CANopen displays, door machines and drive units will react on this automatically, entering an energy saving operation mode.

Energy Saving Wakeup Time active [1083]

As the lift was idle for the given time span of the 'Energy Saving Timer', the lift has activated the dedicated output and has transmitted 'Energy Saving Level S4' via the CANopen bus. Usually the CANopen displays and drive units will react on this automatically, entering an energy saving operation mode.

Standby Wakeup Time active [1084]

As the lift was idle for the given time span of the 'Standby Timer', the lift has activated the dedicated output and has transmitted 'Energy Saving Level S6' via the CANopen bus. Usually the CANopen displays, door machines and drive units will react on this automatically, entering an energy saving operation mode.

Team operation disabled via input terminal [1085]

The team or group operation has been disabled via an input terminal. This lift is now running in single lift operation mode, assuming that there are no other lifts, connected to the same landing calls.

Speed governor testing [1086]

The assistant used to perform a speed-governor-test operation has been started.

Brake distance learning assistant active [1087]

The braking distance assistant is used to automatically determine the required deceleration distances required to stop the lift, when driving V1…Vn. Usually this assistant is used for classical drive systems, running in velocity rather than position profile mode.

Rescue operation mode activated [1088]

The rescue operation mode has been activated, because the corresponding input 'Rescue operation' has been activated.

Circulating operation active [1089]

The Circulating operation has been activated. This will make the lift stop at every floor, open and close the doors and finally altering the direction at the top and bottom floor.

Circulating operation paused [1090]

The Circulating operation has been paused as the given count of complete floor cycles has been completed. After the pause time has expired, the lift will start to cycle the floor table again.

Passenger calls inhibited (Circulating operation) [1091]

The normal passenger calls have been inhibit for the given time span to not interrupt the circulating operation too much.

Chemical/Hazard goods operation [1092]

The Chemical/Hazard goods operation mode has been activated, usually via a key switch at the landings. This operation mode let a technician at the landings drive the car to any floor, were such a key switch is mounted. Usually those key switches have three positions. A neutral position, one for activating and one for resetting the operation mode.

Chemical operation, finishing car calls [1093]

The Chemical/Hazard goods operation mode has been activated, usually via a key switch at the landings. This operation mode let a technician at the landings drive the car to any floor, were such a key switch is mounted. Usually those key switches have three positions. A neutral position, one for activating and one for resetting the operation mode.

Automobile transport operation [1094]

The Automobile transport operation mode had been activated via the

corresponding parameter in the lift controller's menu. In this operation mode the lift controller will feature positioning light barriers to ensure the car or vehicle being in the right spot on the platform. In order to instruct the driver, traffic light signals are generated by the lift controller, that shall be visible for the driver in the car.

Automobile lift, passenger transport active [1095]

If the Automobile lift is used by persons as well as by cars or vehicles, there is usually a key switch in the cabin/car, that can be used to indicate that this passenger is a person not a car and there is not need to place the vehicle via the position light barriers.

Waiting for the car/vehicle to be positioned [1096]

The lift is waiting for the car/vehicle to be properly placed on the platform or in the cabin. The position of the car/vehicle is indicated via the positioning light barriers.

Smoke detector service operation started [1097]

In order to test the smoke detector in the shaft head, an automated procedure had be used to enter the car roof. Driving to the shaft head is done via the inspection control. The smoke detector can now be tested with a spray. A buzzer is activated when the smoke detector is tripped.

Driving back to floor level [1098]

Due to a fault and because the car is not flush on level, the lift returns to the next floor in order not to trap the passengers.

Brake testing started [1099]

The assistant used to perform a brake-test operation has been started.

Lift starting interlock active [1100]

The input signal that is used to interlock the start of several lifts at the very same time has been indicated by some other lift. A timeout for this signal can be setup under 'Settings > More… > Drive Unit > More… > Even more… > Lift start interlocking timeout'

Buffer test has been activated [1101]

The buffer testing operation has been activated via the dedicated testing assistant.

Overload indication test has been activated [1102]

The overload indication testing operation has been activated via the dedicated testing assistant.

Electrical Safety gear testing active [1103]

The assistant used to perform an electrical safety brake test operation has been started.

Peak-up operation activated via time planner [1104]

The 'peak-up' operation is used, if a group of passengers is in

need of transportation to the upper floors, for example when filling an office building in the morning or a group of guests leaving a meeting for lunch.

Peak-down operation activated via time planner [1105]

The 'peak-down' operation is used, if a group of passengers is in need of transportation to the lower floors, for example when employees leave an office building in the evening or a group of guests leaving a meeting for lunch.

Peak-up operation activated via terminal [1106]

The 'peak-up' operation is used, if a group of passengers is in need of transportation to the upper floors, for example when filling an office building in the morning or a group of guests leaving a meeting for lunch.

Peak-down operation activated via terminal [1107]

The 'peak-down' operation is used, if a group of passengers is in need of transportation to the lower floors, for example when employees leave an office building in the evening or a group of guests leaving a meeting for lunch.

Key switch 'Keep doors closed' active [1108]

The operation mode for 'keeping the doors closed' has been activated. The lift doors shall not open when approaching to a floor.

Lift standard/code turned to the old EU-EN81-1/2 [1109]

The standard/code that the lift is using to operate had been altered. Be careful to select the right code for the region the lift is operated. The EN81-20 standard is usually applied for Europe and the ASME code for the North American market.

Lubrication runtime warning threshold reached [1110]

The lift controller throws a warning about the remaining oil in the reservoir to be low, when the parameterized runtime of the oilpump (lubrication) has been exceeded. You can change the value under Settings Menu > More... > Drive Unit > More... > Even more... > Lubrication Function

Automatic service for rescuing disabled people [1111]

The second phase for rescuing people with disabilities from a building has been activated. There are two possible operation modes, including 'Automatic evacuation operation' and 'Driver assisted evacuation operation'.

Remote service for rescuing disabled people [1112]

The second phase for rescuing people with disabilities from a building has been activated. There are two possible operation modes, including 'Automatic evacuation operation' and 'Driver assisted evacuation operation'.

Driver assisted service for rescuing disabled people [1113]

The second phase for rescuing people with disabilities from a building has been activated. There are two possible operation

modes, including 'Automatic evacuation operation' and 'Driver assisted evacuation operation'.

Evacuation/rescue service operation has been suspended [1114]

The evacuation/rescue service operation has been suspended via the dedicated input signal 'Evacuation/Rescue operation suspend'. This signal is usually issued by a building management system, if smoke or fire/heat has been detected in the machine room or some other important electrically installation room and/or the safe areas, used to evacuate the people.

Swing door is continuously open [1115]

The manual/swing door has been continuously opened for more than a minute. This happens usually if someone has left the car and forgot to close the manual door again. If this lift is a team member, the lift will leave the team. You can setup a 'door bell' to signal to passengers to close the door again.

Please close the swing door [1116]

The swing doors has been left open. After the parameterized time has been expired, the signal 'Please close the door' will be indicated.

The oil pump lubrication run time has been reset [1117]

Resetting the oil pump runtimer value shall be done, when the oil bottle or reservoir has been refilled with oil and so the runtimer shall start again, counting the seconds the oil pump has been engaged.

Maintenance interval trip counter [1118]

The maintenance interval threshold for the trip counter indicates that the lift is in need of maintenance. You can set the next interval or threshold at 'Service & Assembling' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals'.

Maintenance interval operation time meter [1119]

The maintenance interval threshold for the operating hours indicates that the lift is in need of maintenance. You can set the next interval or threshold at 'Service & Assembly' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals'.

Maintenance interval Date & Time [1120]

The maintenance interval Date & Time indicates that the lift is in need of maintenance. You can set the next Date & Time at 'Service & Assembling' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals'.

Safety chain bridging test assistant started [1121]

The assistant for testing the safety chain bridging supervision function has been started. This assistant is usually used to emulate a bridge in the safety chain in order to check, if the lift would get blocked.

Lift standard/code turned to AS1735 (Australia) [1122]

The standard/code that the lift is using to operate had been

altered. Be careful to select the right code for the region the lift is operated. The EN81-20 standard is usually applied for Europe and the ASME code for the North American market.

Drive indicated > [1123]

If the drive is not ready to drive, it can transmit a message to simplify troubleshooting.

Drive to telescopic toe guard push-in position [1124]

These special toe guards are usually spring loaded and hold by an electromagnet. On a power drop they are pushed out and when the power comes back, the lift has to push them in again, by driving below the lowest floor, so that the toe guard will touch the ground. The lift will stop, if the input indicates, that the toe guard has been pushed in again or the maximum given travel distance has been reached.

Telescopic toe guard push-in operation [1125]

These special toe guards are usually spring loaded and hold by an electromagnet. On a power drop they are pushed out and when the power comes back, the lift has to push them in again, by driving below the lowest floor, so that the toe guard will touch the ground. The lift will stop, if the input indicates, that the toe guard has been pushed in again or the maximum given travel distance has been reached.

Waiting for security signal at stopover floor [1126]

As defined by the dedicated parameter 'Wait for security signal at the intermediate stopover floor', the lift is waiting at the intermediate stopover floor for the 'Special Function > Security Run' signal to peak up once, in order to proceed to the registered destination.

Waiting for security signal before start driving [1127]

As defined by the dedicated table 'Wait for security signal door table', the lift is waiting for the 'Special Function > Security Run' signal to peak up once, in order to start driving to the registered destination.

Generic supervision input 1 # [1128]

One of the the generic supervision inputs has been triggered. These inputs can be used for a wide range of functions. Please refer to the actual schematics of your lift. Usually they are used 'broken wire interlock'.

Generic supervision input 2 # [1129]
Generic supervision input 3 # [1130]
Generic supervision input 4 # [1131]
Generic supervision input 5 # [1132]
Generic supervision input 6 # [1133]
Generic supervision input 7 # [1134]
Generic supervision input 8 # [1135]
Generic supervision input 9 # [1136]
Generic supervision input 10 # [1137]
Generic supervision input 11 # [1138]
Generic supervision input 12 # [1139]
Generic supervision input 13 # [1140]
Generic supervision input 14 # [1141]
Generic supervision input 15 # [1142]
Generic supervision input 16 # [1143]

External door zone signal belated when leaving floor x [1144]

While driving from one floor to another, the external door zone signal seems to have lately dropped. This may cause the safety circuit at the stopping floor to fail and the lift to be blocked non-volatile.

Door x close limit switch hung/jammed [1145]

One of the door-limits seems to be hung or be jammed. The signal is activated permanently. This might be a mechanical issue or an electrical bypass/bridge. If the door limit goes straight into a door drive, which then gives a potential free relay output to the controller, it might even be that this relay is faulty. If the limits are 'normally closed' also check the wiring. A broken wire could then indicate a permanently activated door limit.

Door x open limit switch hung/jammed [1146]

One of the door-limits seems to be hung or be jammed. The signal is activated permanently. This might be a mechanical issue or an electrical bypass/bridge. If the door limit goes straight into a door drive, which then gives a potential free relay output to the controller, it might even be that this relay is faulty. If the limits are 'normally closed' also check the wiring. A broken wire could then indicate a permanently activated door limit.

Runtime supervision test has been activated [1147]

The runtime supervision testing operation has been activated via the dedicated testing assistant.

Terminal (pre-limit) switch top not dropped at upper floor [1148]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Terminal (pre-limit) switch bottom not dropped at lowest floor [1149]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Speed governor test results [1150]

The assistant used to perform a speed governor test operation has been executed. The test results can be found in the text of the item.

Brake test result [1151]

The assistant used to perform a brake-test operation has been executed. The test results can be found in the text of the item.

Electrical Safety gear test results [1152]

The assistant used to perform the electrical safety gear testing

operation has been executed. The test results can be found in the text of the item.

UCM testing upward result [1153]

The assistant used to perform the UCM testing operation has been executed. The test results can be found in the text of the item.

UCM testing downward result [1154]

The assistant used to perform the UCM testing operation has been executed. The test results can be found in the text of the item.

Limit-switch top test results [1155]

The assistant used to perform the limit switch testing operation has been executed. The test results can be found in the text of the item.

Limit-switch bottom test results [1156]

The assistant used to perform the limit switch testing operation has been executed. The test results can be found in the text of the item.

Helicopter Allocation Time [1157]

The allocation time is running, after the lift has arrived at the helicopter allocation floor, usually the topmost floor of the building or the roof stop. The lift is waiting here for the helicopter crew to handover the patient.

Helicopter Function Standby [1158]

The lift is waiting to be called to the helicopter floor. Usually the lift will first be called by a high priority landing call and then the medical staff will enter the lift and drive to the helicopter floor via a car call.

Smoke Detectors active [1159]

One or more fire/smoke detectors had been activated. Those inputs are usually indicated, if smoke or fire had been detected at some floor level.

Position encoder replacement operation [1160]

The position encoder replacement operation can be used to swap the encoder unit. Select at which floor the car/cabin is flush on level and the system will then initialize the new installed positioning encoder matching this floor level.

Maintenance activated remotely [1161]

The maintenance operation mode has been turned on remotely (fieldbus/cloud). Faults will not be recorded or forwarded. Parking is being disabled.

Keeping the doors closed activated remotely [1162]

The operation mode for 'keeping the doors closed' has been activated remotely (fieldbus/cloud). The lift doors shall not open

when approaching to a floor.

Waiting for the safety light curtain to be cleared [1163]

The safety light curtain is still interrupted, so that the lift cannot start the safety light curtain test in order to begin the ride.

Lift standard/code turned to NZS4332 (New Zealand) [1164]

The standard/code that the lift is using to operate had been altered. Be careful to select the right code for the region the lift is operated. The EN81-20 standard is usually applied for Europe and the ASME code for the North American market.

Docking Service operation active at floor x [1165]

The docking service operation has been activated, used to level the lift to a truck bed, with the doors being open. Leveling is usually done with the doors being opened and the door's safeties being bridged within a defined work space.

Temporarily disabled inspection stop before floor level [1166]

The option to temporarily zero the distance, that the lift will stop on inspection operation before top or bottom floor level (terminal stops), has been turned on.

Hydraulic jack resync procedure started [1167]

If the lift is equipped with twin or triple hydraulic jacks (cylinders), then they might require re-synchronization after a certain run time. Otherwise, the cylinders will no longer extend evenly, so that one cylinder already reaches the end stop before the others do. To resynchronize the cylinders, the lift will move to the buffer below the lowest floor, featuring creeping velocity and remain there for some time with open valves, until all cylinders are fully retracted again.

Driving to hydraulic jack resync position [1168]

If the lift is equipped with twin or triple hydraulic jacks (cylinders), then they might require re-synchronization after a certain run time. Otherwise, the cylinders will no longer extend evenly, so that one cylinder already reaches the end stop before the others do. To resynchronize the cylinders, the lift will move to the buffer below the lowest floor, featuring creeping velocity and remain there for some time with open valves, until all cylinders are fully retracted again.

Cleaning operation activated [1169]

The cleaning operation has been activated, that will keep the lift stationary at some floor with the possibility to operate the doors via the door open/close buttons. Landing calls and car calls will be cancelled and rendered non-operational. This function is usually activated via a key switch.

Fault signal light curtain x [1170]

Regarding to EN-regulations, the light curtain has to signal an internal fault state, so that the lift controller can finish the last trip and enter Out of Order operation. This fault signal has been turned on by the light curtain.

Door zone signal dropped when stationary [1171]

The external door zone signal has dropped unattended, while the lift was stationary. This can lead to the SZ module for door bridging being unable to bridge and therefore blocking the lift. The SZ module requires both zones to be dropped and peaked high again, before being able to bridge the door's safeties again.

System Restart required [1172]

Since some crucial lift parameters have changed, it is necessary to restart the system.

System Reboot required [1173]

Since the lift application has been updated, it is necessary to completely restart the lift controller, i.e. to carry out a reboot.

Manually restarted node [1174]

A CANopen node has been manually restarted via the lift controller's user interface (node list).

Waiting for landing door lock cycle [1175]

The lift is waiting to reset the inspection car top operation, that requires the landing door lock being cycled, after inspection had been turned off again. The door lock cycle is used as an indication, that the technician has actually left the car top.

Waiting for inspection being activated by landing door opening [1176]

The door safety chain has been interrupted unattended. Because of the dedicated parameter being activated, the lift is now waiting for the inspection operation to be turned on by the technician.

Upward inspection direction locked [1177]

Because of the dedicated parameter about activating the inspection operation on an unattended landing door opening, the upward inspection direction has been disabled. It will be enabled again, as soon as the lift is driven once in downward direction by the technician.

Position supervisor unit in EN81-21 mode [1178]

The safe (SIL3) position encoder (PSU) has been turned to EN81-21 mode, securing the safety space in the low pit or low head.

Waiting for the relay (SAC) of the safe encoder (PSU) to close [1179]

The used safety encoder (PSU) features a relay (SAC) in the safety circuit (behind the doors) which must be closed, so that the drive can be powered. This relay seems to be still open, looking at the encoder status. Check for any errors of the safe encoder (PSU) and consult its manual.

Maximum Travels with Emergency Power reached [1180]

The maximum count of travels, that has been parameterized in the Emergency Power Settings, has been reached.

Automatic brake testing is running [1181]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the car starts to slide away, the test will fail and the lift is entering blocked operation mode.

In-Car-Stop-Switch bridging relay hung [1182]

The relay used to bridge the In-Car-Stop-Switch for re-levelling and fire recall operations, does hung or is broken. That means that the supervision input 'In-Car-Stop-Switch bridging relay supervision' is not following the relay output. The supervision input shall be connected to a normally closed contact of the relay, so that it is peaked high, when the relay is turned off.

Automatic brake testing cancelled by car call [1183]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the car starts to slide away, the test will fail and the lift is entering blocked operation mode.

Automatic brake testing waiting [1184]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the car starts to slide away, the test will fail and the lift is entering blocked operation mode.

Evacuation waiting for car call [1185]

If the automatic emergency evacuation, that moves the lift to the very next floor, just by brake opening, shall not start before the passenger has pressed any car call button, the lift will wait stationary.

Lift attendant mode active [1186]

The Lift Attendant or Elevator Operator mode has been activated. The lift is now controlled via special buttons in the car panel by an assistant instead of the passengers.

Door opening by landing call suspended remotely [1187]

Opening of the doors via landing calls has been suspended by the corresponding input function 'Prevent door opening by landing call'. Instead the landing calls will be put on hold for one minute and the output 'Landing call but door opening prevented by input' will be turned on to indicate to a central, that a passenger is waiting. If the timeout expires, the landing call will be dropped.

Service password entered [1188]

The lift controller has been secured using a Service password. This password is usually used to protect parameters and settings, that are used when doing service to the lift. Those parameters are highlighted with a yellow key icon.

Setup password entered [1189]

The lift controller has been secured using a Setup password. This password is usually used to protect the core parameters and settings, that are setup in the factory or on site when assembling the lift. Those parameters are highlighted with a red key icon and might be changed later on again, when the lift is under repair or revision.

Lift application software update [1190]

The lift application software had been updated. The existing software had been stored into the backup folder. After that update, the lift controller had been rebooted.

Earthquake operation mode [1191]
Driving to Earthquake floor [1192]

The Earthquake operation mode will drive the lift to the dedicated floor and release the passengers. If no dedicated floor had been parameterized, the lift will drive to a floor above the middle of the hoistway, to make sure that the counterweight is below the car, if the lift actually has one.

Waiting for a car door opening [1193]

The supervision function 'Waiting for a car door opening' has been activated. It makes sure, that a swing door opening is always followed by a car door opening, making sure that no passenger is stuck in between the landing door and the car door. If the car door opening has not been detected, the lift will not process calls. An output function 'Opening of the car door required' will be activated and a message at the lift controllers screen.

Manual car door is continuously open [1194]

The manual car door has been continuously opened for more than a minute. This happens usually if someone has left the car and forgot to close the manual car door/gate again. If this lift is a team member, the lift will leave the team. You can setup a 'door bell' to signal to passengers to close the door again.

Floors have been locked via input [1195]

One or more floors have been locked/disabled by means of an input function, usually a key switch. To check which floors are effected, check the 'Floor Locked' table in the Diagnosis Menu.

Time Planner 1 deactivated via input function [1196]
Time Planner 2 deactivated via input function [1197]
Time Planner 3 deactivated via input function [1198]
Time Planner 4 deactivated via input function [1199]

A time planner entry has been deactivated via an input function, usually a key switch.

Setup a password against unattended usage! [1200]

Make sure, that you protect the at least the important settings in the Lift Controller by setting a proper 'Setup'-Password. You can do that via the user interface, following 'System Menu → Security'. The password should be at least 6 characters long. You may also setup a Service-Password, protecting the parameters, that are less important but can still effect the performance of the

lift against unattended usage. We suggest that your password is 6 digits long and shall not be the same for all of your lifts.

Terminal (pre-limit) top switch tripped [1201]
Terminal (pre-limit) bottom switch tripped [1202]

The Terminal (pre-limit) has been tripped while the car was not in the terminal floor. This might be a cabling issue or a loose contact. So double check the terminal switch signals, making sure the connections are tied and stable.

Condition Monitoring Door [1203]

Some Condition Monitoring Data points indicate, that a pheripherial, like the door or the drive unit is indicating need of maintenance. To have a closer look at it, go to Assembly & Repair > Condition Monitoring and go further to the indicated unit.

Condition Monitoring Drive [1204]

Some Condition Monitoring Data points indicate, that a pheripherial, like the door or the drive unit is indicating need of maintenance. To have a closer look at it, go to Assembly & Repair > Condition Monitoring and go further to the indicated unit.

Body Detector continously interrupted [1205]

The input of the body detection unit has been triggered continously for more than 15 minutes in a row. That might indicate, that the detector is blocked or faulty. So check the detector and make sure, it is not triggered by something else, than a passenger in the car.

Light barrier possibly defective [1206]

If no light barrier change has been detected after 20 trips featuring car calls, excluding random calls and time planner calls, a warning is generated in the lift attendant status. In addition, the date of the last time the light barrier has changed its state is always stored. This feature can be turned on or off in the Lift Attendant settings.

Door-open button possibly defective [1207]

If the door-open button has not been operated for more than 100 trips in a row, excluding random calls and time planner calls, a warning is generated in the lift attendant status. In addition, the date of the last time the door-open button has been operated is always stored. This feature can be turned on or off in the Lift Attendant settings.

Automatic safety gear testing waiting [1208]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

Automatic safety gear testing is running [1209]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

Passenger User Group waiting for no-load [1210]

The Passenger user groups feature is active. The idea is that those passenger groups will only be able to enter car calls on the given floors/doors, when they have entered the lift from one of those landings as well. In order to make this work, those car calls have to be disabled for normal passengers, via the car call disabling table in the first place.

Cleaning operation waiting for calls [1211]

The cleaning operation has been activated but there are still car calls, that needs to be processed first. When all car calls have been finished, the lift will travel straight to the floor, were the cleaning key had been activated.

PSU Safety Space Gear Triggering Test active [1212]

The PSU safety-space gear-tripping testing operation has been activated via the dedicated testing assistant.

Traction belt/cable worn out warning [1213]

If the lift is equipped with a traction belt/cable monitoring unit, that supervise the health of the steel cores of the belts or plastic coated cables. You get a worn out warning and later on a worn our error, if those units detect, that the traction belts or cables do worn out by means of the steel cores breaking.

Direct Travel Mode active [1214]

In the 'Direct Travel Mode' landing and car calls are frozen and only high priority car calls are handled. If a normal car call button is pressed, it will be latched once as a high priority car call. The idea is that when you pulse the dedicated input terminal, you will be able to enter once a car call and the lift is going straight to that floor. Then it will continue with the otherregular calls.

109.3 Faults

Lift is in blocking operation mode. [2001]

The lift is in blocking operation mode, because a fault has occurred, that does not allow the lift to enter operation mode automatically again.

The lift stopped inaccurate - risk of stumbling. [2002]

The lift stopped inaccurate, so the passengers may stumble, when entering or leaving the cabin. Regarding to EN regulations, the lift shall stop within a range of no more that 10 mm.

Passive Safety Chain Fault [2003]

The 'Passive Safety Chain' has been opened. This can be caused by limit switches, the speed governour or the safety gear unit. Consult the schematics of this lift installation for tracking the fault in the passive safety chain.

Passive Safety Chain Fault while driving [2004]

```
    The 'Passive Safety Chain' has been opened. This can be caused by
    limit switches, the speed governour or the safety gear unit.
    Consult the schematics of this lift installation for tracking the
    fault in the passive safety chain.


Emergency Stop Safety Chain [2005]

    The 'Emergency Stop Safety Chain' has been opened. This can be
    caused by an emergency stop switch, some safety light curtains or
    other safety equipment. Consult the schematics of this lift
    installation for tracking the fault in the emergency stop chain.


Emergency Stop Safety Chain while driving [2006]

    The 'Emergency Stop Safety Chain' has been opened. This can be
    caused by an emergency stop switch, some safety light curtains or
    other safety equipment. Consult the schematics of this lift
    installation for tracking the fault in the emergency stop chain.

Landing/Swing Door Safety Chain [2007]

    The 'Landing Door Safety Chain' has been opened. This can be
    caused by some faulty swing/manual door contact or the car/cabin
    touching the door bolt. Consult the schematics of this lift
    installation for tracking the fault in the landing door chain.


Landing/Swing Door Safety Chain while driving [2008]

    The 'Landing Door Safety Chain' has been opened. This can be
    caused by some faulty swing/manual door contact or the car/cabin
    touching the door bolt. Consult the schematics of this lift
    installation for tracking the fault in the landing door chain.


Car Door A Safety Chain [2009]

    The 'Car Door A Safety Chain' has been opened. This can be caused
    by some faulty car door contact or the door A panel not being
    properly closed. Consult the schematics of this lift installation
    for tracking the fault in the car door A chain.


Car Door A Safety Chain while driving [2010]

    The 'Car Door A Safety Chain' has been opened. This can be caused
    by some faulty car door contact or the door A panel not being
    properly closed. Consult the schematics of this lift installation
    for tracking the fault in the car door A chain.


Car Door B Safety Chain [2011]

    The 'Car Door B Safety Chain' has been opened. This can be caused
    by some faulty car door contact or the door B panel not being
    properly closed. Consult the schematics of this lift installation
    for tracking the fault in the car door B chain.


Car Door B Safety Chain while driving [2012]

    The 'Car Door B Safety Chain' has been opened. This can be caused
    by some faulty car door contact or the door B panel not being
    properly closed. Consult the schematics of this lift installation
    for tracking the fault in the car door B chain.


Door Lock Safety Chain [2013]

    The 'Door Lock Safety Chain' has been opened. This can be caused
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by some faulty door lock contact or the cabin/car touching the door/lock bold/roller. Consult the schematics of this lift installation for tracking the fault in the door lock chain.

Door Lock Safety Chain while driving [2014]

The 'Door Lock Safety Chain' has been opened. This can be caused by some faulty door lock contact or the cabin/car touching the door/lock bold/roller. Consult the schematics of this lift installation for tracking the fault in the door lock chain.

Safety Chain Fault [2015]

The 'Safety Chain' has been opened. This can be caused by safety equipment or some faulty door/lock contact or the cabin/car touching the door/lock bold or roller. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Safety Chain Fault while driving [2016]

The 'Safety Chain' has been opened. This can be caused by safety equipment or some faulty door/lock contact or the cabin/car touching the door/lock bold or roller. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Re-levelling failed [2017]

The car/cabin was not flush on level, so the lift tried to re-level the cabin/car. Anyhow this operation failed.

Re-levelling safety circuit fault [2018]

The car/cabin was not flush on level, so the lift tried to re-level the cabin/car. Anyhow this operation failed, because of an issue regarding the safety circuit (SZ) for door bridging.

Re-levelling door fault [2019]

The car/cabin was not flush on level, so the lift tried to re-level the cabin/car. Anyhow this operation failed, because of the door contact or state.

Re-levelling drive fault [2020]

The car/cabin was not flush on level, so the lift tried to re-level the cabin/car. Anyhow this operation failed, because of a drive related issue.

Re-levelling unit failed [2021]

The car/cabin was not flush on level, so the lift tried to re-level the cabin/car. Anyhow this operation failed, because of the used external re-levelling unit.

Door opening timeout [2022]

The door did not open in the given time span. Check the door drive & operation and the time span that has been setup as 'Door opening supervision time' at the 'Door Settings'.

Door closing timeout [2023]

```
    The door did not (fully) close in the given time span. Check the
    door drive & contacts and the time span that has been setup as
    'Door closing supervision time' at the 'Door Settings'.


Door locking timeout [2024]

    The door did not lock in the given time span. Check the door
    lock/bold & contacts and the time span that has been setup as
    'Door locking supervision time' at the 'Door Settings'.


Drive contactors stuck (drive off) [2025]

    The supervision signal for the drive contactors indicates that the
    contactors are turned on, but the lift has them turned off. Check
    the logic/polarity of the contactor and the supervision signal.


Drive contactors activation failed [2026]

    Activating the drive contactors for start driving has been failed.
    Check the contactors and the supervision signal for polarity and function.


Drive contactors disrupted [2027]

    The drive contactors have been disrupted (turned off) while being
    driving. Check the connection and the function of the supervision
    (feedback) signal that is used to monitor the contactors.


Drive brake x stuck (brake off) [2028]

    The supervision signal for the brake indicates that the brake is
    still turned on, but the lift has them turned off. Check the
    logic/polarity of the brake contactor and the supervision signal.


Releasing the brake x failed [2029]

    Releasing the brake on start driving has been failed. Check the
    brake contactors and the supervision contact used as a feedback signal.


Brake (contactors) x disrupted [2030]

    The brake has been disrupted (turned off) while being driving.
    Check the connection and the function of the supervision
    (feedback) signal that is used to monitor the brake.


Drive not ready  [2031]

    The drive unit is not ready. Check the 'ready' signal of the drive
    or the bus connection to the drive system. Check the status
    indication or the drive's display for more detailed error
    information.


Drive not ready  [2032]

    The drive unit is not ready. Check the 'ready' signal of the drive
    or the bus connection to the drive system. Check the status
    indication or the drive's display for more detailed error
    information.


Position encoder data fault [2033]

    The lift controller did not receive valid position encoder
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messages in time. Please check the encoder bus connection and its power supply or try to replace the encoder unit, to check if the unit has a fault.

Position encoder value out of range [2034]

The lift controller did receive position encoder messages, however out of the valid range (bottom/top floor). You may do a learning trip or if you just replaced the encoder, use the 'Encoder Replacement' at the 'Assembling & Repair' menu.

Drive Start supervision time [2035]

The drive start supervision time has been expired. The lift was not able to leave the current door zone within the given time. Check the drive and the 'Start Supervision Time' parameter. A typical value would be 15 s.

Driving supervision time [2036]

The driving supervision time has been expired. The lift was not able to reach the destination within the given time. Check the drive and the 'Driving Supervision Time' parameter. A typical value would be 45 s.

Drive deceleration supervision time [2037]

The drive deceleration supervision time has been expired. The lift was not able to decelerate/brake within the given time, when approaching to the floor. Check the drive and the 'Drive Deceleration Supervision Time' parameter. A typical value would be 15 s.

Drive command timeout [2038]

A drive command timeout has been detected. The drive did not react to a command, send by the lift controller, in the appropriate time span. Check if the drive unit gives more hints about a possible error or warning.

Rotation sense supervision [2039]

A rotation sense supervision error has been detected. The car/cabin moved in the wrong (opposite) direction while driving, regarding to the positioning encoder system. Check cabling, brake and the drive system and parameters. Check the positioning encoder too.

Door x close button hung/jammed [2040]

The door-close button seems to be hung or jammed. The signal is activated permanently. This might be a mechanical issue or an electrical bypass/bridge.

Door x open button hung/jammed [2041]

The door-open button seems to be hung or jammed. The signal is activated permanently. This might be a mechanical issue or an electrical bypass/bridge.

Boarding could not be completed. [2042]

The lift was not able to close/lock the doors and start driving, because of some door fault, preventing the safety chain to be closed.

Drive message timeout [2043]

The drive unit normally transmit a status word regularly via the bus interface. If not, a timeout will expire and the lift assume the drive to be not ready anymore.

Door/lock contact bridging failed at floor x [2044]

The safety circuit was not able to bridge the door/lock contact. This might be because of one of the zone signals not set or being unstable.

Door/lock bridging failed by external zone at floor x [2045]

The safety circuit was not able to bridge the door/lock contact, because of the external zone signal not switched on or being unstable.

Door/lock contact bridging collapsed at floor x [2046]

The door/lock contact bridging circuit has been unexpectedly turned off, usually caused by one of the door zone signals being interrupted or peaked down.

Door/lock bridging external zone collapsed at floor x [2047]

The door/lock contact bridging circuit has been unexpectedly turned off, usually caused by one of the door zone signals being interrupted or peaked down.

The drive/engine temperature is too high. [2048]

The drive/engine temperature is too high to operate. This can be signaled by a classic PTC via an input, directly from the engine or the inverter unit controlling the engine.

Car/cabin light voltage supervision [2049]

The cabin light voltage monitoring detected a power failure. Usually, the supply for the light of the cabin has its own circuit and fuse.

Error handshaking the target position with the drive. [2050]

The lift controller and the drive unit do handshake the target position in order to drive to a defined destination. This handshake has failed several times.

Unintended car movement detection [2051]

An unintended car/cabin movement has been detected. The cabin has left the door zone, although the doors were still open according to the safety chain.

Fire Alarm level not reachable [2052]

The Fire Alarm level can not be reached, because some smoke/fire detectors indicate that the lift would have to pass an already smoked/burning floor. You may change the policy for passing smoked/burning floors, if the doors of the lift installation fulfill the specification for doing so.

Safety Chain bridge/bypass doors detected [2053]

A safety chain bridge or bypass had been detected via monitoring the doors, that had been unlocked/opened and then checking the safety chain for being opened as well. Normally the safety chain has to open, if the doors are unlocked and/or opened. If this is not the case for some seconds, the system will block the lift. A bridged safety chain cause a high risk of an accident.

Lift blocked by Testing Assistant [2054]

The lift has been blocked by the 'Testing Assistant' to ensure that the lift can not automatically go back to normal operation. Before unblocking the lift, check that all modifications that had been done for testing/inspection have been undone. Generally spoken, check that it is safe to turn the lift back to 'normal'.

Door/lock bridge collapsed by velocity too high at floor x [2055]

The door/lock contact bridging circuit has been unexpectedly turned off, because of the velocity of the car/cabin exceeding the maximum allowed value for the given operation.

Phase failure/loss detected [2056]

A electrical phase failure/loss has been signaled via the supervision input. Often the drive unit monitors phase loss today, but if not, an external unit may be used and connected via an input to the lift controller throwing the error then.

Terminal (Pre-limit) switches faulty [2057]

The hoistway terminal (pre-limit) switch signals are faulty. Basically the pre-limit switches at top and bottom of the hoistway can not be actuated at the very same time. Keep in mind that the switches are normally closed. They open, if the car reaches the top or bottom position.

Both safety bypass device signals active [2058]

For maintenance/repair of the door safety chain contacts, a device (switch) shall provide a safe way of bypassing these contacts. This is signaled to the lift controller via two monitoring inputs. It shall not be possible to bridge the car and landing doors together.

Door x 'open' limit switch not operated in time. [2059]

The door 'open' limit switch has not been operated within the given time-span, when the doors was opening. Check the time-out and the switch (polarity). You can find the door-open time under 'Settings' > 'Doors' > 'Door Properties' > 'Door X' > 'Door opening/closing time span.

Door x 'close' limit switch not operated in time. [2060]

The door 'close' limit switch has not been operated within the given time-span, when the doors was closing. Check the time-out and the switch (polarity). You can find the door-close time under 'Settings' > 'Doors' > 'Door Properties' > 'Door X' > 'Door closing time span.

SB-board (safety chain) hardware fault. [2061]

The SB-board (safety chain) could not be recognized on system startup. Check the flappy cable connecting the SB-Board to the CPU board for being properly connected.

CAN1: Node-Id conflict with some component. [2062]

Some other component at CAN1 is in conflict with this lift controller, regarding the node-id. Check your bus configuration and red 'Error LED' of other components to solve the conflict.

CAN2: Lifts using the same team-id. [2063]

If running in lift team mode, each team lift has to be told which team member it shall represent. It is not allowed to have the same team number twice. Check the settings of all via CAN2 connected lifts at 'Settings' > 'More...' > 'Basics' > 'Single/Team Settings'.

Drop protection activation fault [2064]

The drop protection could not be activated properly. That means that the feedback contact of the bolt, blocking the speed governour, did not signal that the bolt is free and therefore enabling the speed governour pulley to spin.

Drop protection release fault [2065]

The drop protection could not be released properly. That means that the feedback contact of the bolt did not signal, that the bolt is back in its position, blocking the speed governour wheel.

Car movement sense supervision [2066]

A cabin movement supervision error has been detected. The car/cabin has unexpectedly stopped moving, while being already driving. This might happen for rotation encoder systems, if the toothbelt of the encoder is ripped up from the pulley. The same may happen on linearly encoder systems in a similar way.

Emergency Electrical Operation & Inspection activated [2067]

Emergency Electrical Operation and Inspection has been activated together. Regarding to the EN regulations the inspection control panel has to neutralize the emergency electrical operation panel.

Inspection car top & pit activated [2068]

The Inspection control panel at the car top and hoistway pit are activated together. Regarding to the EN regulations driving is only allowed if both panels signal the very same direction.

Low oil pressure [2069]

The hydraulic drive system signalled a low oil pressure in the system. This signal is usually transmitted low-active, meaning that it should be signalled as long as the pressure is not low. Please check the drive unit for further investigation.

Oil overpressure [2070]

The hydraulic drive system signalled an oil overpressure in the system. This signal is usually transmitted low-active, meaning that it should be signalled as long as the pressure is not too high. Please check the drive unit for further investigation.

Lift missed floor level [2071]

The lift has passed/missed flush floor level. If operating the lift in classic velocity mode, check the braking distance of the fast velocity in order to ensure that the lift does a short creeping.

Drive not ready [2072]

The drive unit is not ready. Check the 'ready' signal of the drive or the bus connection to the drive system. Check the status indication or the drive's display for more detailed error information.

Error handshaking the target position with the drive. [2073]

The lift controller and the drive unit do handshake the target position in order to drive to a defined destination. This handshake has failed several times.

Quickstart, external door zone missing [2074]

For doing a drive unit quickstart, the external door zone signal has to be present in order to activate the safety circuit, used for bridging the door safety chain, while the doors are still closing.

Load measuring unit communication fault [2075]

The car load measuring unit stopped to communicate properly. Check cabling and bus termination. Ensure that it is powered constantly and not may be turned off with the cabin light.

Load measuring unit internal (sensor) fault [2076]

The car load measuring unit signals an internal fault, probably caused by a faulty sensor or connection. Check sensor cabling and power supply. Refer to the unit's manual for further solutions.

Ambient temperature too low [2077]

The lift controller is not allowed to operate if the ambient temperature is too low, so that the risk of condensation of vapor on the PCB is possible.

Ambient temperature too high [2078]

The lift controller is not allowed to operate if the ambient temperature is too high, so that there is a risk of failure of electronic components.

Generic supervision input 1 # [2079]

One of the generic supervision inputs has been triggered. These inputs can be used for a wide range of functions. Please refer to the actual schematics of your lift. Usually they are used 'broken wire interlock'.

Generic supervision input 2 # [2080]
Generic supervision input 3 # [2081]
Generic supervision input 4 # [2082]
Generic supervision input 1 # [2083]
Generic supervision input 2 # [2084]
Generic supervision input 3 # [2085]
Generic supervision input 4 # [2086]

Generic supervision input 1 # [2087]
Generic supervision input 2 # [2088]
Generic supervision input 3 # [2089]
Generic supervision input 4 # [2090]

Fault signal light curtain x [2091]

Regarding to EN-regulations, the light curtain has to signal an internal fault state, so that the lift controller can finish the last trip and enter Out of Order operation. This fault signal has been turned on by the light curtain.

Door & Lock Safety Chain Problem [2092]

The 'Door & Lock Safety Chain' could not been closed as required. This can be caused by some faulty door or lock contacts or the cabin/car touching the door/lock bold/roller. Consult the schematics of this lift installation for tracking the fault in the door lock chain.

Hall Door Safety Chain Problem [2093]

The 'Hall Door Safety Chain' could not been closed as required. This can be caused by some faulty door contact or some other device keeping the safety chain open. Consult the schematics of this lift installation for tracking the fault in the landing door chain.

Final limit switch bottom activated [2094]

The hoistway limit switch at the bottom (FLB) has been activated. This is usually signalled via a safe positioning unit. Beside the drive and braking system, low traction can be a cause for that.

Final limit switch top activated [2095]

The hoistway limit switch at the top (FLT) has been activated. This is usually signalled via a safe positioning unit. Beside the drive and braking system, low traction can be a cause for that.

Overspeed detected by safe position encoder [2096]

The installed safe positioning encoder has detected an over velocity situation. In some scenarios, like re-levelling, a maximum velocity is defined. If exceeded a corresponding fault is thrown and the lift is stopped via the safety chain.

Deceleration monitoring via safe position encoder [2097]

Safe position encoder units usually supply a deceleration monitoring function used to ensure, that the lift will not crash into the top/bottom floors without having started to slow down.

Safe encoder unit (PSU) not in valid state [2098]

The safe encoder unit, also called position supervisor unit (PSU), detected an unsafe event. The unit will return to normal operation, if the problem has been fixed.

Safe encoder unit (PSU) blocked, safety reset required [2099]

The safe encoder unit, also called position supervisor unit (PSU), detected a fault and has been put to 'blocked' operation mode. To turn the unit back to normal operation a reset has to be done.

Safe encoder unit (PSU) internal device fault [2100]

The safe encoder (position supervisor unit) detected an internal device/system error. First try to restart the device electrically (power cycle). If the error remains, contact the manufacturer of the position encoder.

Door unit x error operation [2101]

The door unit signals to be in error operation mode. Please check the door drive or door controller unit for further details. It might be a stuck door or defective engine or belt.

Direction change counter expired [2102]

The direction change counter has been expired and therefore the lift has been turned to 'out of order' operation. If the lift is using plastic coated cables, the manufacturer of the cables defines a maximum count of direction changes allowed. There is a parameter for defining a 'pre-warning' and an 'out of order' threshold. You can alter the thresholds and reset the counter if having 'Setup' password privileges granted.

Re-levelling external zone fault [2103]

The re-levelling operation has not been started because of the external door zone signal missing.

Limit switch top activated [2104]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit switch with emergency electrical operation.

Limit switch bottom activated [2105]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit switch with emergency electrical operation.

Inspection limit switch top activated [2106]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit switch with emergency electrical operation.

Inspection limit switch bottom activated [2107]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit switch with emergency electrical operation.

Inspection terminal (pre-limit) switch top activated [2108]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit switch with emergency electrical operation.

Inspection terminal (pre-limit) switch bottom activated [2109]

A limit switch has been activated and therefore will interrupt the safety chain. The cabin might has to be moved out off the limit

switch with emergency electrical operation.

PSU detected UCM failure [2110]

The safe encoder or position supervisor unit (PSU) has detected a case of an unattended car movement (UCM). The lift is therefore blocked.

PSU detected overspeed [2111]

The safe encoder or position supervisor unit has detected that the car/cabin has moved faster than allowed in the actual operating mode. Please check the details of the log-book item for details about position and velocity.

PSU detected deceleration fault [2112]

The safe encoder or position supervisor unit has detected that the car/cabin has not decelerated while running out of runway. Please check the details of the log-book item for details about position and velocity.

Door x unit communication fault [2113]

The door unit stopped to communicate properly. Check cabling and bus termination. Ensure that it is powered constantly and not may be turned off with the cabin light.

Car I/O panel communication fault [2114]

The car I/O panel stopped to communicate properly. Check cabling and bus termination. Ensure that it is powered constantly and not may be turned off with the cabin light.

Extra door supervision signal fault [2115]

One or more of the extra door supervision contacts are not in the assumed state. Those signals are usually used to monitor the door lock and detect unattended opening of the doors. These supervision inputs have to be powered by a special test output, called 'Door Extra Supervision Test'.

Low pit/head barrier fault [2116]

The barrier for the low pit/head hoistway solution have to be in the right position in order to drive normally or with inspection operation. If this is not the case the lift usually gets blocked. For detecting the mechanical position a signal pair (NORM/INS) is used.

Extra door contactor monitoring fault [2117]

The extra door contactor used to turn off the safety circuit power seems to be hung. This is detected via the extra door contactor monitoring input that follows the contactor coil signal using inverted logic.

Separate 'door x safely closed' switch fault [2118]

The option for supporting a separate 'door safely closed' switch is parametrized, but that signal did not respond, when the door had been closed. In order to comply with the EN81-20, some doors provide a separate position switch, signalling that the car door is safely (mechanically) closed. This signal is used to ensure that the lift can be safely driven in car door bypass operation.

Pawl/bolt retracted fault/timeout [2119]

The pawl device (bolt) did not operate properly and did not retract in the given time span. It might be mechanically locked or otherwise unable to move in the 'unlocked'/'released' position, so that the cabin/car could drive. If the device features a position switch to indicate the 'unlocked' position, please check that one as well.

Pawl/bolt extended fault/timeout [2120]

The pawl device (bolt) did not operate properly and did not extend in the given time span. It might be mechanically locked or otherwise unable to move in the 'locked'/'safe' position, so that the cabin/car can't drop. If the device features a position switch to indicate the 'locked' position, please check that one as well.

Pawl device re-pumping failed [2121]

If the cabin has been seated using a pawl device and the hydraulic pressure drops, the system will fire up the pump to bring the oil pressure back to normal. This has failed due to a timeout reason.

Pawl device lowering failed [2122]

Lowering the car/cabin in order to seat on the pawl device has been failed. Check the drive lowering the car in time and if connected, the input signal for 'Car being seated'.

Pawl device lifting failed [2123]

Lifting the car/cabin in order to release the pawl device has been failed. Check the drive lifting the car in time and if connected, the input signal for 'Car being seated' being dropped.

Signal 'car seated' missing [2124]

A pawl device may support an optional signal, indicating that the car has been seated. If this option has been turned on, but the signal is not indicated, this fault message will be added to the log book. To open the pawl device parameters press the hardware button 'Favorites' and then go to 'Settings Menu' > 'More' > 'Pawl Device'.

Safety light curtain status/control door x [2125]

On normal operation the status and the control signal of the safety light curtain should follow each other inverted. That means, if the status signal is peaked up, the control signal will peak down and vice versa. If this does not happen, within a long enough time span, a fault will be thrown.

Safety light curtain test failed door x [2126]

Before the lift starts driving to another floor, all safety light curtains have to be tested. For that a test signal (output) is generated that will cause the light curtains to react as being interrupted. This will change the state of the status and control signals accordingly.

Load measuring unit internal (sensor) fault [2127]

The car load measuring unit signals an internal fault, probably caused by a faulty sensor or connection. Check sensor cabling and power supply. Refer to the unit's manual for further solutions.

Load measuring unit 'slack rope' fault [2128]

The car load measuring unit signals a 'slack rope' event. This can be caused by a traction cable/rope fallen of the pulley or the sensor being mechanically disconnected from the cable. In rare situations it may also be a sensor fault that can cause the event.

The pawl device did not respond as intended. [2129]

The pawl device did not respond as intended. This may be caused by the SZ not being able to bridge the door contacts or a mechanical issue preventing the pawl device to operate the feedback switches. Check for the pawl device being able to mechanically operate and that the feedback signals are working as well.

Drive fault event > [2130]

The drive has signaled an emergency message, presented as a text, coming directly from the unit. This text is non-translatable afterwards as it has been fetched directly from the drive (inverter) unit. For more details about the message, please refer to the drive's manual.

Drop protection activation fault [2131]

The drop protection could not be activated properly. That means that the feedback contact of the bolt, blocking the speed governour, did not signal that the bolt is free and therefore enabling the speed governour pulley to spin.

Hydraulic fault [2132]

The hydraulic drive unit indicates that it is not ready for operation or that there is a fault pending. For more details, please consult the drive's fault memory and its manual.

Safety hydraulic valve fault (UCM) [2133]

The hydraulic safety valve (UCM/SMA) has been tripped. This fault is non-volatile and has to be reset manually.

Separating still door not closed [2134]

This lift is equipped with a separating door used for goods transportation. The door is only allowed to be open, if the car preference signal has been activated. In normal operation the separating door has to be always closed. Otherwise it would allow more passengers to step into the car as allowed.

Position encoder data not applicable [2135]

The position encoder data can't be used to operate the lift. This might be because of a non finished learning trip operation, a non finished encoder replacement operation or because of the encoder data simply being out of range.

Team Operation Strategy mismatch [2136]

The 'Lift Team Operation Strategy' setting is not the very same across the lift team/group members. Please check this setting,

that can be found following this path 'Settings' > 'Basics' > 'More' > 'Team/Group' on all lift team members. It has to be the very same.

Reset low pit/head reset signal hung [2137]

The reset signal used to reset the low pit/head solution seems to hung as it is turned on continuously for more than 10 seconds. Please check the switch, input signal and wiring.

Unblock lift operation signal hung [2138]

The signal used to unblock the lift seems to hung as it is turned on continuously for more than 10 seconds. Please check the switch, input signal and wiring.

Error initial handshaking the target position on start. [2139]

The lift controller and the drive unit do handshake the target position in order to drive to a defined destination. The first handshake on start has failed.

Waiting for the door 'closed' indication [2140]

Especially on a 'Car Door Bypass' operation the lift controller is only allowed to drive, if the door can indicate in a secondary way (door limit switch) that the door is actually mechanically closed. The door 'closed' limit switch might be a virtual one that a CANopen door machine is providing.

Extra door supervision test fault [2141]

The extra door supervision contact on the current floor has not be in the assumed state. Those signals are usually used to monitor the door lock and detect unattended opening of the doors. These supervision inputs have to be powered by an special test output, called 'Door Extra Supervision Test'.

Attempts to fully open the doors failed [2142]

All attempts to fully open the doors have been failed. Regarding to US-ASME regulations, the lift has blocked itself and is in need to be unblocked by a service technician.

Attempts to fully close the doors failed [2143]

All attempts to fully close the doors have been failed. Regarding to US-ASME regulations, the lift has blocked itself and is in need to be unblocked by a service technician.

Hidden door contact chain fault [2144]

The hidden door contact chain has not been following the regularly door contact in the safety chain. This is a feature used for old swing door solutions, typically in Northern Europe. A secondary (hidden) solenoid switch is basically verifying the function of the regularly door contact and has to follow its state changes. If that does not happen this fault will be thrown.

Hidden door contact chain fault while driving [2145]

The hidden door contact chain has not been following the regularly door contact in the safety chain. This is a feature used for old swing door solutions, typically in Northern Europe. A secondary (hidden) solenoid switch is basically verifying the function of the regularly door contact and has to follow its state changes. If that does not happen this fault will be thrown.

Closing force limit signal door x continuously triggered [2146]

The force limit signal has been continuously interrupted, while the door was closing. This will stop the lift from driving in normal or inspection operation.

Door x close limit switch bridge detected [2147]

A door close limit switch bridge detected. As requested by the EN81-20 5.12.1.9 regulations, the lift will be blocked, until the problem is fixed.

Traction sheave brake fault [2148]

The brake of the traction sheave has failed to operate as intended. Usually the input 'Traction sheave supervision' indicates if the brake is released or engaged. Check the micro-switch on the brake itself and the wiring. Usually if the brake is released the signal should be low but if the brake is blocking the sheave again, then the signal shall be high.

Hydraulic pump enable (UCM/UP) signal missing [2149]

The hydraulic pump enable (UCM/UP) signal from the drive controller card is missing. Double check wiring and measure the signal on the drive (NGV/A3) card in upward direction.

Drive unit blocking error > E [2150]

The drive unit has indicated an error that usually blocks the drive from operating properly. So fix the drive unit's error and then power cycle the drive unit and finally unblock the lift controller.

Low oil pressure [2151]

The hydraulic drive system signalled a low oil pressure in the system. This signal is usually transmitted low-active, meaning that it should be signalled as long as the pressure is not low. Please check the drive unit for further investigation.

Inspection overspeed detection [2152]

Depending on local or national rules, running the lift on inspection operation comes with a limitation of velocity. Regarding to the EN81-20 the velocity is limited to 0.63 m/s. The US-ASME code states 0.75 m/s here.

Chemical/Hazard transport timeout [2153]

The maximum time span (timeout) for the chemical/hazard transport operation has been expired and therefore the operation has been turned off. This might happen, if the technician using this feature has forgotten to use the key-switch in order to reset the operation, when being finished. You find the time value in the 'Settings' menu under 'Controller/Piloting' > 'More…' >'Even more…' >'Further more…' > 'Chemical Operation'.

Low Oil Protection [2154]

The Low Oil Protection supervision shall render the lift on normal operation inoperative if for any reason the liquid level in the tank falls below the permissible minimum.

Auxiliary power active [2155]

When the auxiliary lowering operation has been initiated, the car shall descend to the lowest landing or the designated landing in a fire alarm/recall situation.

Fire reset switch hung [2156]

The fire reset switch is continuously activated for an unusual long time period. Check the electrical wiring to the reset key switch and the input of the I/O card to work properly.

Unattended landing door opening [2157]

The landing doors have been opened unattended for more than 4 seconds. This is usually an indication that a person might have entered the hoistway without the lift being on inspection operation mode. The lift will travel to the next floor level away from the top and bottom floor and enter blocked operation mode.

Generic supervision input 5 # [2158]

One of the generic supervision inputs has been triggered. These inputs can be used for a wide range of functions. Please refer to the actual schematics of your lift. Usually they are used 'broken wire interlock'.

Generic supervision input 6 # [2159]
Generic supervision input 7 # [2160]
Generic supervision input 8 # [2161]
Generic supervision input 9 # [2162]
Generic supervision input 10 # [2163]
Generic supervision input 11 # [2164]
Generic supervision input 12 # [2165]
Generic supervision input 13 # [2166]
Generic supervision input 14 # [2167]
Generic supervision input 15 # [2168]
Generic supervision input 16 # [2169]
Generic supervision input 5 # [2170]
Generic supervision input 6 # [2171]
Generic supervision input 7 # [2172]
Generic supervision input 8 # [2173]
Generic supervision input 9 # [2174]
Generic supervision input 10 # [2175]
Generic supervision input 11 # [2176]
Generic supervision input 12 # [2177]
Generic supervision input 13 # [2178]
Generic supervision input 14 # [2179]
Generic supervision input 15 # [2180]
Generic supervision input 16 # [2181]

Generic supervision input 5 # [2182]
Generic supervision input 6 # [2183]
Generic supervision input 7 # [2184]
Generic supervision input 8 # [2185]
Generic supervision input 9 # [2186]
Generic supervision input 10 # [2187]
Generic supervision input 11 # [2188]
Generic supervision input 12 # [2189]
Generic supervision input 13 # [2190]
Generic supervision input 14 # [2191]
Generic supervision input 15 # [2192]

Generic supervision input 16 # [2193]

Low pit/head barrier issue [2194]

The barrier for the low pit/head hoistway solution have to be in the right position in order to drive normally or with inspection operation. If this is not the case the lift will not respond to drive. For detecting the mechanical position a signal pair (NORM/INS) is used.

Terminal (pre-limit) switch top dropped at wrong floor [2195]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Terminal (pre-limit) switch bottom dropped at wrong floor [2196]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Terminal (pre-limit) switch top not dropped at upper floor [2197]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Terminal (pre-limit) switch bottom not dropped at lowest floor [2198]

The terminal (pre-limit) switches are usually dropped at the top and bottom floor, preventing the lift from driving further in the direction of the terminal floors. The switches are usually high and will be dropped to low, when the lift approached the lowest or highest landing. The fault is thrown when those switches are dropped with the car being at a different floor.

Overspeed Governor Safety Chain Fault [2199]

The 'overspeed governor safety chain' has been opened. This can be caused by the lift having tripped the speed governour, because of the lift or platform moving faster than allowed. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Overspeed Governor Safety Chain Fault while driving [2200]

The 'overspeed governor safety chain' has been opened. This can be caused by the lift having tripped the speed governour, because of the lift or platform moving faster than allowed. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Safety Edges Fault [2201]

The safety edges have been tripped. This will usually stop the

platform or car immediately from driving. Starting the lift again is only possible, when the safety edges have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Safety Edges Fault while driving [2202]

The safety edges have been tripped. This will usually stop the platform or car immediately from driving. Starting the lift again is only possible, when the safety edges have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Overtravel/Nutswitch tripped [2203]

The overtravel switch (final limit top) or the nutswitch (final limit bottom) has been tripped. This will usually stop the platform or car immediately from driving. Starting the lift again is only possible, when the safety switches have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Overtravel/Nutswitch tripped while driving [2204]

The overtravel switch (final limit top) or the nutswitch (final limit bottom) has been tripped. This will usually stop the platform or car immediately from driving. Starting the lift again is only possible, when the safety switches have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Safety hatch switch has triggered [2205]

The safety hatch switch has been tripped. This will usually stop the platform or car immediately from driving. Starting the lift again is only possible, when the safety switches have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Safety hatch switch has triggered while driving [2206]

The safety hatch switch has been tripped. This will usually stop the platform or car immediately from driving. Starting the lift again is only possible, when the safety switches have been released again. Consult the schematics of this lift installation for tracking the fault in the safety chain.

Pawl/bolt extended fault/timeout [2207]

The pawl device (bolt) did not operate properly and did not extend in the given time span. It might be mechanically locked or otherwise unable to move in the 'locked'/'safe' position, so that the cabin/car can't drop. If the device features a position switch to indicate the 'locked' position, please check that one as well.

Smart Power Supply communication fault [2208]

The smart power supply unit stopped to communicate properly. Check cabling and bus termination. Ensure that it is powered constantly and not may be turned off with the cabin light.

Car floor display 1 communication fault - [2209]

The communication to the floor display in the car, via the bus

system, has been failed. The heartbeat of the floor display timed out. Check the function and power of the display unit and that the bus cabling is properly done with terminations on both ends. Check as well that the node-id that is supervised actually matches the node-id that the car floor display is using.

Car floor display 2 communication fault - [2210]

The communication to the floor display in the car, via the bus system, has been failed. The heartbeat of the floor display timed out. Check the function and power of the display unit and that the bus cabling is properly done with terminations on both ends. Check as well that the node-id that is supervised actually matches the node-id that the car floor display is using.

Brake fault event > [2211]

The drive has signaled an emergency message, presented as a text. Please double check the brake monitoring settings of the lift controller. Check as well, if the brake monitoring input on stopping indicates, that the brake has been locked again.

Brake test circuit supervision tripped [2212]

The input function 'Brake test circuit monitoring' must be at 24V in normal operation and may only drop to 0V when the brake test is activated. This ensures that the lift cannot change to normal operation if one of the contactors, used to hold the brake open, has got stuck.

Lubrication runtime error threshold reached [2213]

The lift controller throws an error about the oil reservoir to be empty, when the parameterized runtime of the oilpump (lubrication) has been exceeded. This will turn the lift to Out Of Order operation mode. You can change the value under Settings Menu > More... > Drive Unit > More... > Even more... > Lubrication Function

Overspeed detection [2214]

The maximum allowed velocity for this lift installation has been exceeded. Therefore the lift has been emergency stopped by engaging the break unconditionally. The actual velocity threshold may be quite low, if the lift is at the door zone with the door safeties being not closed.

Finger detector signal door x continuously triggered [2215]

The finger protection sensor signal has been continuously interrupted for more than 10s. This will stop the lift from driving in normal or inspection operation.

Opening force limit door x continuously triggered [2216]

The door or the door drive unit permanently signalled that the permissible opening force had been exceeded. The problem may be caused by an object or stone in the door sill.

No braking point from drive [2217]

The drive unit did not transmit a brake point (control effort) via the bus system. Check if the drive unit is capable of doing positioning mode. If this is a hydraulic CANopen unit, then it is likely that it only can do velocity mode. In that case change the parameter 'Drive mode (profile)' to 'Velocity Profile (classic)'.

Lift emergency telephone is not ready [2218]

The lift emergency telephone indicated to be not ready anymore. This might happen, if the connection or subscription to the mobile phone network has been interrupted. This will usually render the lift out of order.

In-Car Stop-Switch tripped [2219]

The In-Car Stop-Switch has been tripped. This input signal is normally peaked high (24V), if the lift shall be rendered operational. If this signal has been dropped, the lift will do an emergency stop. You find the related option at 'Settings Menu > More… > Basics > More… > Even more… > In-Car Stop Switch Usage'.

Failed to push-in the telescopic toe guard [2220]

Telescopic toe guard are usually spring loaded and hold by an electromagnet. On a power drop they are pushed out and when the power comes back, the lift has to push them in again, by driving below the lowest floor, so that the toe guard will touch the ground. This procedure has been failed. The lift was not able to push the toe guard in again.

Drive unit out of order > E [2221]

The drive unit has indicated an error that usually blocks the drive from operating properly. So fix the drive unit's error and then power cycle the drive unit and finally unblock the lift controller.

Oil tank temperature shutdown [2222]

The dedicated input for monitoring the temperature in the hydraulic oil tank has been tripped. The temperature threshold is defined by the switch itself. Those devices are usually closed if the temperature in normal and will open the circuit, when the temperature exceed the operation range.

Fire service switch hung [2223]

One of the fire service switches in the car/cabin is permanently activated without the fire recall switch being engaged. If that happens unattended, without actually using the fire service, you should check the wiring for any issue, like the switch being shorted.

Fire service hold switch hung [2224]

One of the fire service switches in the car/cabin is permanently activated without the fire recall switch being engaged. If that happens unattended, without actually using the fire service, you should check the wiring for any issue, like the switch being shorted.

Supply voltage drop detected (UAC<180V) [2225]

The main supply voltage, monitored by the lift controller unit, has dropped for a short time under 180V AC. That can cause a variety of secondary faults, that can be very hard to track down. The two supervision inputs (L/N) shall be connected to the 110/230V input of the very main power supply, that provide the 24V DC for the controller itself.

Position encoder preset distance out of range [2226]

The position encoder preset value triggered by the dedicated input for that floor and direction was larger than 150 mm away from the current position value. The encoder preset has therefore been dismissed. Check the input assignment and the solenoid switches, that usually trigger the preset for the position encoder to work properly.

Safety Chain bridge/bypass cam/lock detected [2227]

A safety chain bridge or bypass had been detected by activating the safety circuit (SZ) in order to check for a bridge between the last point of the safety chain (L - landing door lock) and the one before (A/B - doors). This test is done after the doors have been fully opened. When doing the test only (L) shall light up. A bridged safety chain cause a high risk of an accident.

Rope brake (gripper) has tripped [2228]

The rope brake or the rope gripper has been tripped. This usually happens, if a UCM (unattended car movement) has been detected. The lift should be double checked by a lift technician before putting it back in operation.

Rope Brake door zone contactor supervision [2229]

The supervision of the contactors that reflect the status of the two door zone channels has been tripped. This supervision signal is normally peaked high, if the car has left the door zone and will be dropped again, when the lift arrives at the door zone. This signal shall be a logical 'AND' of both door zone channels. It might be the result of a safety circuit, testing that none of the channel is 'hung' as well.

Rope Brake safety chain contactor supervision [2230]

The supervision of the contactors that reflect the status of the end of the safety chain has been tripped. This supervision signal is normally peaked high, if the safety chain has been opened within the door zone. The signal will be peaked low, if the end of the safety chain is closed or has been opened but with the car being already out of the door zone.

Timeout waiting for load measuring readout [2231]

No valid load measurement had been received when starting the drive. This is usually a problem specific to platform lifts, where the platform moves up and down on a rotating threaded rod. These lifts can only measure the load when the brake is open and the drive is energized.

Inspection car-top signal is missing [2232]

Even after about 10 seconds, there is still no car-top inspection signal indicated. This is required to be sure the lift shall be on normal or inspection operation.

Inspection pit signal is missing [2233]

Even after about 10 seconds, there is still no pit inspection signal indicated. This is required to be sure the lift shall be on normal or inspection operation.

Brake enable signal missing on start [2234]

The brake enable signal is used for classical terminal driven inverters to indicate to the controller, that it is fine to open the brake. On standstill the signal shall be dropped and will be peaked high at start and dropped again, when the velocity signals have been dropped.

Brake enable signal active after stop [2235]

The brake enable signal is used for classical terminal driven inverters to indicate to the controller, that it is fine to open the brake. On standstill the signal shall be dropped and will be peaked high at start and dropped again, when the velocity signals have been dropped.

Brake enable signal missing on driving [2236]

The brake enable signal is used for classical terminal driven inverters to indicate to the controller, that it is fine to open the brake. On standstill the signal shall be dropped and will be peaked high at start and dropped again, when the velocity signals have been dropped.

Brake enable signal peaked on standstill [2237]

The brake enable signal is used for classical terminal driven inverters to indicate to the controller, that it is fine to open the brake. On standstill the signal shall be dropped and will be peaked high at start and dropped again, when the velocity signals have been dropped.

Emergency electrical operation enable [NC] signal is missing [2238]

Even after about 10 seconds, there is still no emergency electrical operation enable signal indicated. This is required to be sure the lift shall be on normal or emergency electrical operation.

Door Lock/Hall Door Safety Chain at floor [2239]

The 'Door Lock Safety Chain' has been opened. This can be caused by some faulty door lock contact or the cabin/car touching the door/lock bold/roller. Consult the schematics of this lift installation for tracking the fault in the door lock chain.

Door Lock/Hall Door Safety Chain while driving floor [2240]

The 'Door Lock Safety Chain' has been opened. This can be caused by some faulty door lock contact or the cabin/car touching the door/lock bold/roller. Consult the schematics of this lift installation for tracking the fault in the door lock chain.

Drive enabling signal missing [2241]

The input signal that enables the drive output signals 1..6 is missing. This signal is usually coming from a soft starter unit.

Contactor monitoring docking service [2242]

The contactor for the docking service operation, that is used to bridge the door contacts needs to be monitored by a feedback input in order to ensure, that the contactor would never hung. This feedback signal has been in the wrong state. If the docking service operation is not active the feedback input must be peaked high. If the contactor has been activated in order to bridge the

door's safety contacts, the feedback input must be peaked low.

Hydraulic jack resync has failed [2243]

To resynchronize the cylinders, the lift will move to the buffer below the lowest floor, featuring creeping velocity and remain there for some time with open valves, until all cylinders are fully retracted again. If the lift never reached the resync position and the supervision time has been expired, this error will be generated.

Emergency Power Trip failed [2244]

The timeout for the emergency power trip has been expired. The lift was not able to start to the emergency power floor. Therefore the operation has been finally canceled.

Door x unit repeating communication fault [2245]

The door unit stopped to communicate properly. Check cabling and bus termination. Ensure that it is powered constantly and not may be turned off with the cabin light.

Door unit x repeated error operation [2246]

The door unit signals to be in error operation mode. Please check the door drive or door controller unit for further details. It might be a stuck door or defective engine or belt.

Pawl/bolt retracted fault/timeout [2247]

The pawl device (bolt) did not operate properly and did not retract in the given time span. It might be mechanically locked or otherwise unable to move in the 'unlocked'/'released' position, so that the cabin/car could drive. If the device features a position switch to indicate the 'unlocked' position, please check that one as well.

Pawl device bolts dropped while driving [2248]

During the travel the 'retracted' limit switch of the pawl device dropped. It can be assumed that the bolts of the pawl device are no longer in the retracted position. The lift was therefore stopped

Terminal (Assembly Pre-limit) switches faulty [2249]

The hoistway terminal (pre-limit) switch signals are faulty. Basically the pre-limit switches at top and bottom of the hoistway can not be actuated at the very same time. Keep in mind that the switches are normally closed. They open, if the car reaches the top or bottom position.

Position supervisor unit event > Exxx [2250]

The position supervisor unit has signaled an emergency message, presented as a text, coming directly from the unit. This text is non-translatable afterwards as it has been fetched directly from the drive (inverter) unit. For more details about the message, please refer to the position supervisor unit (safe encoder) manual.

Maximum Travels with Emergency Power reached [2251]

The maximum count of travels, that has been parameterized in the Emergency Power Settings, has been reached.

Automatic brake testing failed [2252]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the car starts to slide away, the test will fail and the lift is entering blocked operation mode.

In-Car-Stop-Switch bridging relay hung [2253]

The relay used to bridge the In-Car-Stop-Switch for re-levelling and fire recall operations, does hung or is broken. That means that the supervision input 'In-Car-Stop-Switch bridging relay supervision' is not following the relay output. The supervision input shall be connected to a normally closed contact of the relay, so that it is peaked high, when the relay is turned off.

Automatic brake testing timeout [2254]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test includes opening one brake pad at a time and checking if the car stays in position. If the test cannot be completed within a minute, a timeout situation will happen.

Drop Protection, contactor supervision [2255]

The Drop Protection Contactor Supervision has tripped. This supervision is monitoring the contactor, that actually actuates the Drop Protection Coil. When that contactor is turned off, the supervision input should be turned on again.

Automatic Drop Protection testing failed [2256]

This lift is equipped with a Drop Protection device, that is permanently activated. In order to ensure it is in working condition, it will be tested once in a day. This is done by turning the contactor off, that controls the bolt and then checking, if the bolt has actually been released, via the feedback signal.

Max. re-leveling attempts per floor/hour [2257]

The lift has done as many attempts to re-level the car, within one hour on the very same floor, as stated in the parameter 'Settings Menu' > 'More…' > 'Drive unit' > 'More…' > 'Re-leveling' > 'Re-leveling attempts per floor/hour'.

On-board drive relays defective [2258]

This device is equipped with additional drive relays for voltage level shifting. These relays have a built in supervision contact to ensure they don't get stuck. This monitoring signal indicates that at least one of the relays could be defective.

Safe encoder unit (PSU) detected a faulty door circuit [2259]

Some position supervisor units (PSU) are able to detect faulty or shorted door circuits. If a unit has detected such a fault, an error is thrown and the PSU will keep the safety chain usually open.

Floor approaching featuring early opening doors takes an unusually long time [2260]

The lift required an unusually long time to reach a floor level, featuring advance-door-opening. This has the side effect that a passenger is more likely to stumble, when leaving the car. With the advance-door-opening feature being activated, the doors start to open, while the lift is still moving. However, the doors should not be fully open for a longer time, before the lift has actually stopped.

Unattended Drive Stop [2261]

The drive unit unattended stopped the operation and entered the error state. Normally after detecting an error, the drive would send an error code, that can be recorded. In the case no error code is sent, this generic fault message is added to the log.

Fire alarm/service inspection buzzer active [2262]

This fault item documents, that the 'Fire alarm/service inspection buzzer' had been activated, that shall notify a technician, that is working on the lift, that fire alarm or fire recall/service has been requested, while the lift is under inspection control or in some kind of testing assistant procedure.

Destination not reachable (minimum travel distance) [2263]

The destination cannot be reached using any of the available velocities without tripping the runtime monitoring.

SZ module door bridging hangs [2264]

The module used for bridging the door safeties seems to hung and is bridging the door safeties within the door zone, without being activated.

Car Lighting/Illuminant supervision [2265]

The Car Lighting/Illuminant supervision unit has triggered the dedicated [NC] supervision input in order to indicate, that the Illuminants (LED, light bulbs) are not working properly anymore. Those kind of supervision units may measure the brightness in the car or at least the electrical current going through the illuminants. This supervision feature can be turned on and off in the lift attendant settings.

Position encoder accuracy supervision [2266]

By recording the absolute positions of the external zone signals by means of the position encoder and later on, when approaching to the very same floor, comparing them to the recorded values, the system has detected a noticeable difference several times, that might be caused by the position encoder. This supervision can be turned on/off in the Lift Attendant settings.

Maintenance interval trip counter [2267]

The maintenance interval threshold for the trip counter indicates that the lift has to be turned to Out of Order operation mode. You can set the next interval or threshold at 'Service & Assembling' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals' > 'Out of Order Maintenance Intervals'.

Maintenance interval operation time meter [2268]

The maintenance interval threshold for the operating hours indicates that the lift has to be turned to Out of Order operation

mode. You can set the next interval or threshold at 'Service & Assembly' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals' > 'Out of Order Maintenance Intervals'.

Maintenance interval Date & Time [2269]

The maintenance interval Date & Time indicates that the lift has to be turned to Out of Order operation mode. You can set the next Date & Time at 'Service & Assembling' > 'Maintenance' > 'More…' > 'Even more…' > 'Maintenance Intervals' > 'Out of Order Maintenance Intervals'.

Automatic safety gear testing timeout [2270]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

Automatic safety gear testing failed [2271]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

Safety gear supervision inputs x tripped [2272]

This test is done, when the lift is idle, has the doors closed and no passengers have boarded the cabin. The test will engage the safety gear electrically. A sensor then checks the mechanical operation and feeds back that information to the controller.

Passive Safety Chain Fault while driving upward [2273]
Passive Safety Chain Fault while driving downward [2274]

The 'Passive Safety Chain' has been opened. This can be caused by limit switches, the speed governor or the safety gear unit. Consult the schematics of this lift installation for tracking the fault in the passive safety chain.

Shaft Light Impulse Relay Supervision [2275]

The lift controller has tried to switch the impulse relay for the shaft light but the feedback input of that very relay, indicates the wrong state. So, check the wiring of the shaft light impulse relay and if that feedback contact works.

ASME Hydro-ACR Relay Supervision [2276]

The ACR Relay used for bridging the door safeties on ASME residential hydraulic lifts has failed to operate properly. The feedback input does not reflect the correct state of the relay. So, either the relay or the feedback contact is faulty or the output controlling the relay has failed.

Reserved [2277..2279]

Traction Belt Monitoring unit communication fault [2280]

If you have installed a device, that is monitoring the steel cores of your traction belts or plastic coated cables, the bus heartbeat is monitored, in order to detect, if the unit goes offline.

Traction Belt Monitoring status missing [2281]

If you have installed a device, that is monitoring the steel cores of your traction belts or plastic coated cables, the bus status word (PDO) is monitored, in order to detect, if data is available.

Error Traction belt/cable worn out [2282]

If the lift is equipped with a traction belt/cable monitoring unit, that supervise the health of the steel cores of the belts or plastic coated cables. You get a worn out warning and later on a worn our error, if those units detect, that the traction belts or cables do worn out by means of the steel cores breaking.

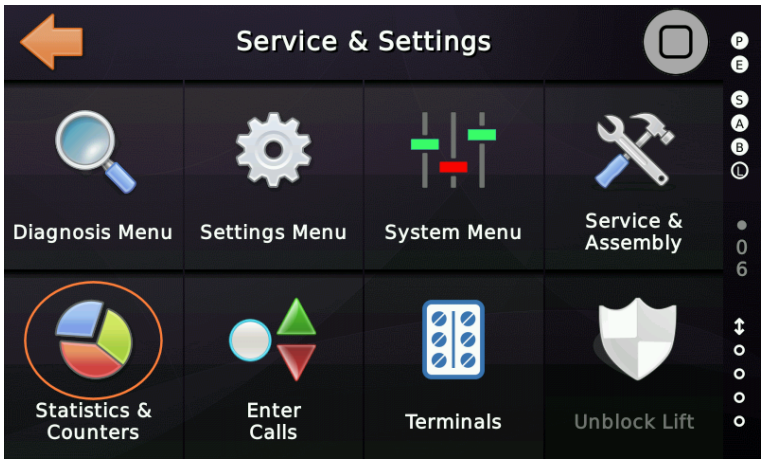
Wrong destination floor approached [2283]

The lift has traveled to the wrong destination floor. This may be due to a failed handshake between the controller and drive. Please check the velocity displayed by the drive and the controller to ensure that they match exactly. If they are not the same, the gear ratio, the set traction sheave diameter, the resolution of the encoder or, in the case of rotary encoders, the circumference of the encoder pulley may be incorrect.

110 Statistics & Counter

THOR provides a rich set of statistical values recorded at runtime. They are stored non-volatile in the THOR flash memory.

You find the related dialogue by pressing the Favorites button and then follow the 'Statistics & Counters' icon.



110.1 Generic counters & times

- Trip Counter
- Operation Time Meter
- Direction Changes
- Drive energy meter, if using a CANopen drive unit, providing the consumption

- Main contactors cycle count in upward and downward direction
- Re-levelling cycles in upward and downward direction

- Call waiting time (average and maximum)
- Transfer time (average and maximum)
- Travel time (average and maximum)

- Car/cabin door cycles for door A/B/C/D
- Shaft/Landing door cycles for A/B/C/D per floor

110.2 TOP#5 Landing Door Cycles

In addition to the list of landing door movements for all floors/doors, THOR also has a TOP#5 list of the most frequently cycled landing doors to make it easier to identify the doors that need the most 'care'.

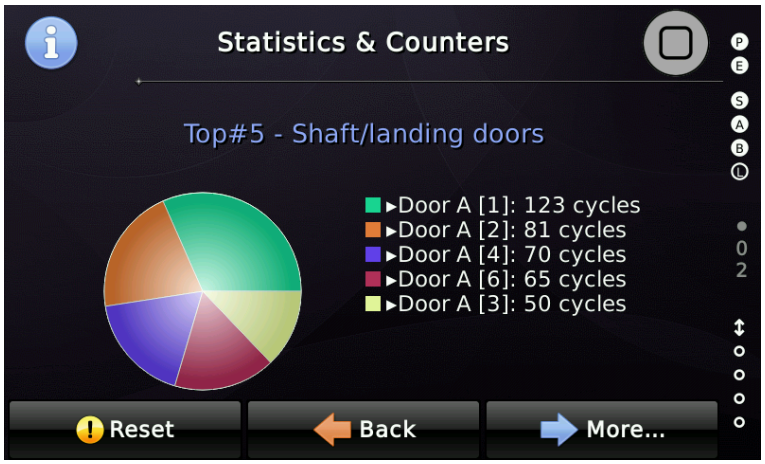


Figure 212: TOP#5 of the landing doors most frequently operated

110.3 Car Illumination Runtime Meter

The operating hours of the car illumination, that is usually switched on, is counted internally. The counter stops when the car illumination has been switched off via the '*Status/controller signals → Car illumination off*' output function. The value is specified in hours with one decimal place.

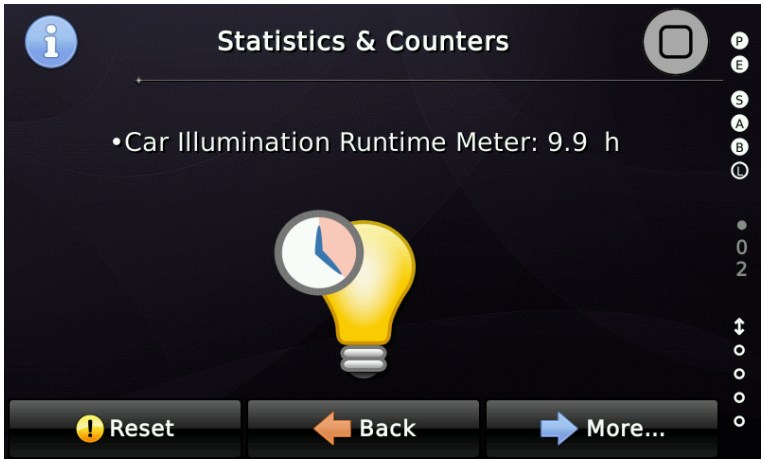
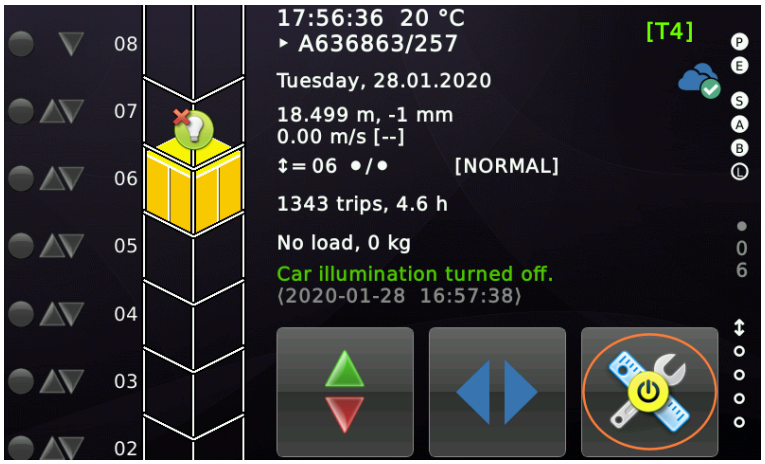
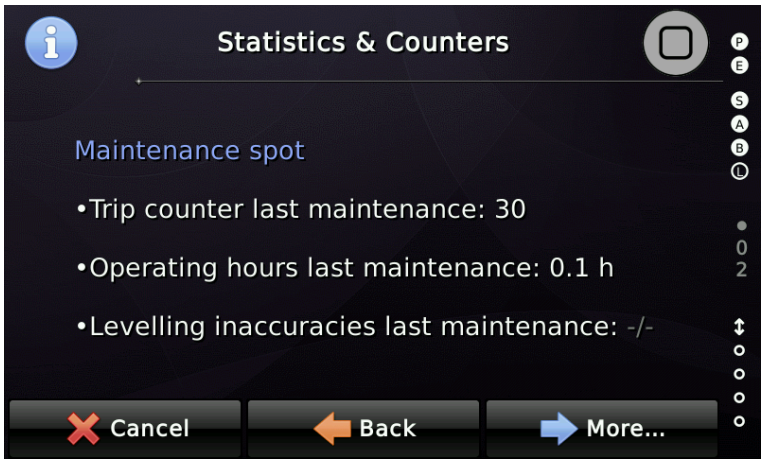


Figure 213: Car Illumination Runtime Meter

110.4 Maintenance Spot

Every time you finally turn off Maintenance again, the 'spot' values will be set back to zero, making it easier to get an idea what the lift did since the last time it was maintained.





111 Emergency Lift Telephone Readiness Input

In order to render the lift only operational, if the emergency call device is operational as well and has reception and a valid subscription, the telephone unit may provide an output, that can be connected to the input function '***Status/controller signals*** → ***Emergency Lift Phone Readiness Indication***' at the lift controller.

Using an adjustable delay for detecting the readiness signal having peaked down, the lift will enter '*Out Of Order*' operation state and release the passenger on the next possible floor.

As long as the readiness signal is peaked up, the lift controller will assume the telephone unit to be ready. At system startup an extra delay makes sure, that the telephone has some time to become operational.

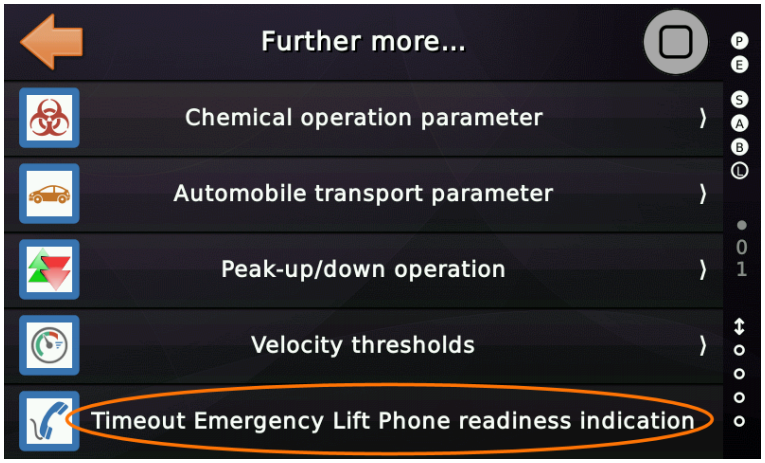


Figure 214: Emergency Lift Phone readiness timeout

The settings can be found by pressing the hardware button 'Favorites' and then go further to 'Settings Menu' → 'Controller/Piloting' → 'More...' → 'Even more...' → 'Much more...' → 'Further more...' → 'Timeout Emergency Lift Phone readiness indication'.

112 Smart Shaft Light Management

112.1 Abstract

The lift controller can turn on/off the shaft light on demand, for example when Fire Brigade mode has been requested. For that an output for controlling the shaft light impulse relay and an input for sensing the status of the impulse relay is required.

Additionally an input function can be used to switch the impulse relay on demand.

If you plan not to use an impulse relay, then two additional outputs 'on/off' can be used to control simple relays. But keep in mind, that this might render your shaft light non-usable, if the lift controller is not operational.

The settings can be found by pressing the hardware button 'Favorites' and then go further to 'Settings Menu' → 'Controller/Piloting' → 'More...' → '...' → 'Rarely used...' → 'Smart Shaft Light Management'.

112.2 Inputs

- Status/controller signals → Shaft light button, all floors
  (shaft light buttons [NO])

- Status/controller signals → Shaft light impulse relay status, all floors
  (feedback input from the relay, on - if the relay has turned the light on)

112.3 Outputs

- Status/controller signals → Shaft light impulse relay, all floors
  (impulse relay output)

- Status/controller signals → Shaft light on acknowledge, all floors
  Status/controller signals → Shaft light off acknowledge, all floors
  (simple relay outputs)

The impulse length to trigger the impulse relay is 500 ms. The supervision time for the feedback is 1500 ms. The supervision signal is always required, independently from the type of relay used.

112.4 Automatic & Manual

The reasons for automatically turning the light on, if the feedback signal indicates it to be off, are:

- Inspection
- Emergency Electrical Operation
- Maintenance
- Fire Brigade
- Extra Door Supervision

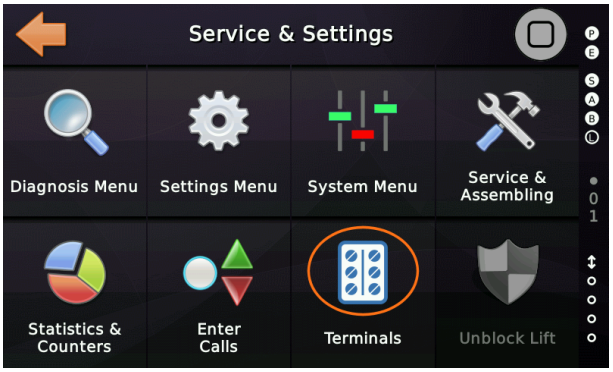
The technician can always at any time turn the light on/off manually by operating the impulse relay. If the status signal indicates the light to be manually on for a long time (default 5 hours) without that any reason (list above) is pending (*technician turned the light on manually and forgot when leaving the place*), it will be turned off again.

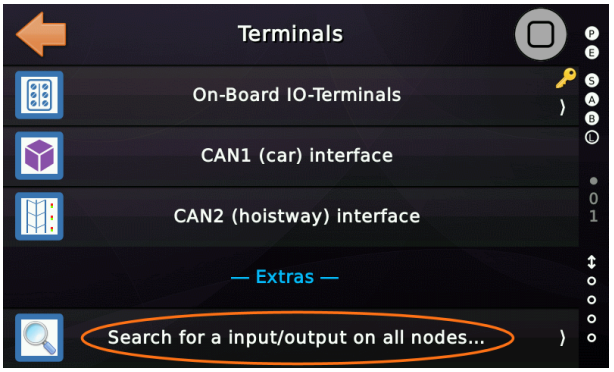
112.5 Supervision

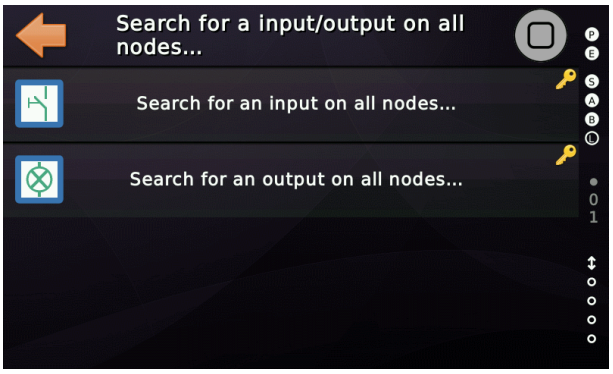
An error is thrown, when the lift controller is actively turning the impulse relay on or off and then after 1500 ms, the feedback contact of that very relay has not reacted on the impulse. So, the lift controller will not throw an error, when the technician is manually turning the light on or off.

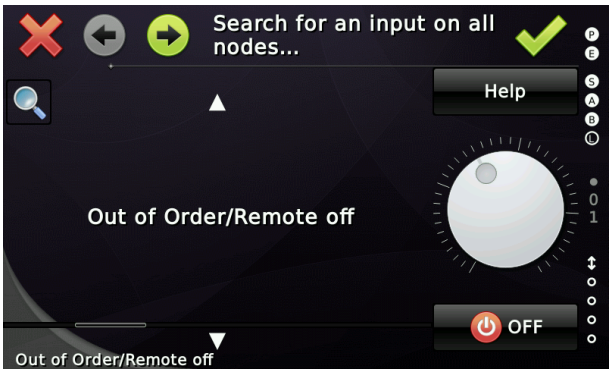
113 Search for Inputs or Outputs

In order to search for specific input or output functions or to search for free input or output terminals, you might feature the help of this assistant, that can be found by following the '*Terminal*' menu path:





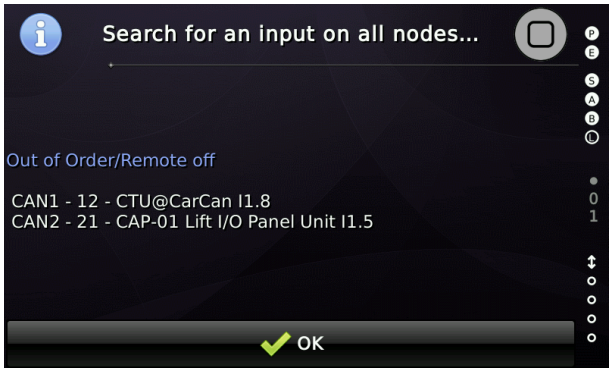




The search assistant will browse through all I/O panel units on the bus system, including the lift controller itself. It will only leave out those units, hidden behind CANopen Bridges. In the result dialogue, it will show were it has found the terminal function. If you want to search for an empty input or output, use '*off – unused*'. Keep in find, that a terminal might have no input function programmed but is in fact already used as an output or vice versa.

In this example the input '*Out of Order/Remote off*' had been found twice. Once at the car-top-IO panel CAN 1 – Node 12 and once at a landing panel CAN2 – Node 21.

This is a classical conflict as that key-driven input shall only be programmed once in the system.

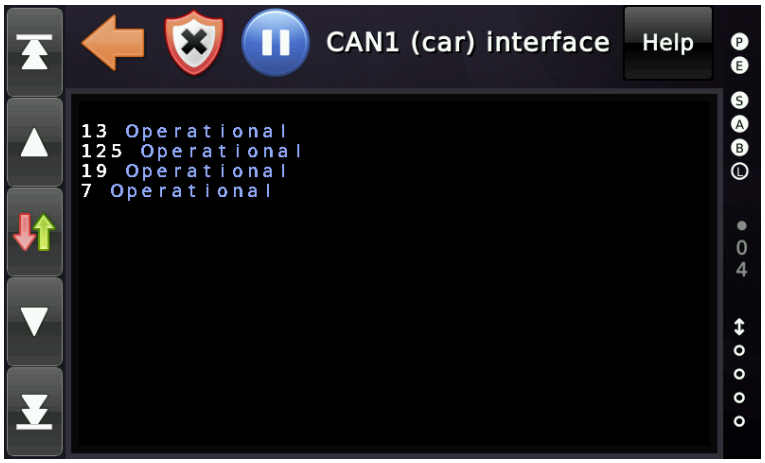


114 Simple CANopen Monitor

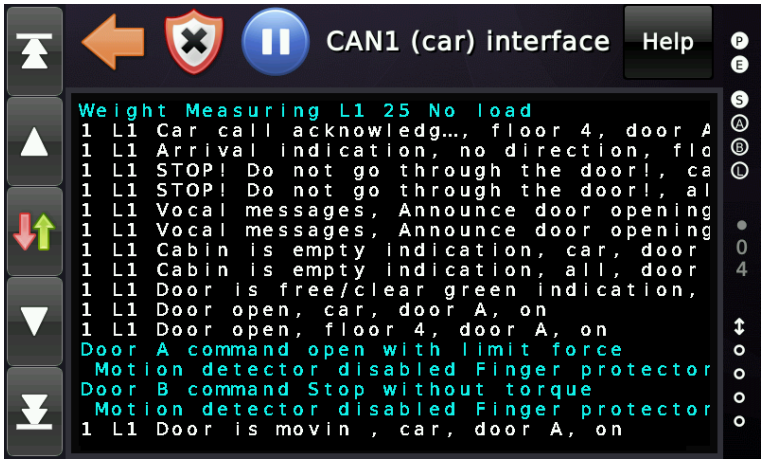
The built-in CANopen monitor can be used to make messages on the bus visible and to translate them into plain text.

It can be reached by navigating to 'Diagnosis Menu' ▸ 'CANopen Node List' ▸ 'CANopen Logging'.

After selecting the CAN1 or CAN2 interface, the visible nodes are first displayed with their operating status.



All inputs, outputs, door commands, door status words, PSU commands and PSU status words, bus errors and the status of the digital load measurement, that are then transmitted via the bus system are translated into readable text.



The recording can be stopped using the pause button. The content of the recording can be erased with the shield button.

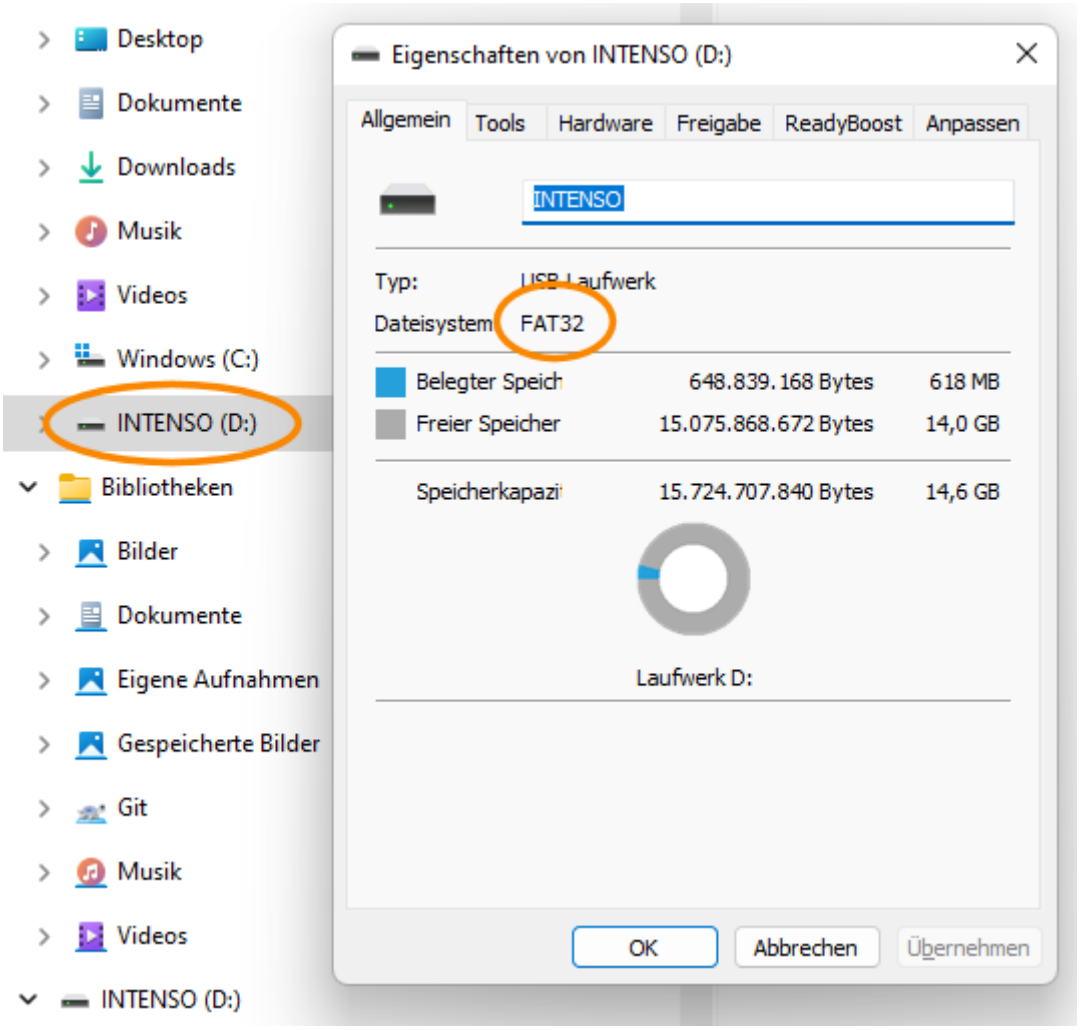
When the recording is paused, the content of the text field can be moved left and right and up and down with your finger.

115 Mass Storage Logging

To help the technician with the task of fault tracking, especially if the fault in question is only happening once a week or month, logging the trips to an USB-mass storage might help.

The logging can be activated here by pressing the hardware button '*Favorites*' and then go further to '*Diagnosis Menu*' → '*More...*' → '*Even more...*' → '*Further more...*' → '*Special functions...*' → '*USB Mass Storage Logging*'.

Storing is done on a plugged in FAT32 USB-Stick. Double check that the USB-stick in question is using the FAT32 file system and **not** exFAT, which suffers from Microsoft® patents. You can check the file system used, by clicking the mass storage in your Windows® Explorer with the right mouse button and then select '*More options...*' → '*Properties*'. You can actually format an empty USB-stick using FAT32.



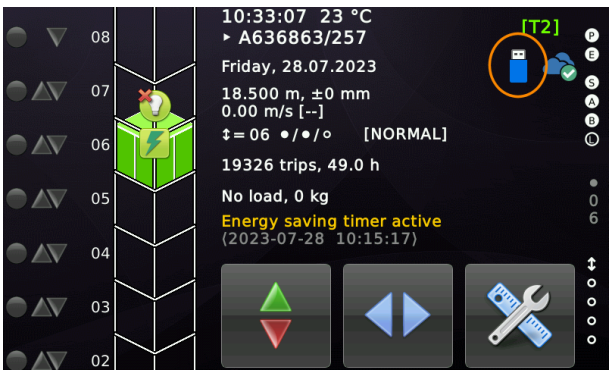
115.1 File Names

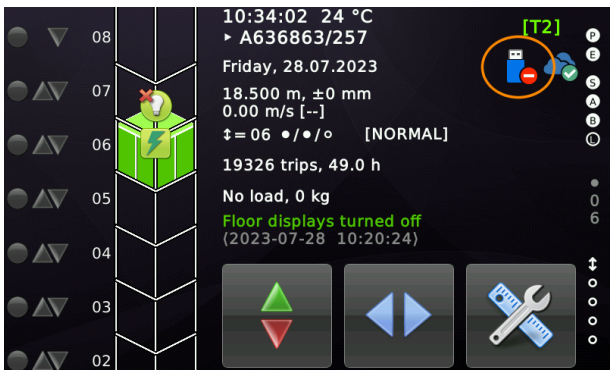
The system will create a log file per day with the file name containing the date and week day. Here is an example: '*Fri_28_Jul_2023_log.txt*' So, double check, that time and date in the controller are set correctly, before starting a logging session.

115.2 Activating the Logging Session

In order to activate the logging, enter the dedicated parameter and select the duration, you want to log. If the logging had been activated and the USB-stick had been found, you will see a screen like this:

At the desktop an icon is reminding you about the logging being active. In the case of an issue with the stick or the stick being full, you will see a red overlay icon on top of the stick symbol.





115.3 File Format

The log files have the file extension of a text file (.txt) but are in fact JSON files. JSON files are text based files, that can be read by humans but feature a format, that makes it possible to process those files in future software tools. In the following abstract, we will dive into the different text blocks within the log file and described them in detail.

115.3.1 Entering and cancelling a call

The dedicated text block contains the time stamp, the floor, the door and the call type.

```
,{"register_call":{
"time":"2023-07-28,12:06:27",
"floor":4,
"door":"A",
"call":1,
"comment":"Car call"
}}
```

When a call is turned off again or all calls of a type are cancelled, this block is created:

```
,{"cancel_call":{
"time":"2023-07-28,12:06:33",
"floor":4,
"door":"A",
"call":1,
"comment":"Car call"
}}
```

```
,{"cancel_all_calls":{
"time":"2023-07-28,12:06:33",
"call":1,
"comment":"Car call"
}}
```

Possible values for the “call” property are:

```
1..3   - Car call (1 – normal, 2 – low priority, 3 – high priority)
4..5   - Landing call independent (4 – normal, 5 – extra)
6..7   - Priority call (6 – low priority, 7 – high priority)
8..9   - Upward landing call (8 – normal, 9 – extra)
10..11 - Downward landing call (10 – normal, 11 – extra)
```

115.3.2 Travel Direction

A change of the travelling direction is indicated by a text block, like this example.

```
,{"object":{
"mplex":"0x502C00",
"time":"2023-07-28,12:06:27",
"name":"Current travel direction",
"value":1,
"floor":1,
"comment":"upward"
}}
```

115.3.3 Door Status

The door status is indicated as numerical value and as readable text string.

```
,{"object":{
"mplex":"0x503B01",
"time":"2023-07-28,12:06:33",
"name":"Door status A",
"value":3,
"floor":3,
"comment":"opening"
}}
```

The possible values are:

```
0 - Door is in an ambiguous state.
1 - Door is in emergency stop operation.
2 - Door stopped (with torque) at the current (intermediate) position.
3 - Door is opening.
4 - Door opened.
5 - Door is closing.
6 - Door is closed.
```

115.3.4 More counters and values

Other values and counters are always stored according to the same scheme. The CANopen multiplexer can be used for identifying the values by some software. The name displayed is useful to the technician reading the file.

Example 'Trip counter':

```
,{"object":{
"mplex":"0x652001",
"time":"2023-07-28,12:06:34",
"name":"Trip counter",
"value":19329,
"floor":3
}}
```

Example 'Unlevelling Value'

```
,{"object":{
"mplex":"0x504300",
"time":"2023-07-28,12:06:35",
"name":"Unlevelling value",
"value":2,     → [mm]
"floor":3
}}
```

115.3.5 Bus errors

Bus errors are logged in this form:

```
,{"can_error":{
"time":"2023-07-28,12:32:23",
"can":1,
"count":1
}}
```

The interface CAN1 or CAN2 and the current error counter is written into the log file.

115.3.6 Parameter changes

If the technician is changing a parameter in the lift controller, this parameter change is recorded into the log files as well.

```
,{"parameter":{
"mplex":"0x000001",
"method":1,
"privilege":4265728,
"time":"2023-07-28,12:43:15",
"name":"Parking timer",
"hint":"This object defines the time to park the lift when no calls are present. The parking floor
is determined by the parking strategy/mode and other options.",
"oldval":"300",
"newval":"310",
"entity":""
}}
```

115.3.7 Notifications, Warnings and Errors

Any notification, warning or error event is recorded in this detailed way:

```
,{"message":{
"code":"[0013]",
"time":"2023-07-28,12:32:30",
"name":"Inspection turned off",
"hint":"The inspection control operation has been turned off via the inputs assigned to the hoistway
(shaft) pit and car top inspection control box.",
"flags":"144",
"floor":6,
"doors":0,
"position":18500,     → [mm]
"distance":0,         → [mm]
"velocity":0,         → [mm/s]
"payload":1,
"weight":0,
"trips":19330,
"hours":49.0,
"turns":4716,
"mode":17,
"maintenance":0,
"keep closed":0,
"landings":0,
"assembly":0,
"bridging":0,
"zones":[1,1],
"direction":0,
"chain":[1,0,0,0,0,0],
"relay":[0,0,0,0]
},

"chain":{"0.1":[1,0,0,0,0,0],"0.2":[1,0,0,0,0,0],"0.3":[1,0,0,0,0,0],"0.4":[1,0,0,0,0,0],"0.5":
[1,0,0,0,0,0],"0.6":[1,0,0,0,0,0],"0.7":[1,0,0,0,0,0],"0.8":[1,0,0,0,0,0],"0.9":[1,0,0,0,0,0],"1.0":
[1,0,0,0,0,0],"1.1":[1,0,0,0,0,0],"1.2":[1,0,0,0,0,0],"1.3":[1,0,0,0,0,0],"1.4":[1,0,0,0,0,0],"1.5":
[1,0,0,0,0,0],"1.6":[1,0,0,0,0,0],"1.7":[1,0,0,0,0,0],"1.8":[1,0,0,0,0,0],"1.9":[1,0,0,0,0,0]},

"relay":{"0.1":[0,0,0,0],"0.2":[0,0,0,0],"0.3":[0,0,0,0],"0.4":[0,0,0,0],"0.5":[0,0,0,0],"0.6":
[0,0,0,0],"0.7":[0,0,0,0],"0.8":[0,0,0,0],"0.9":[0,0,0,0],"1.0":[0,0,0,0],"1.1":[0,0,0,0],"1.2":
[0,0,0,0],"1.3":[0,0,0,0],"1.4":[0,0,0,0],"1.5":[0,0,0,0],"1.6":[0,0,0,0],"1.7":[0,0,0,0],"1.8":
[0,0,0,0],"1.9":[0,0,0,0]},

"velos":
{"0.1":0,"0.2":0,"0.3":0,"0.4":0,"0.5":0,"0.6":0,"0.7":0,"0.8":0,"0.9":0,"1.0":0,"1.1":0,"1.2":0,"1.
3":0,"1.4":0,"1.5":0,"1.6":0,"1.7":0,"1.8":0,"1.9":0},

"posis":
{"0.1":18500,"0.2":18500,"0.3":18500,"0.4":18500,"0.5":18500,"0.6":18500,"0.7":18500,"0.8":18500,"0.
9":18500,"1.0":18500,"1.1":18500,"1.2":18500,"1.3":18500,"1.4":18500,"1.5":18500,"1.6":18500,"1.7":1
8500,"1.8":18500,"1.9":18500}}
```

Beside the time stamp, name and help/hint text about the event, you will have a kind of '*rear mirror*' of two seconds for the safety chain, pilot relays, velocity and the position values, given in millimeter.

The “code” property contains the event code in the same format, that can be found in the appendix of the manual.

115.3.8 Starting and Stopping

Starting and stopping of the lift is recorded together with the payload, if a payload value in [kg] or [%] is available. Otherwise only the load enumeration, like full load or normal load is recorded.

```
,{"start_driving":{
"time":"2023-07-28,19:41:43",
"velocity":"V4 - 1600",      → [mm/s]
"floor":8,
"load":158,
"comment":"Normal load"
}}
```

Stopping again would look like this:

```
,{"stop_driving":{
"time":"2023-07-28,19:41:51",
"position":7589,      → [mm]
"acceleration":610,   → [mm/s²]
“maxpower”:1250,      → [W] Only available,if the drive is transmitting the power consumption.
"floor":6
}}
```

An unconditional stop, that happens because of an error, usually in between the floors, would produce that extra text block. This block contains the safety chain mask. In the given example the last signal, the door cam lock, is open indicated by a Zero.

```
,{"stop_unconditional":{
"time":"2023-07-28,19:41:51",
"position":7589,
"chain":[1,1,1,1,1,0],
"debug":3
}}
```

The value “debug” is actually an internal value pointing to caller, that caused the stop. That can be interesting for when communicating with the software developers. The value “position” is the position of the car when having stopped in millimeters.

In the case the drive unit runs into an issue, a fault block is thrown into the log file:

```
,{"error_driving":{
"time":"2023-07-28,19:43:16",
"position":7589,      → [mm]
"velocity":820,       → [mm/s]
"acceleration":787,   → [mm/s²]
"floor":3
}}
```

115.3.9 Inspection Direction Indication

When the technician is pressing a direction button, being in Inspection or Emergency Electrical Operation, a text block is generated, like so:

```
,{"insp_direction":{
"time":"2023-07-28,19:47:21",
"direction":1,
"comment":”upward”
}}
```

115.3.10 External Door Zone Signal

The external door zone indication is recorded, like so. In the given example the zone signal is peaked high from zero to one.

```
,{"ext_door_zone":{
"time":"2023-07-28,19:47:23",
"state":”0 > 1”,
"position":7589,      → [mm]
"floor":3
}}
```

115.3.11 Power peak last trip record

If the drive unit is measuring the power consumption, while driving, you will find an item in the logging file after a trip, that looks like so:

```
,{"object":{
"mplex":"0x503600",
"time":"2023-08-01,13:31:22",
"name":"Power peak last trip record",
"value":"205;1;2;823",
"floor":2
}}
```

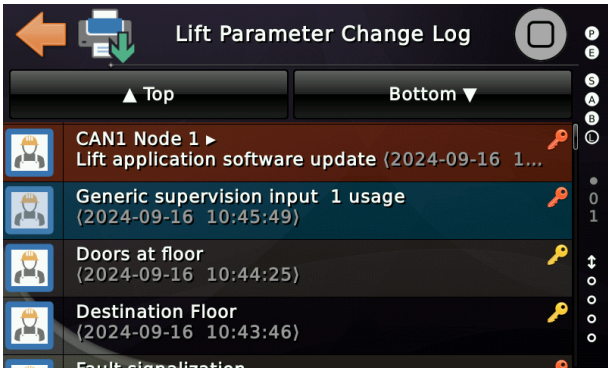
The values "205;1;2;823" mean, that there was a power consumption peak of 205 W, when driving from floor 1 to floor 2, reaching a maximum velocity of 823 mm/s.

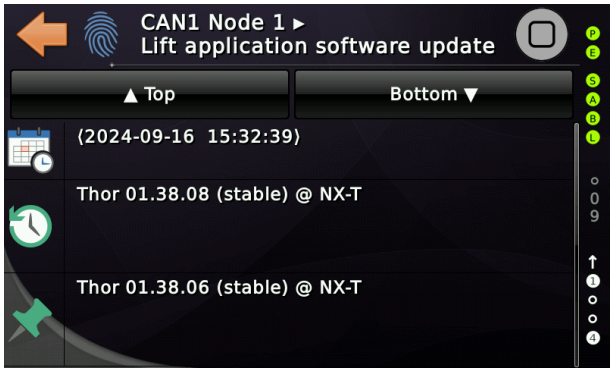
116 Safely Updating the Firmware

The USB and SD-Card mass storage can be used for **updating the firmware**. It is also possible to manually download a new firmware from the Cloud connection, instead of reading the update file from an USB/SD mass storage.

Updating the software can only be **done manually** and **only locally** on the device, if...

- The lift has to be turned to inspection, emergency electrical operation or emergency stop operation.
- To update the firmware, the **Setup Code** has to be entered locally on site.
- The firmware file is validated by the lift controller. For that purpose the ELF-token, the build in CRC32 of the file, the vendor-id and the product code are checked.
- Additionally, the engineer on site must verify the **SHA** of the file previously specified in the release notes. The release note has been previously sent to the technician, typically by e-mail, not in the same way as the file, which is usually transferred via a file sharing service. **The existing lift software calculates the SHA** of the requested file from the USB stick/micro SD card and displays it on the screen in an easy-to-read manner.
- Only if all requirements are fulfilled, the software can be updated.
- Any update of the software is recorded in the Parameter Change Log as well, that cannot be erased by the technician.

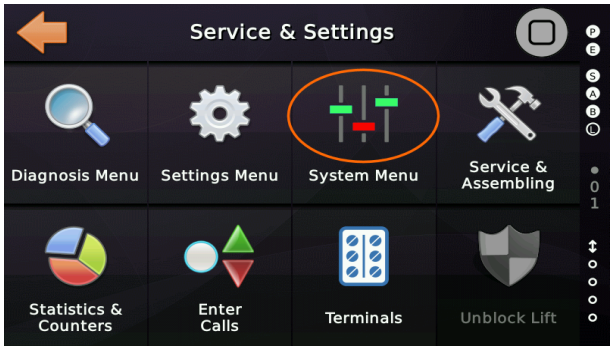




116.1 Creating a backup copy of the current software

To ensure that in the event of an unlikely and unforeseen error, it is possible to return to the previous program version and thus keep the lift operational, it is recommended to perform a software backup before updating the software.

You will find the corresponding parameter by pressing first '*Home*' and then the hardware button '*Favorites*' and then go to '*System Menu*' → '*System*' → '*Software Backup/Update*'.



Note that you must enter the **SETUP** code and have the inspection operation, the emergency electrical operation or the emergency stop activated in order to be able to perform a backup.

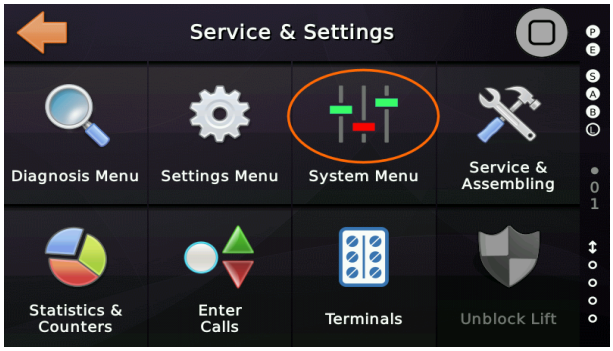
To perform a backup to a mass storage device (USB/SD), select "*Software Backup*". You will now be asked to manually select the name and storage location, as shown in the dialog.

To save the file into another folder, double-tap that folder name, in order to switch to that folder.

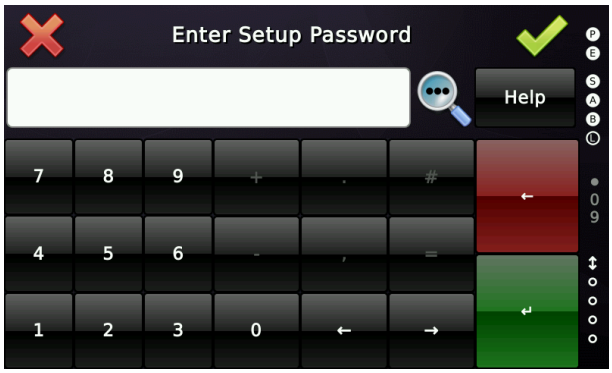
The backup file can only be used to recover the same controller again. It is not for updating other controllers.

116.2 Updating via SD/USB Mass Storage

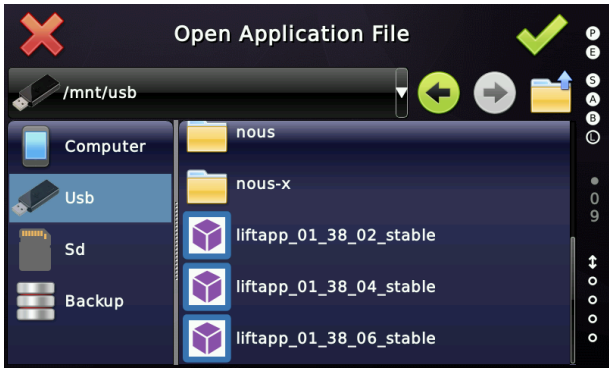
You will find the corresponding parameter by pressing first '*Home*' and then the hardware button '*Favorites*' and then go to '*System Menu*' → '*System*' → '*Software Backup/Update*'.



Keep in mind, that you are in need to enter the SETUP code and have *Inspection*, *Emergency Electrical Operation* or *Emergency Stop* activated in order to perform any update.



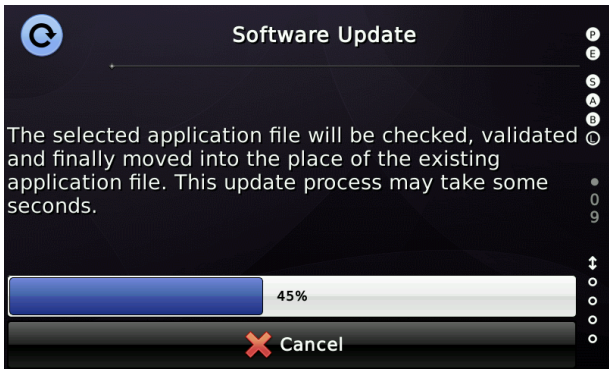
For performing an update via the mass storage (USB/SD) you want to choose '*Software Update*'. When you decide to perform an update via the mass storage, you will now be asked to select the update file manually as shown in the dialogue.

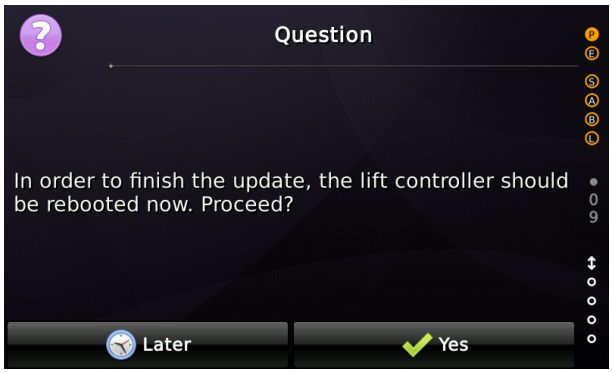


The SHA of the update file is now calculated and shown on the screen.

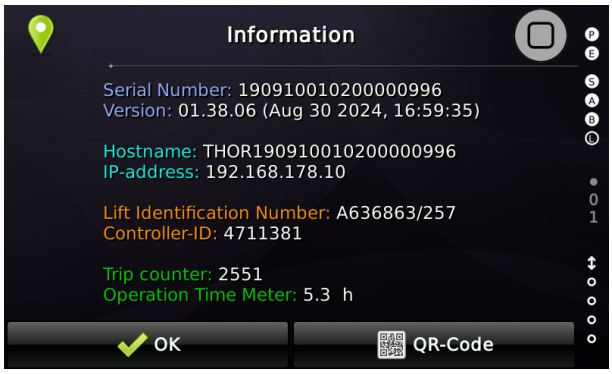
The technician has now the task to check that shown HASH against the hash from the release note, that he/she got via e-mail before. Only if that hash number is the very same, the software shall be installed by means of pressing 'OK'.

If the SHA number match, press 'OK' otherwise press 'Cancel'.

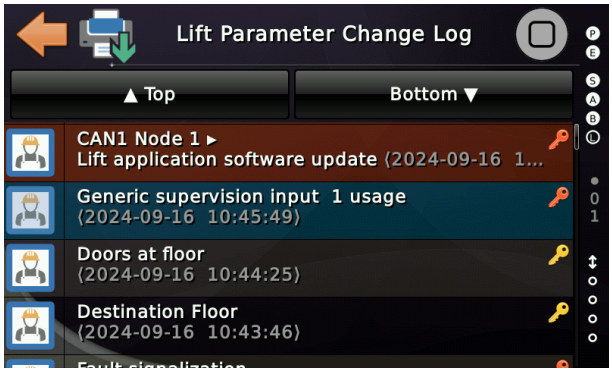


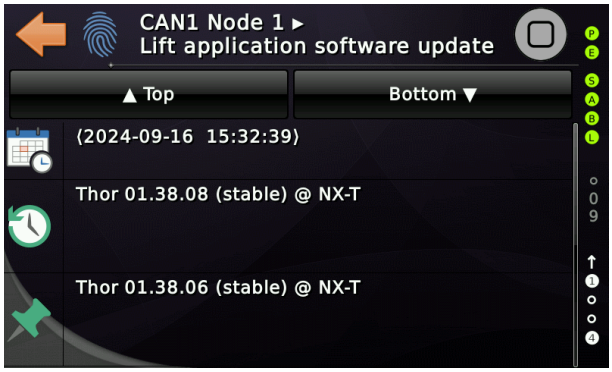


After having rebooted the lift controller software, you can check that the software has been updated by swiping once down the main screen and then using the green icon to show the system information.



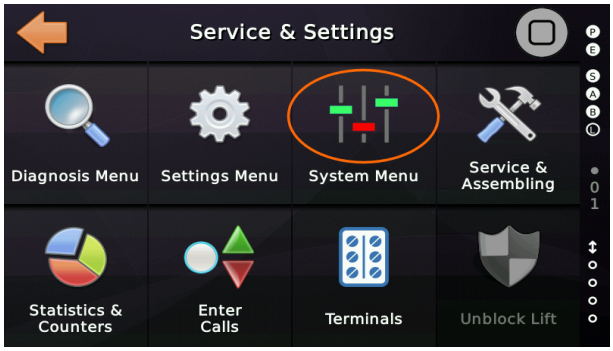
Any update of the software is recorded in the Parameter Change Log as well, that cannot be erased by the technician.



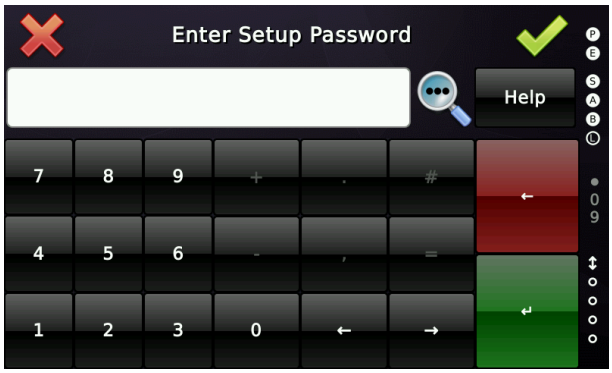


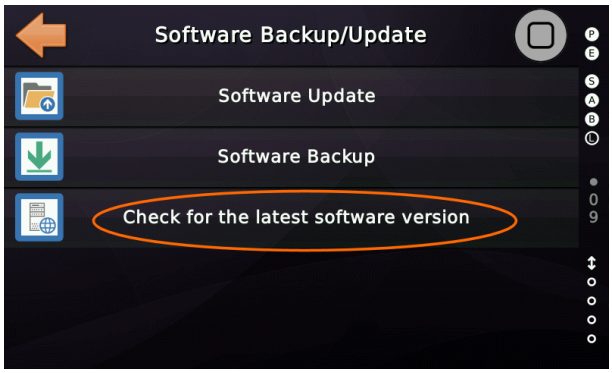
116.3 Updating via the Cloud Service

You will find the corresponding parameter by pressing first '*Home*' and then the hardware button '*Favorites*' and then go to '*System Menu*' → '*System*' → '*Software Backup/Update*'.

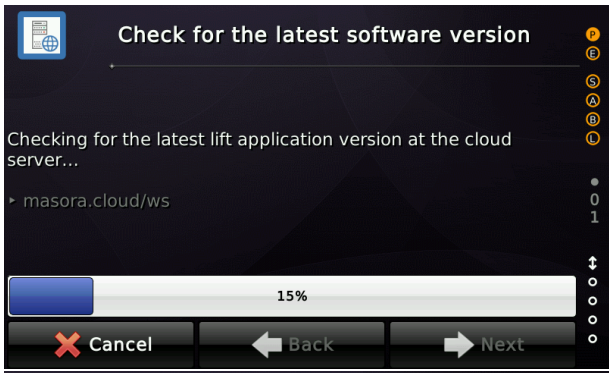


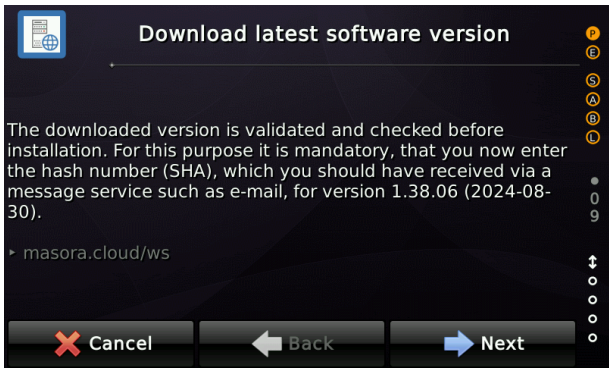
Keep in mind, that you are in need to enter the SETUP code and have *Inspection*, *Emergency Electrical Operation* or *Emergency Stop* activated in order to perform any update.

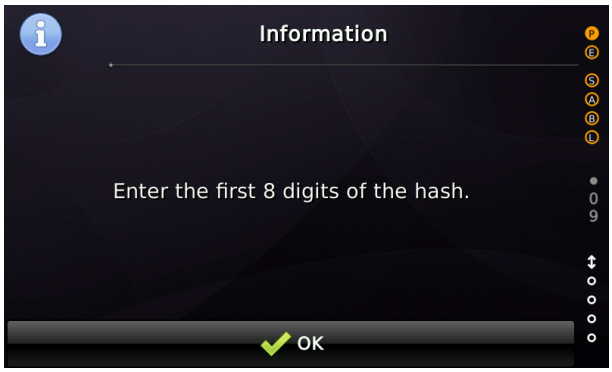




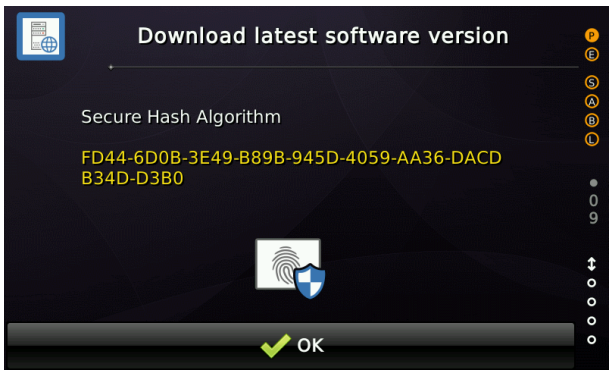
For downloading an update file via the cloud service, you want to choose '*Check for the latest software version*'. If the connection with the cloud is successful, you will see the current installed version and the version that can be downloaded as an update.



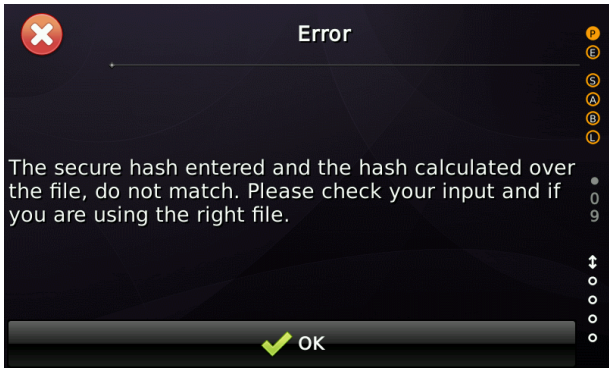


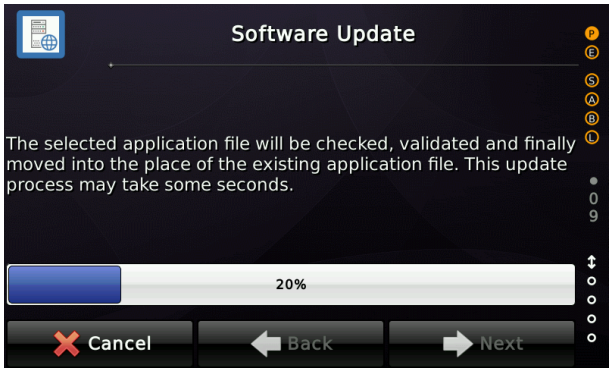


The SHA of the update file is now calculated but **not** shown on the screen. **Instead the technician has now the task to enter the first eight digits of the HASH from the release note, that he/she got via e-mail before.**

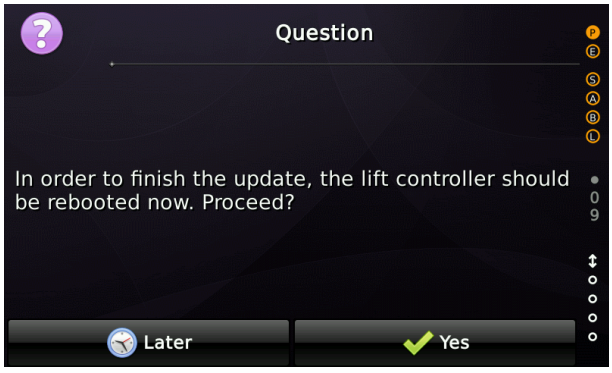


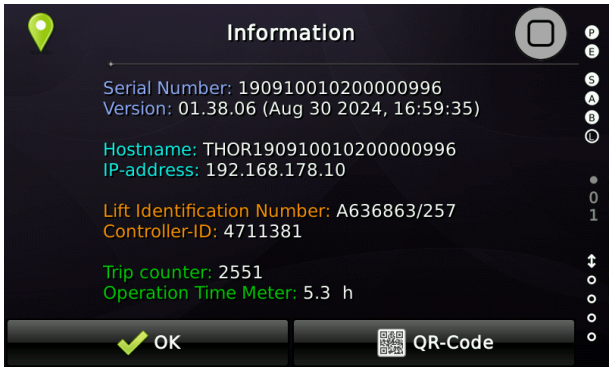
In the case the hash does not match or has been entered wrong, the update process can not be executed. Otherwise the update will be installed.



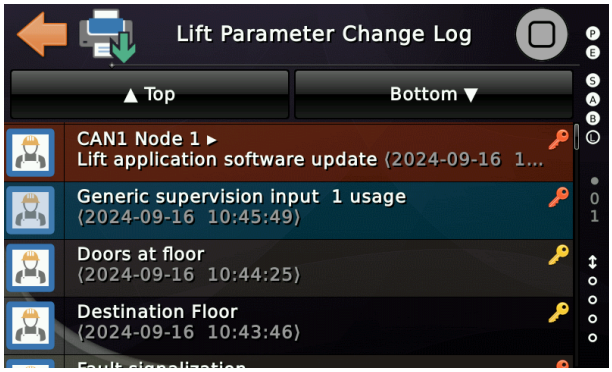


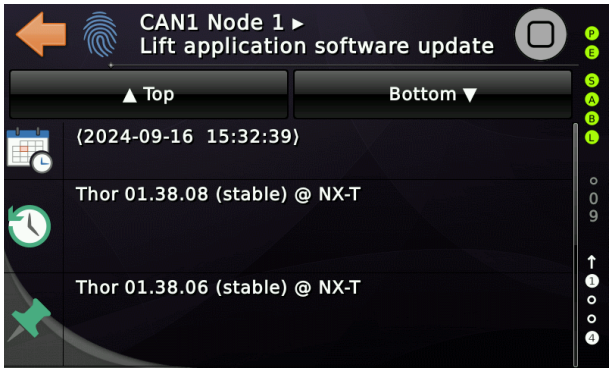
After having rebooted the software, you can, see that the software has been updated.





Any update of the software is recorded in the Parameter Change Log as well, that cannot be erased by the technician.





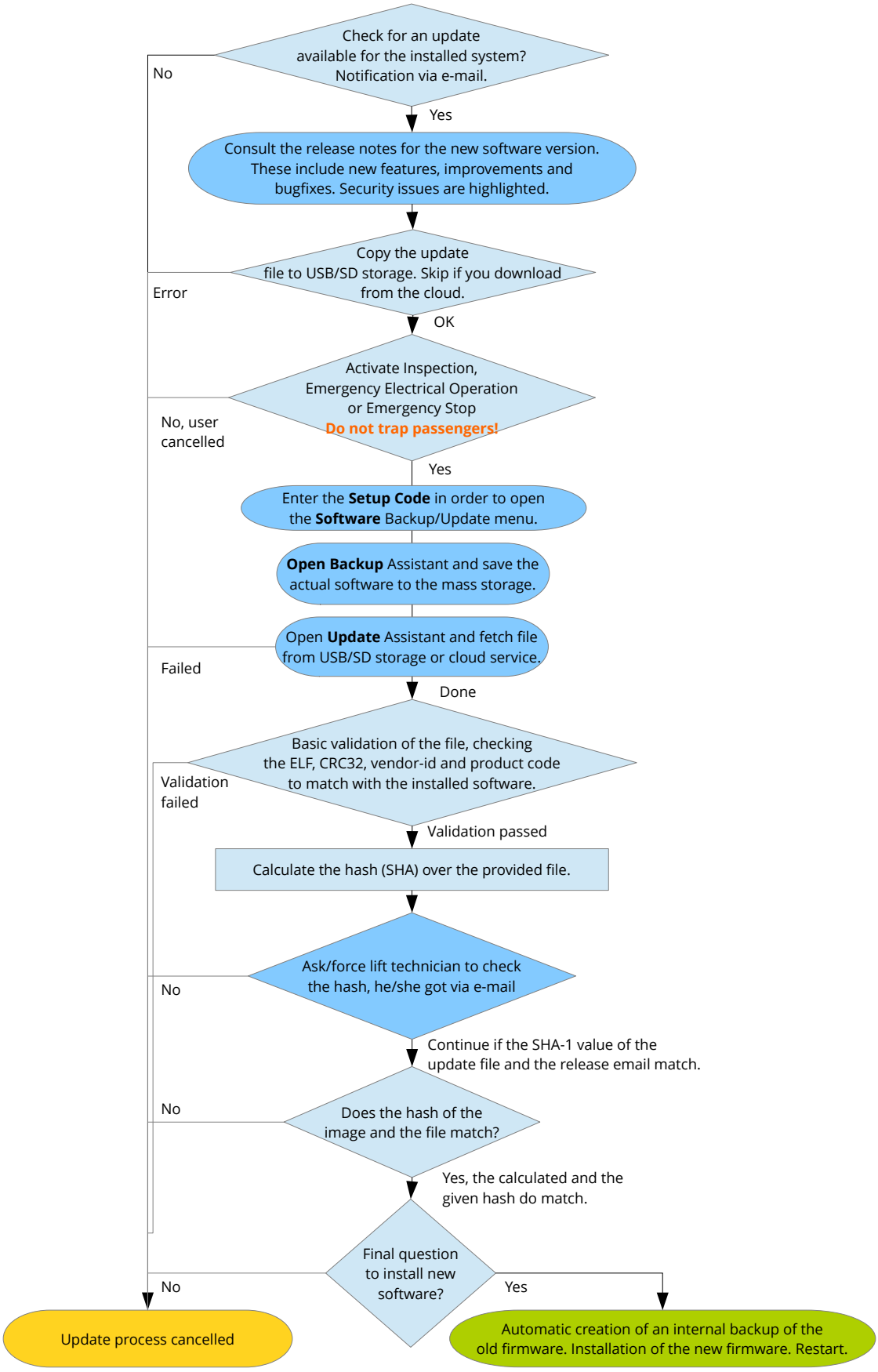


Figure 215: Float Chart Software Update/Backup

117 Incident/Issue Reporting

In the case of an incident, it is vital that we have a structured procedure of reacting. Bug/error/security/issue/incident reports can be sent to us by e-mail, directly to:

hq@thor.engineering

Submitted reports must be clear, complete and concise. Reports must include an name, Lift-/Controller Identification Number, e-mail address and enough information, so that the bug can quickly be verified from the report. So, please describe the issue and the steps that produce it as complete as possible.

The information that reaches us via phone or usually e-mail is then filled into an Incident Report. An incident report is a file that documents any event that may or may not have caused a functional or security issues of a product. It is used to capture what has happened and usually the steps required to reproduce the problem, security breaches and misconducts at the installation site. Our Incident Report template file on the company server, looks like this (2024-09-04):

```
THOR Engineering Incident Report
================================

Purpose
An incident report is a file that documents any event that may or may not have caused a functional
or security issues of a product. It is used to capture what has happened and usually the steps
required to reproduce the problem, security breaches and misconducts at the installation site. This
also helps the management implement new policies to determine the efficacy of these changes for
safety and quality.

Topic: /* Give the Incident a Headline! */
Date: dd.mm.yyyy
Changed: --.--.----

General information:
Introduction — /* The first part of the incident report covers the who, what, when, and where
                 of the incident. */
-

Body — /* Talk about the incident from start to finish, ensuring details are laid out
          in chronological order to avoid confusion. Include the technician details required to
          reproduce the issue, if possible. That will speed-up the process of fixing. */

Setting or environment - /* Please attach the parameter printout of the controller to the report. */
-

Affected Installation
-

Issues caused by the Incident
-

Witnesses/Reporters
-

Quick Fix / Temporary / Short-Term Solution at the installation site
-

---
Signed-off-by: /* Include the full name and signature of the incident report writer for
                 accountability and record-keeping. */
```

This RACI diagram describes the responsibilities for handling incident reports within the THOR Engineering GmbH organization as of 09-2024.

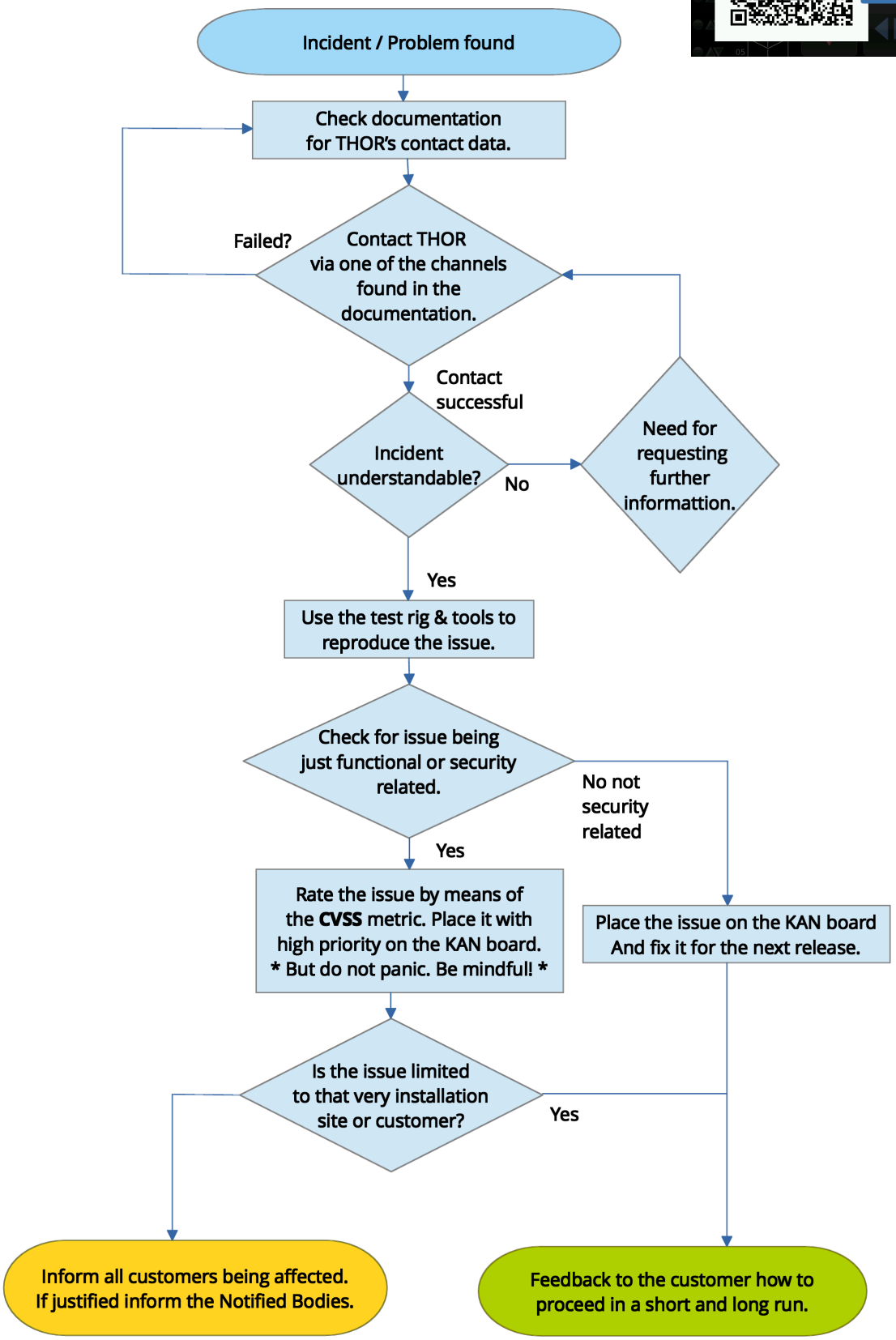
R – Responsible
A – Accountable
C – Consulted
I – Informed

	Lars Gustafsson	Roy Schneider	Thomas Reul
Customer Contact (START)	I*		R
Fetching Details (CREATE)		I	R
Checking/Validating (TO DO)		I	R
Creating Test Case (IMPLEMENTATION)		R	I
Fixing Issue (IMPLEMENTATION)		R	I
Testing Solution (TESTING / REVIEW)		I	R
Update Documentation (REVIEW)	I	R	C
Notifying Customer (RELEASE)	A		R

Figure 216: Incident Reporting RACI

*) If the issue is security related.

Figure 217: Incident Reporting Float chart



List of figures