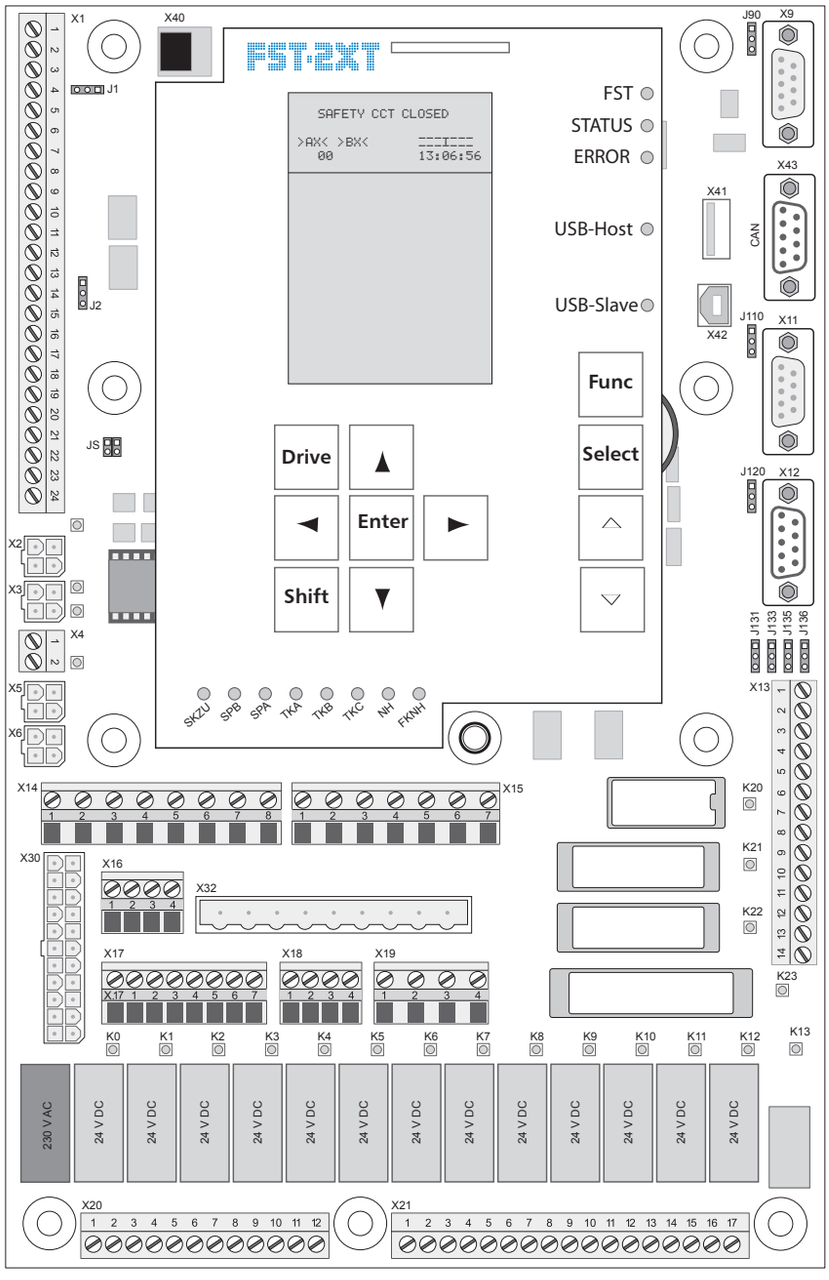
NEW LIFT
NEUE ELEKTRONISCHE WEGE

FST-2XT

Controller

INSTALLATION & COMMISSIONING



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1 About this manual

Read these instructions carefully before installing and commissioning the FST-2XT controller. In addition, chapter „2 General safety regulations“ must be observed. Operation of the FST-2XT controller is briefly explained in chapter „3 FST controller user interface“.

1.1 General

This manual will help you during installation and commissioning of the FST-2XT controller and its components.

The installation and commissioning manual contains important information for safe and proper installation and commissioning of the FST-2XT controller.

Following these instructions will help to:

› prevent danger,
› avoid repair costs and downtime,
› increase the reliability and lifespan of the FST-2XT controller and of the lift system.

Local, national and on-site regulations regarding health and safety and protection of the environment must be taken into account in addition to this installation and commissioning manual.

This manual only describes the assemblies of the lift system delivered by NEW *LIFT*. For information about components of the lift system that were not manufactured and supplied by NEW *LIFT*, please refer to the respective user information supplied by the manufacturer or supplier.

Hint:

The dimension and mounting holes and the pins assignmets for the cable conntections have not changed with respect to the FST-2. The FST-2XT is therefore fully compatible with th FST-2. The FST-2 can be replaced with a FST-2XT in all circumstances. The FST-2XT has improvments made to the connectivity and user interfaces.

1.2 Signs and symbols used

The following signs and symbols are used for operational instructions:

Symbols

✶ **Delivery condition**
Settings that are supplied as standard are marked with an asterisk ✶.

⛔ **System stop**
Marks settings requiring a system stop in case a change becomes necessary. The FST-2XT controller displays the text `Lift must be stopped to change the value. OK?` If you wish to change the value, confirm with `YES`, if you do not wish to change the value or wish to change it later, then confirm with `NO`.

○ **Re-start**
Marks settings that only become active after a re-start of the FST-2XT or of the components.

► **Activity symbol**:
Activities described after this symbol must be carried out in the given order.

+ Key combination:
Press the linked keys simultaneously.

Abbreviation used for detailed terminal information

P: power
I: input
O: outpur
L: low active
H: high active

Safety-relevant information

This symbol is located in front of safety-relevant information.

Information notice

This symbol is located in front of relevant information.

1.3 Further information

The following documents, among others, are available for the FST controller and its components:

› FST controller description
› FST manual
› FST short instructions
› FST GROUP manual
› ADM manual
› EAZ-256 manual
› EAZ-LCD and EAZ-VFD manual
› EAZ-TFT manual
› LCS manual
› SAM manual
› Fire recall manual

These and other up to date manuals can be found in the download area of our website unter Service
http://www.newlift.de/service/download

1.4 How to contact us

If, after referring to this manual, you still require assistance, our service line is there for you:

Phone	+49 89 – 898 66 – 110
E-mail	service@newlift.de
Mon. - Thurs.:	08:00 a.m. – 12:00 p.m. and 1:00 p.m. – 5:00 p.m.
Fr:	08:00 a.m. – 12:00 p.m. and 12:30 – 3:00 p.m.

2 General safety regulations

All important safety regulations are summarised in this chapter. These safety instructions must always be adhered to during all work on the installation.

All persons performing installation and commissioning work on the FST-2XT controller must read this chapter and follow its regulations.

Laws, regulations, guidelines and standards that apply in the country of operation must be followed in addition to the safety regulations mentioned in this manual.

2.1 Qualifications of the installing engineer

The installing engineer must:

› be over 18 years of age (exception: apprentices who are over 16 years of age and are permanently supervised by an engineer qualified for training apprentices).
› have first aid training,
› have theoretical and practical knowledge of regulations and measures for the prevention of fire and explosions in his work area,
› be able to identify, avoid and rectify all dangers that might occur during his work in the shaft and in the operating rooms,
› be able to identify and rectify all irregularities and faults that might occur during installation and operation of a lift system,
› have theoretical and practical knowledge of operating principles and requirements of electric controls and drive systems.

All installation and commissioning work on electric and electronic components of the FST controller must be performed by or supervised by a qualified electrician.

A qualified electrician has appropriate training and knowledge of regulations that allow him to judge the quality of the work performed and identify possible dangers (BGV A3).

2.2 Residual dangers

Danger for persons

The following shall always apply during all work on the installation:

Danger to life! Do not touch live parts while working on electrical equipment.

› Before starting work, make sure the system is off circuit.
› Only carry out any installation work on electrical components when these are switched off and in an unpowered state.
› Only use insulated tools when working on electrical system components.

Risk of injury when lifting or moving the control cabinet if it falls down or tips over.

› Only transport and lift the control cabinet with suitable equipment (lift truck, hoisting gear etc.).
› All workers must be trained in using these aids and must observe all applicable special regulations to avoid accidents.

Falling parts or parts protruding into the shaft. Risk of serious injury or death.

› Block the shaft access points.
› Before beginning installation work, remove all foreign parts and assembly aids that are not required from the shaft.

Electrical hazard, leaking gas or water due to pierced supply lines. Risk of serious injury or death.

› Make sure no supply lines are in the installation location before starting any installation work.

Danger of falling! Installing engineers and unauthorised persons can fall down the shaft. Risk of serious injury or death.

› Block the shaft access points.

› Use suitable protection (e.g. safety harnesses, scaffoldings) when working on or in the shaft.

Danger of crushing due to intentional or accidental car movement. Risk of serious injury or death.

› Block the shaft access points.

› Before starting any work, make sure that there are no persons in the shaft or in the vicinity of moving parts of the drive.

› Prevent unauthorised operation of the controller.

Risk of material damage

The following shall always apply during all work on the installation:

Electrostatic charging

› Keep the electronic assembly in its original packaging until installation.

› Before opening the original packaging, a static discharge must be performed. To do this, touch a grounded piece of metal.

› During work on electronic assemblies, periodically perform this discharge procedure.

Electronic assemblies are destroyed by defective, interchanged or incorrectly mounted connectors, short-circuiting or excess voltage.

› Check plugs for mechanical damage.

› Never change pre-assembled connectors or cables.

› Only connect loose or torn off wires according to circuit diagram details if this is possible on site (suitable material and tools must be available).

› Pay attention to coding pins and latch lugs.

2.3 Safety regulations

General

› The instructions of the lift manufacturer and the instructions in this manual must be followed during installation and commissioning of the lift system.

› The shaft must be secured against unauthorised trespassing during installation and commissioning.

› Assemblies, devices and cables must be installed and fastened securely and permanently.

› Loads must be moved with suitable aids (lift trucks, hoisting gear etc.).

› Sharp and pointed tools or other potentially dangerous objects may only be carried along in clothing if suitable protective measures have been taken to rule out any danger.

› Alcohol and drugs must not be consumed before and during installation and commissioning.

Documentation

› A copy of the installation and commissioning manual must be available to the installing engineer at the time of installing and commissioning the FST-2XT controller and its components.

› A copy of the installation and commissioning manual and the wiring diagrams must be kept in the control cabinet at all times after installation.

› The wiring diagrams supplied with the FST-2XT controller are binding. Changes must only be made after consulting NEW *LIFT* and must be documented in writing on the system.

› The factory test logs of the FST-2XT controller remain with NEW *LIFT*.

Electricity

› Regulations for installing and operating electrical equipment (VDE 0100) and regulations of local utilities must be followed.

› The specified distances between different electrical assemblies must be controlled and maintained.

› All installation work must be carried out with the system shut down and off circuit.

› All cables and wires must be installed with sufficient strain relief.

› The neutral and ground wires must be routed separately.

› The control cabinet must be supplied with a clockwise rotary field.

Working in the shaft

› Any work in the shaft requires perfect and permanent communication between the supervisor on the FST-2XT controller in the motor room and the workers in the shaft.

› Components in the shaft must be arranged or secured in such a way that persons accessing the shaft for inspection, maintenance or repair purposes are not in danger.

› The maximum load of the lift system must not be exceeded.

› The specified overruns of the emergency end switches in relation to the speed must be observed.

› The emergency installations must not be activated during normal operation.

› All emergency installations and braking systems must be checked for troublefree operation and all shaft entrances closed off before beginning work.

› Installation and operation are prohibited if other persons could be in danger.

› Workers must be secured against falling.

› In case of any work interruptions, the car must be moved to the lowest stop position, the controller switched off and the power supply (e.g. UPS) permanently disconnected.

Personal safety equipment of the installing engineer

› Eye protection

› Safety boots

› Protective helmet

› Safety harness

› Clothing suitable to the ambient conditions of the installation location

› Jewellery, watches and similar items may not be worn; a hair net must be used if applicable.

Handling electronic assemblies

› Leave electronic assemblies in their original packaging until installation.

› Touch a grounded piece of metal prior to opening the original packaging to prevent damage from static charges.

› All bus inputs and outputs not in use must be equipped with a terminal resistor (terminator). Exception: FSM-2 X23 and FST X2 are only for use with the HHT hand-held terminal and must not be equipped with a terminator.

Waste disposal

› All packaging material must be disposed of in an environmentally acceptable manner; paper, plastic, metal, electronic assemblies etc. must be recycled.

3 FST-2XT controller user interface

The user interface of the FST-2XT controller is located on the FST-2XT main circuit board in the control cabinet of the lift system. The FST-2XT user interface consists of front panel, LC-Display, keypad and LEDs.

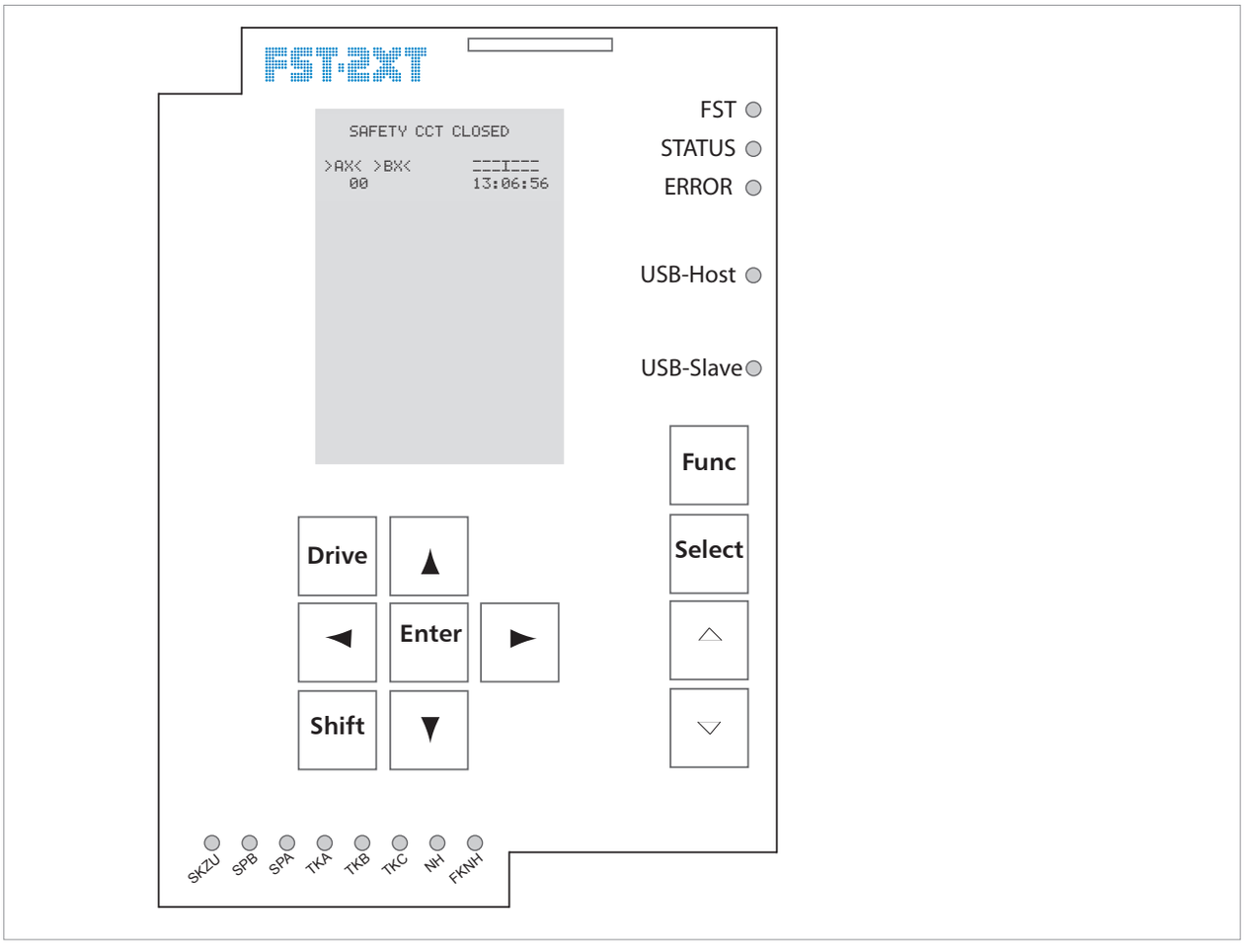


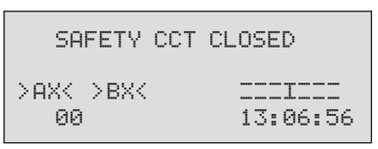
Fig. 3.1: FST controller user interface

3.1 Keypad functions

The FST-2XT controller is operated using seven keys, which are located below the display. These keys are refered in this manuel as [Drive] for Drive, [Enter] for Enter and [Shift] is for Shift.

The four blue buttons on the right side of the front panel are described in more details at chapter 9.

3.1.1 When switching on



[Shift]	Pressing and holding the [Shift] key during the switch-on sequence of the FST-2XT starts emergency operation. In emergency operation, no drives are possible. Emergency operation is required if the FST-2XT cannot be switched on in normal mode due to a malfunction. The complete FST-2XT menu and the PC-Card functions are active in emergency operation!

3.1.2 Main screen

```
     SAFETY CCT CLOSED

<A>             ---I---
00              13:06:56
```

▲	Set car call to top floor
▼	Set car call to bottom floor
◀	Switch landing control on and off (switch function)
▶	Open test menu
Enter	Open main menu
Shift	Activate emergency mode: press before switching on and keep pressed until the FST has fully run up (see FST manual)
Shift + ▲	Set car call to next floor up
Shift + ▼	Set car call to next floor down
Shift + ▶	Scroll through the right status messages in line C
Shift + ◀	Scroll through the left status messages in line C
Shift + Enter	Display information page
Shift + ◀ + ▶	Switch diagnostic message in line C on or off
▲ + ▼ + ◀ + ▶	Perform controller RESET
Drive	Switch to converter menu (DCP)

3.1.3 Main menu and test menu

```
MAIN MENU
   Drive
   Config
   >Positioning
```

▲	Move cursor up
▼	Move cursor down
◀	Exit submenu
▶	Change menu level
Enter	Select submenu / menu item

```
Clock Setting


13:45:01
```

▲	Increase value
▼	Decrease value

◄	Move cursor left
►	Move cursor right
Enter	Confirm setting

3.1.4 Error list

```
ERROR[00037/00040]
28.09 10:18:26    [012]
Door close failure
FLOOR:03 V00 R01 I00
```

▼	Switch to 2nd to 8th information byte in line D
▲	Switch to initial display in line D
Shift + ▲	To previous error message
Shift + ▼	To next error message

3.1.5 Information page

```
- FST Information -
 HW Ver.:  12-16
 SW VER::  V  1.100-0026
              18/05/1999
```

▲	Scroll one line up
▼	Scroll one line down
Enter	Back to main screen

3.1.6 Frequency inverter with DCP interface

Drive	Frequency inverters with DCP interface can be operated and configured from the FST-2XT menu (FST X11 connected). The display of the frequency inverter is simulated on the FST-2XT display by pressing the Drive-key once. The FST-2XT keys then perform the function of the frequency inverter keys. The FST-2XT display is restored by pressing the Drive-key again.

3.2 TFT-Display and messages

The TFT-Display is divided into two sections, the upper portion consists of four lines (A, B, C and D) with 20 columns each. After switching on and during normal operation, the FST-2XT controller displays the main screen. The lower portion of the display is described in Chapter 9.

3.2.1 Main screen

```
   SAFETY CCT CLOSED

>AX<            ___I___
00              13:06:56
```

A	Maximum active state of the safety circuit
B	Active state or error
C	Status of the lift system / diagnostic message
D	Data for current drive mode

Line C has a special status. In normal mode (after switching on), it displays status messages (see „3.2.4 Line C – Status messages“). By switching with key combination Shift+◄+►, it displays diagnostic messages (see „3.2.5 Line C - Diagnostic messages“).

See also „3.1 Keypad functions“.

3.2.2 Line A – Safety circuit messages

Display	Description
SAFETY CCT CLOSED	The safety circuit is completely closed (FST X14.1, FST X14.2).
SFTY-CLOSED MISSING	The input "Safety circuit closed" has no power. Possible causes: › Terminal FST X14.1 has no power (normally bridged with X14.2) › Relay K14 (230V) on the FST is faulty
DOOR LOCK-A OPEN	The shaft door contact of door side A is interrupted (FST X14.2, X14.3) .
DOOR LOCK-B OPEN	The shaft door contact of door side B is interrupted (FST X14.3, X14.4) .
DOOR A OPEN	The car door contact of side A is interrupted (FST X14.4, X14. 5).
DOOR B OPEN	The car door contact of side B is interrupted (FST X14.5, X14. 6).
DOOR C OPEN	The car door contact of side C is interrupted (FST X14.6, X14. 7).
MANUAL DOOR OPEN	A manual door contact is interrupted (FST X14.6, X14.7).
EMERGENCY STOP	An emergency switch in the shaft is interrupted (terminals FST X14.7, X14.8).
EMERGENCY STOP CAR	An emergency switch on the car is interrupted (FST X32.4).

The messages DOOR C OPEN, MANUAL DOOR OPEN and EMERGENCY END SWITCH (line B) are triggered by the same safety circuit input of the FST-2XT (TC input: FST X14. 6) and exclude each other.

3.2.3 Line B – State messages

Display	Description
LOW 24 V!	The 24V power supply of the FST-2XT board (FST X1.1, X1.2) is below the permitted range of 17 V. Check power supply and cables in the supply line.
POST-EMERGENCY STOP	Landing control is blocked by a safety circuit interruption (interruption before terminal FST X32.4), line A displays EMERGENCY STOP.
LANDING CONTROL OFF	The landing control has been switched off manually. Possible causes of the shutdown: › ⏎ Key of the FST keypad › Programmable input of an external RIO module › Input FST X1.14 › Programmable input on the FST-2XT controller › Key switch on car panel (FPM-1 X4.37 / FPM-2 X1.13) › Key switch on landing control panel (ADM input X3.12 / X3.13)
FIREMAN MODE	A fire input is active. Possible causes of fire recall: › Fire input on landing call module (ADM input X3.12 / X3.13) › Programmable input on the FST controller › GST Group Controller (see GST manual)
END-SWITCH TEST	The manual end-switch test is being executed (see test menu in the FST manual).
ES-SPEED MON. TEST	The manual test of the deceleration monitoring function at the top and bottom end floors is running (see test menu in the FST manual).

Display	Description
EVACUATION	The controller is in evacuation mode. The reason for the evacuation signal may be: › A programmable input on the FST-2XT controller › A programmable input on the GST Group Controller › LMS via protocol adapter module
SEND FAX	The controller is in fax mode (see Installation & Commissioning – Fax modem).
LIFT OFF	The controller has been switched off. Possible causes of switch-off: › Car lighting failure › Input "Car Lighting OFF", FST X1.13 › Programmable I/O port of a RIO module (external) › Programmable I/O port of the FST-2XT controller › Externally by the GST Group Controller or the LMS Lift Monitoring System
FIREMAN SERVICE	Fireman service mode has been activated. Possible causes of signal: › Key switch fireman service in car operating panel (FPM-1 X4.4 / FPM-2 X2.13) › Programmable I/O port of the FST-2XT controller › The state was saved after a power failure and has been reconstructed. The Fireman Mode Reset function must be executed to reset this state. › Key switch on landing control panel (ADM input X3.12 / X3.13) › GST Group Controller (see GST manual)
FILE TRANSFER ACTIVE	The controller is in data transmission mode to transfer files to a GST Group Controller or to a PC.
Attendant operation	The attendant controller is active.
INSPECTION MODE	The controller is in inspection mode (input FSM-2 X22.2). Attention: Line A of the FST-2XT display must show EMERGENCY STOP CAR!
CALIBRATION --	The calibration drive has been started. A ticker text displays the status. After completion of a successful calibration drive, the message CALIBRATION OK! appears. If the drive is interrupted prematurely, CALIBRATION ABORT! appears. Find the error in the error list and repeat the calibration drive
APRON-EXTENDED!	The car apron is open (due to a shaft door interruption). Monitoring is performed via a programmable input on the FST-2XT controller.
LEARN DRIVE ACTIVE	The controller performs a learn drive.
LEARN DRIVE-START	The controller starts a learn drive.
LEARN DRIVE-OK!	The learn drive has been completed successfully.
LEARN DRIVE-ABORT!	The learn drive has been aborted due to an error. Find the error in the error list and repeat the learn drive.
SAFETY CURTAIN	The safety curtain replacing the car door has been interrupted. The contact is in the safety circuit instead of the car door contacts (see System description – Safety curtain).
DRM ...	A runtime monitoring error has occurred, the installation is brought to a standstill. Possible causes are, amongst others: › Start-up problems › Runtime monitoring › Encoder failure › car communication › Motor failure › Forced stop › Emergency end switch › Door failure
INSTALLATION MODE	The controller is in installation mode.
EMERGENCY END SWITCH	The top emergency end switch is interrupted (FST X14.6, X14.7)
ORIENTATION	Only incremental positioning: After switching on, the controller performs an orientation drive to an end floor. The orientation drive can take place automatically or when the first call is placed.
PARKING ACTIVE	The controller sends the car to the programmed parking floor.

Display	Description
LANDING PRIORITY	A priority landing drive has been triggered. Possible causes of signal: › Key switch on landing control panel (ADM input X3.12 / X3.13) › Programmable input on the FST-2XT controller › Programmable input on an external RIO module
CAR PRIORITY	A priority car drive has been triggered. Possible causes of signal: › Key switch on car panel (FPM-1 X4.37 / FPM-2 X1.13) › Automatically after a type Auto 2 priority landing drive
AUXILIARY MODE	The controller is in auxiliary mode (input FST X18.2). Attention: Line A of the FST-2XT display must show EMERGENCY STOP!
HOMING ACTIVE	The hydraulic lift is sent to the lowest landing.
SERVICE MODE	The controller is in service mode (see test menu in the FST manual).
SERVICE REQUIRED!	One of the service counters has exceeded a set limit.
SYSTEM STOP	The controller has been stopped via the FST-2XT menu.
OVER LOAD	The overload input on the FSM or on a programmable input is active.
USER ERROR	A user error has occurred (you can define up to three error messages as user errors). The number of the error is displayed.
V.I.P. MODE	The controller is in VIP mode. The source for the VIP mode can be: › LMS via protocol adapter module › Programmable input on the FST-2XT controller › FPM-2 X2.14 in the car operating panel
FULL LOAD	The full load input on the FSM is active.

3.2.4 Line C – Status messages

Line C is divided into two parts and displays one of the following status messages in the left part and one in the right part. This way you can select which two status messages you want shown simultaneously on the display.

Select the status message in the left-hand area with Shift+◀, in the right-hand area with Shift+▶.

Status	Display	Description
Car doors	<A>	Door A completely open
	>A<	Door A completely closed
	→A←	Door A is opening
	←A→	Door A is closing
	<A*>	Photocell or reversing contact door A active
	<AX>	Door A is locked (test menu)
	<AL>	Door is in loading mode (loading button has been pressed)
	–A–	Door A is stopped
	?A?	State of door A is unknown (check door end switches)
	→→←←	Door open button active
	←←→→	Door close button active
	<→←>	Door open button permanently pressed
	>←→<	Door close button permanently pressed
Shaft positioning	Z	Zone message active
	F	Zone message missing
	–	Car is in levelled position
	---I--	Car position relative to level position (2.5 mm / pixel)
	⌄	Bottom correction switch active
	⌃	Top correction switch active
Car position	P=6200	Current car position in relation to the level position of the bottom floor in mm.
Levelling	Pd= -2	Current position of the car relative to closest level position in [mm]

Status	Display	Description
Car speed	V=1300	Current speed of the car in [mm/s]
Set / actual speed	========--	Comparison between set and actual speed of the car. The left bar is a graphic display of the relation between actual speed and the set speed on the right. (Only displayed if no level position is displayed in the other area)
Motor-Hours	BS=4351	Operating hours of the drive
Drive counter	FZ=123456	Number of completed drives
Load measurement	L=100 kg	Displays the current car load (only in combination with LCS)
Memory occupied	Rec: 45%	Memory occupied on the PC-Card when recording.

The door states marked with A also apply to doors B and C.

3.2.5 Line C - Diagnostic messages

Line C can be switched from status messages to diagnostic messages with key combination Shift+◄+►. You will find further information in the FST manual.

3.2.6 Line D - Drive mode messages

Column	Display	Description
1	T	Auto test drive active
	S	No serial connection to the frequency inverter (FST X11)
	s	Data transmission to the frequency inverter via serial connection is faulty (FST X11)
2	↑	Direction of travel UP
	↓	Direction of travel DOWN
3-4	10	Current floor for the car
5-8	[13]	car call and landing call on target floor
	[13	car call to target floor
	13]	Landing call to target floor
	X13	car control blocked
	13X	Landing control blocked
9		Not assigned
10	G	FST-2XT is integrated in a GST Group Controller.
	g	FST-2XT is integrated in a GST Group Controller but communication with the GST is faulty
	s	"Separated" group participants
	P	Drive temporarily stopped
11	R	Flashes while recording data on the PC card
	F	Card is cleared
	B	Bank controller: user group active
9-11	FTX	Data exchange from FST-2XT active (from FST to GST, LMS, etc.)
	FRX	Data exchange to FST-2XT active (from GST, LMS, etc. to FST)
12		Not assigned
13-20	10:44:12	Current time of the FST-2XT

3.3 Information texts

When triggering actions in the FST-2XT menu, information texts may appear in the display. They contain information on the result of the respective action.

Display	Description
EMERGENCY MODE!	The controller is in emergency mode. Drives are not possible. Emergency operation is activated by pressing the Shift key while switching the system on.
Landing call button stuck: 03/A Car-call button stuck: 02/B	The landing call from the specified floor and door side is permanently activated (is stuck). The message is repeated every minute until the error has been corrected.
ADM unconfigured!	A landing call module connected to the shaft bus is not configured. Inform NEW *LIFT* service line!
DRIVE INHIBIT ON!	Mutual start-up blocking via the LMS bus is active. Starting will be delayed until the other networked systems have completed their acceleration phases.
Please Wait!	The triggered action has not been completed. Please wait!
REMOVE WRITE-PROTECT	The PC-Card is write-protected. Move the door lock on the PC card to disable the write protect function.
FAX/SMS SENT OK!	A status fax was sent successfully via the modem interface.
FAX/SMS -> GST!	A fax/SMS (text message) is sent to the group controller where it will be sent via the FAX-modem.
FAX/SMS NOT SENT!	Transmission of a status fax via the modem interface was aborted. Check modem and telephone connection. MAIN MENU / Config / Modem/Fax/LMS
FILE NOT FOUND!	The inserted USB-Stick or SD-Card does not contain the file(s) required for the triggered action.
FST Software Update	The software of the FST-2XT is updated with the USB-Stick. The progress in [%] is displayed in line C.
GST UPDATE COMPLETE!	The software update of the GST Group Controller has been completed successfully.
ZONE IS INCORRECT!	The zone measured during the learn drive is too long (max - 300mm to +300mm)
Calibration abort!	The calibration drive was aborted. Check function of connected drive speeds. Locate reason for drive abort in the error list.
NO <TC> SIGNAL	The car is on the top floor and the correction top signal is missing (only incremental positioning). Check function of TC switch. Check settings in MAIN MENU / Positioning / Increm. Positioning. / TC/BC level.
NO <BC> SIGNAL!	The car is on the bottom floor and the correction bottom signal is missing (only incremental positioning). Check function of BC switch. Check settings in MAIN MENU / Positioning / Increm. Positioning. / TC/BC level.
CONFIG TRANSFER ERR!	An error has occurred during copying of the controller configuration.
CONFIG TRANSFER OK!	Controller configuration copied successfully.
CONFIG(D) CORRUPT!	A parameter of the drive configuration is not plausible. Change a parameter in MAIN MENU / Drive and undo the change again. The information text disappears after saving the settings.
CONFIG(S) CORRUPT!	A parameter of the system configuration is not plausible. Change a parameter in MAIN MENU / Config and undo the change again. The information text disappears after saving the settings.
LCS (L1) calibrated!	The LCS empty load measurement was performed.
LCS (L2) calibrated!	The LCS reference load measurement was performed.
LEARN DRIVE FAILURE!	The started learn drive was not successful. Check function of signals zone B, bottom correction (BC) and top correction (TC). Locate reason for drive abort in the error list.
LEARN DR. START FAILURE!	The started learn drive was aborted due to the car not moving even with pre-selection active.
DRV-TEST STARTED!	A DRV test was triggered.
DRV-TEST FINISHED!	The DRV test was not completed successfully.
CAR NUISANCE DETECT!	The car nuisance protection function has triggered. See MAIN MENU / Config / Anti Nuisance.

Display	Description
NOT IN THE ZONE!	The started learn drive cannot be performed because the car is not in the door zone of the bottom floor. Check function of zone B signal and settings in MAIN MENU / Positioning / Increm. Positng. / ZoneB-Level.
NOT IN FLOOR-0!	The started learn drive cannot be completed because the car is not on the bottom floor (check bottom correction switch, BC)
NOT FROM THIS FLOOR!	The car is at an end floor. The end switch test cannot be started from this floor.
EMERG.-CALL PRESSED	An emergency call button was pressed or is defective (see wiring diagram).
ONLY FROM END FLOOR!	The triggered DRV test can only be started from an end floor.
Checking Update File	Updating the software. The inserted mass storage is checked for update files.
RECORDING RE-START!	An already-started recording was restarted.
RECORDING STOPPED!	Recording was stopped.
RECORDING NEW START!	Recording is restarted.
SD card ok	This message will flash 5 times shortly when the SD card is inserted.
SD card removed	This message will flash 5 times shortly when the SD card was removed.
USB stick ok	This message will flash 5 times shortly when the USB stick is inserted.
USB stick removed	This message will flash 5 times shortly when the USB stick was removed.
UPDATE FILE FOUND	The file required for the software update was found on the mass storage. The software is updated.
UPDATE COMPLETE!	The software update of the LON modules was completed successfully.
WAITING TO RESET...	Automatic Reset after changing a basic parameter (e.g. Drive type). This may take a few seconds.
EXCESSIVE SLIPPAGE!!	During the last drive of the learn drive, hysteresis of the connected magnet switches TC, BC and zone B was detected (only incremental positioning). This message appears if the result of the measurement is greater than 10 mm. Hysteresis will then automatically be limited to 10 mm.
DOOR-NUDGING!	Nudging (forced closure) of the car door is active. Photocell and reversing contacts are ignored. See MAIN MENU / Doors / Doors-Selective / Photocell and MAIN MENU / Doors / Doors-Selective / Nudge Time

3.3.1 Information page

The information page contains important information on the individual configuration of your FST controller.

It can be accessed with key combination Shift+Enter and closed with Enter. ▲ and ▼ serve for navigation within the information page.

```
- FST Information
HW Ver.:   FST-2XT
SW VER.:   V2.000-0026
           09/12/2012
```

Messages in lines B, C and D

Display	Description
HW VER.:FST-2XT	Hardware version of the FST-2XT circuit board;
SW Ver.:V2.000-0026 : 09/12/2012	Software version with release date
Boot Ver:0104	Software version of the operating system

Display	Description
`FSM Ver: FSM00125`	Software version of the FSM car control module. If no software version is displayed here, there is no bus connection to the FSM.
`FPM Ver: FPM00128`	Software version of the FPM car panel module. If no software version is displayed here, there is no bus connection to the FPM.
`LiftID:A`	Internal identification of the controller. The ID displayed here must correspond to the jumper settings on the FSM and FPM.
`Neuron-ID..` `01 00 22 C1 fb 00`	Unique ID for identification of the FST-2XT
`SystemID..` `Test bench`	System location or name
`Factory number..` `RC1000234`	Order number of the individual lift system
`Start:01/02/10 08:23`	Date and time of activation
`CAL :01/02/10 10:23`	Date and time of last calibration drive
`STATS:01/02/10 14:03`	Start date and time of the current statistics recording
`Cfg:01/02/10 12:05`	Date and time of the last change of a parameter in the FST-2XT menu
`CfgBk:01/02/10 12:06`	Date and time of the current backup in the internal buffer
`Err:01/02/10 12:07`	Date and time of the last error list reset
`Sec.Level:1`	Active security level of the FST-2XT

3.4 LEDs

FST

Three LEDs on the front panel of the FST controller display the device status.

LED	Colour	State	Reason	Action
FST	Green	On	The power supply is on	
			The hardware of the FST controller is working correctly	
		Off	No power supply	Check the 24V power supply of the FST controller.
			The hardware of the FST controller is faulty	Contact the NEW *LIFT* service line
STATUS	Green	On	The drive processor is working correctly	
		Flashing	Landing control OFF	◄ switches landing control back on
		Off	Fault in drive processor	Contact the NEW *LIFT* service line
ERROR	red	On	Drive not possible	Line B shows the reason of the error. A drive is only possible after the error has been corrected.
		Flashing	One or more errors were added to the error list	The ERROR LED switches off after the error list is called up.
		Off	There is no error or event	

4 Installation work

This section contains important information regarding installation procedure, installation conditions and settings of the NEW *LIFT* components. On-site circumstances may require an installation procedure that differs from the one suggested here.

The FST-2XT field bus controller is available with two different shaft positioning systems:

› Absolute positioning
› Incremental positioning

The procedure during installation and commissioning depends on the type of shaft positioning system used! Before starting any installation work, make sure to determine the type of shaft positioning system used (wiring diagrams) and compare it to the actual delivery contents.

This manual contains separate installation and commissioning instructions for each type of shaft positioning system!

4.1 Installation procedure

NEW *LIFT* recommends performing installation work according to „Fig. 4.1: Recommended installation procedure for NEW *LIFT* components“.

The FST-2XT field bus controller consists of various modules and cables. The controller is only operational with all modules and cables.

› Check the delivery contents using the shipping note, the wiring diagrams and the bus plan before you start any installation work!
› Report missing or wrong parts to the NEW LIFT service line immediately to avoid delays with the commissioning procedure!

First, mount, connect and adjust all NEW *LIFT* components necessary for commissioning the car. „Installation drives“ are performed with the car to mount the NEW *LIFT* components located in the shaft, such as shaft positioning, LON bus and zone magnets.The FST-2XT controller is then commissioned (see chapter „6 Commissioning the FST“*).*

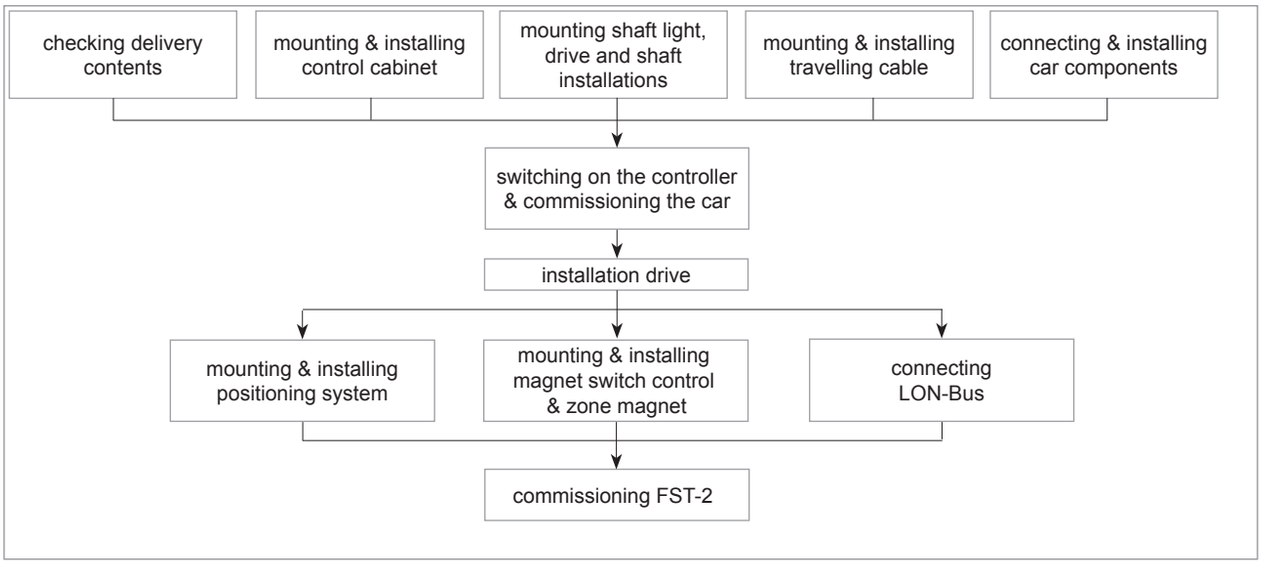


Fig. 4.1: Recommended installation procedure for NEW LIFT components

4.2 Delivery contents

NEW *LIFT* components and documentation:

› Control cabinet or mounting plate with integrated FST-2XT controller
› Electronic assemblies according to bus plan
› Prefabricated LON bus cables according to bus plan
› Prefabricated flat travelling cable according to bus plan
› Terminal resistors (terminators) according to bus plan
› FST quick guide (fixed in the control cabinet)
› FST-2XT Installation & Commissioning manual (this document)
› Wiring diagrams incl. bus plan
› Other components according to the wiring diagram

Checking the delivery contents

Check if the NEW *LIFT* components are complete using the shipping note, the wiring diagram and the bus plan. At the same time, visually inspect the delivery for damage.

When unpacking the delivery, check using the bus plan:

› is any mechanical damage visible on the NEW *LIFT* components?
› does the labelling of the NEW *LIFT* electronic assemblies correspond to the bus plan?
› are the LON bus cables and the flat travelling cable of the length specified in the bus plan?

Claiming damages during transport

If any damage occurred during transport, report it immediately to the carrier.

Reordering NEW *LIFT* components

If any NEW *LIFT* electronic assemblies or cables are missing, contact the NEW *LIFT* service line **immediately**. We will need the following information in order to help you as quickly as possible:

› 8-digit NEW *LIFT* serial number, e.g.: TC110123 (from the wiring diagram or the sticker on the inside of the control cabinet door)
› Description of the missing NEW *LIFT* component (can be obtained from the wiring diagrams or bus plan)
› Type and length of missing cable (can be obtained from the bus plan)
› Your phone/fax number or e-mail address so we can contact you if necessary
› Your delivery address

4.3 Control cabinet

Installing the control cabinet

Move the control cabinet to the planned installation location and install it. The type of mounting brackets to be used depends on the installation location and the weight of the control cabinet and is to be selected by the installing engineer.

The planned installation location can only be changed in exceptional cases, as the length of the prefabricated cables might not be adequate. Please inform the NEW *LIFT* service line so a solution can be found.

Connecting the control cabinet

The cable diameter of the supply, drive and ground lines depends on the power rating of the control cabinet and must be obtained from the included wiring documentation.

Electric hazard due to live wires and parts. Risk of death or serious injury.

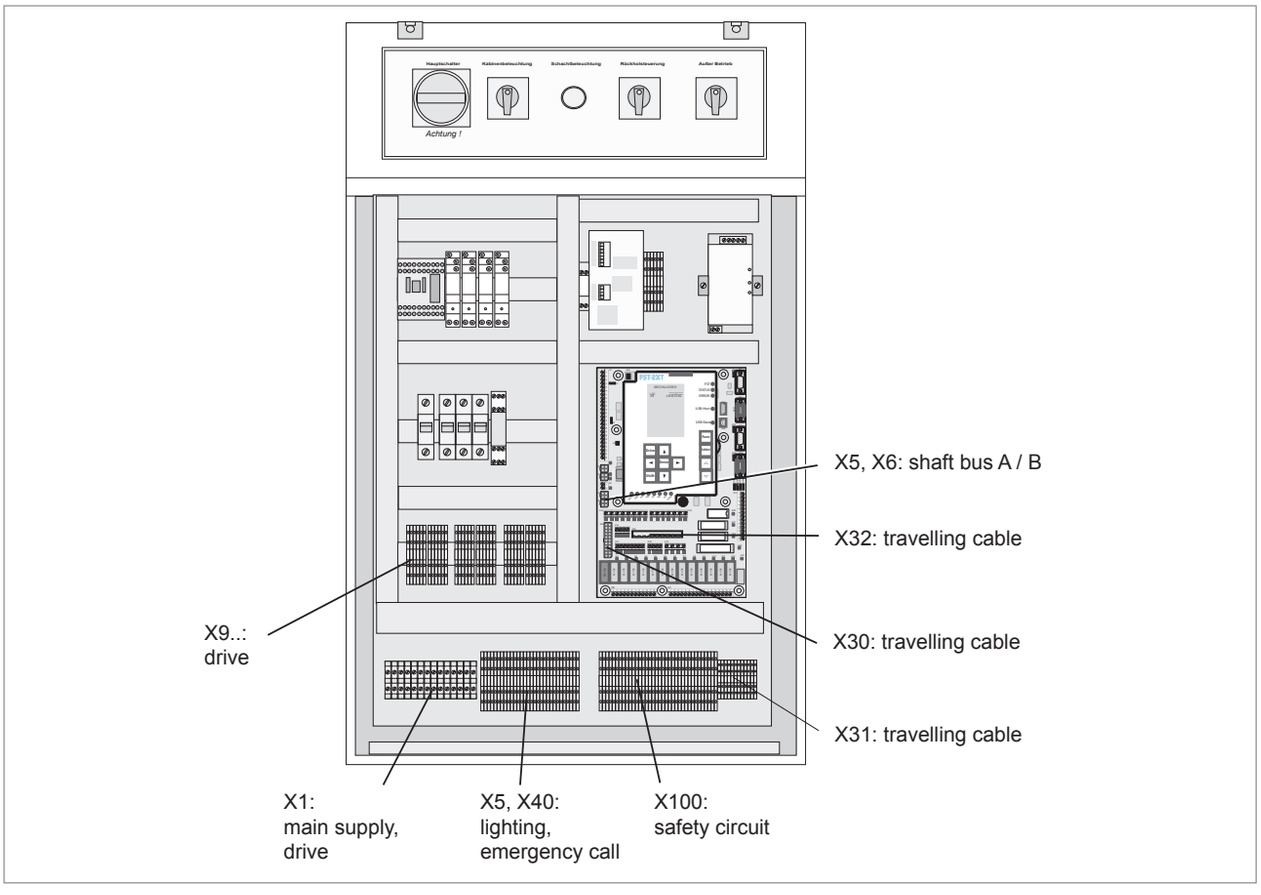


Fig. 4.2: Standard control cabinet for controlled rope lift

Potential equalisation must be carried out in accordance with applicable regulations and guidelines (VDE, DIN, EN and ISO) depending on the power rating.

The neutral and ground wires must be routed separately.

All cables and wires must be secured with sufficient strain relief.

Connections according to the wiring diagram

Before commissioning the control cabinet, the following connections must be made according to the wiring diagram:

› Supply
› Drive
› Light
› Safety circuit

Customer wiring is shown in dashed lines in the wiring diagrams, factory wiring is shown in solid lines!

Connecting the electronical voltage to ground

There is a secure connection between PE and ground in the control cabinet, normally located next to the power supply „G2“. This central connection of both potentials has to be permanent, except for measuring the isolation. A yellow warningsign in the adequate language indicates this connection. It is vital, the warningsign is seen right away if the control cabinet is open.

Measuring the isolation

Whilst measuring the isolation, it is vital NOT to have a connection between the earth wire (PE) and the Ground of the controller (GND). Futhermore, whilst measuring the isolation, it is vital NOT to have a connection between the measuring equipment and the electronical components. Failing this expires the warrenty claim towards New Lift in case of harm or damage.

If a connection exists between PE and GND whilst measuring the isolation, there is the danger of harming or damaging electronical components of the controller besides other (e.g.: frequency inverter, door controller, ...) with the testing voltage.

Technical data - control cabinet (reference value for standard control cabinets)

Power rating

The power rating depends on the power rating of the drive and the travel height of the lift and is, thus, different for each system.

Weight

The weight of the control cabinet depends on the dimensions and on the power rating.

min: 50 kg
max: 200 kg

Safety clearances

The safety clearances specified in EN 81 must be observed, even with the control cabinet door open.

4.4 Travelling cable

The suspension brackets for the flat travelling cable are installed in the shaft and the travelling cable hung.

Note:

› The turning point of the flat travelling cable is at half the travel height + 1m

› Minimum bending radius of PVC cable = 500 mm; minimum bending radius of halogen-free cable = 500 mm

The travelling cable is connected according to the wiring diagram to terminals FST X30 and X31, and to the control cabinet socket X31.

The control cabinet PE cables must be fastened to the provided ground bolts!

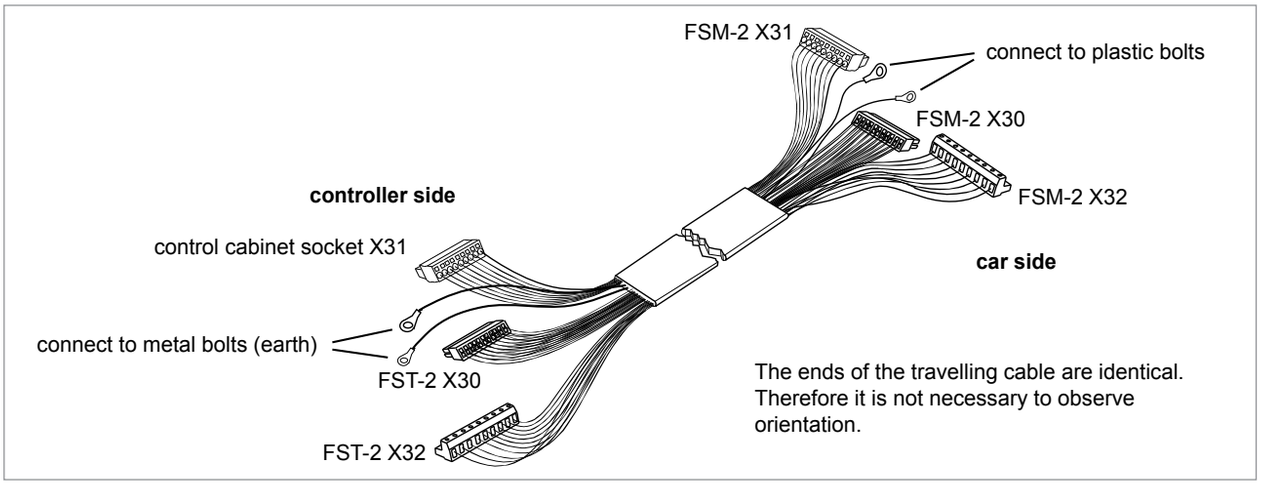


Fig. 4.3: Flat travelling cable

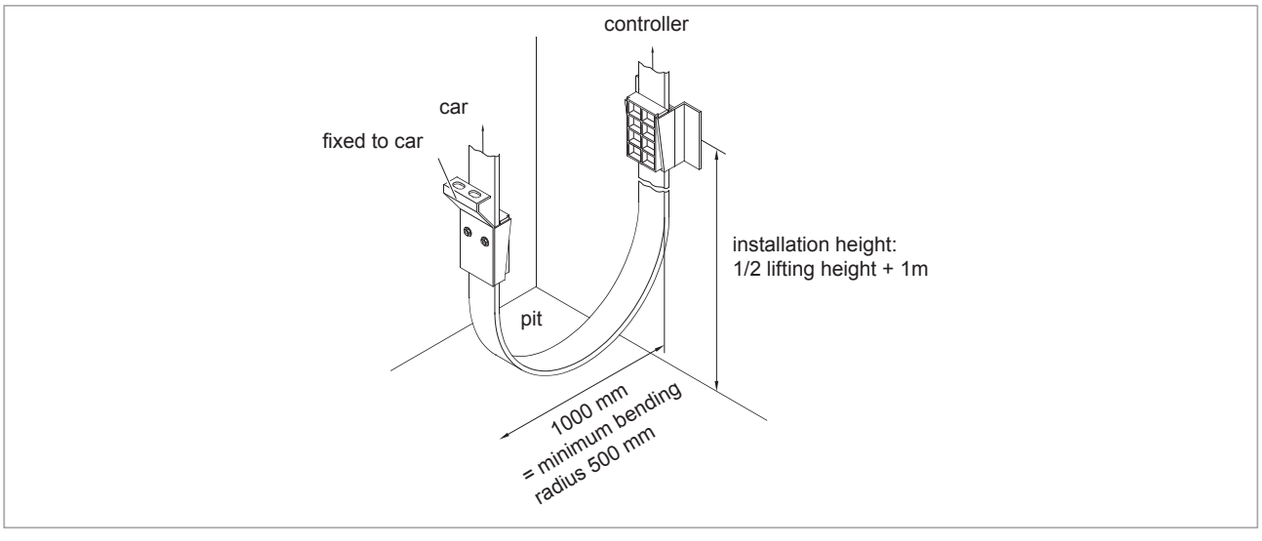


Fig. 4.4: Installation example of flat travelling cable in the shaft

4.5 car components

4.5.1 Car top box

Installing the car top box

The installation location of the car top box on the car roof must be specified on-site. The following criteria must be observed:

› Easy access for later wiring work
› Protective space on the car roof according to EN81
› Proximity to main components door drive, car panel, weight sensor, etc.

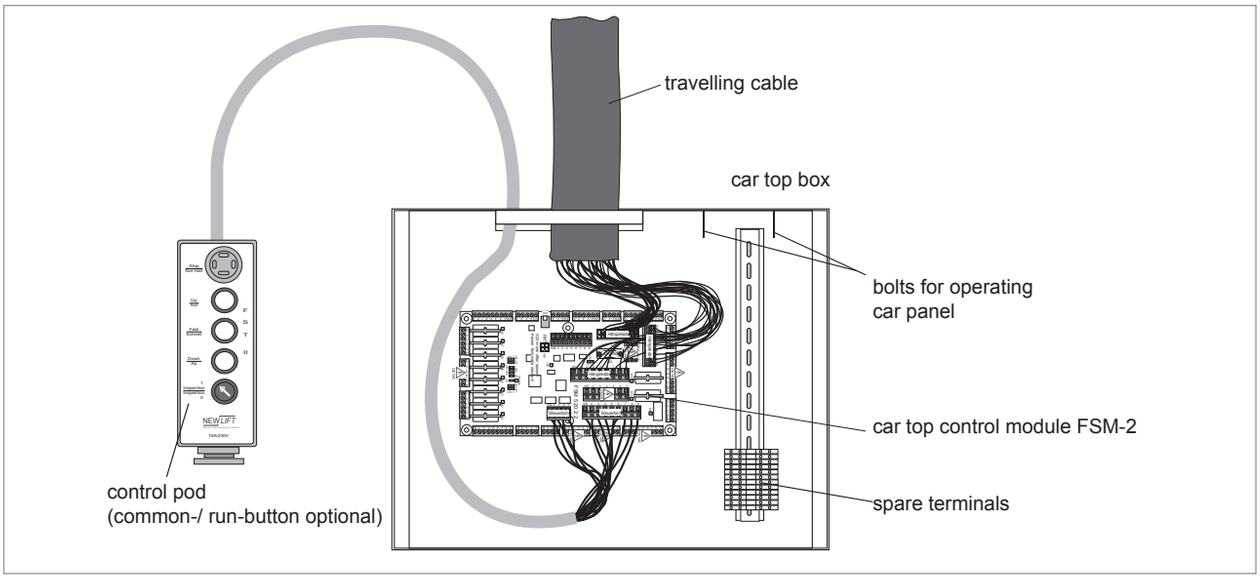


Fig. 4.5: Car top box

With grouped lifts, each car top box is assigned to a specific control by default! Before installation of the car top box, check conformity by means of jumpers FPM-2 and FSM-2 (see „7.2.1 FSM-2 Jumpers“ „7.3.1 FPM-1 Jumpers“ and „7.4.1 FPM-2 Jumpers“.

FSM-2 car top control module

The FSM-2 car control module is mounted in the car top box on the car roof. The travelling cable is now connected to terminals FSM-2 X30, X31 and X32. The two shield connectors are connected to the plastic bolt in the car top box.

The earthing of the car takes place via the PE cable installed in the connector of socket FSM-2 X31. When working, this connector must be connected first and disconnected last.

Connecting the car top box control pod

The car top box control pod is secured on a metal part of the car roof by its magnetic surface.

The car top box control pod is connected to the car control module using FSM-2 X12 and FSM-2 X22. The connected car top box control pod remains on the car roof after commissioning.

Connecting door control

The door control is connected to the FSM-2 car control module according to the wiring diagram.

Function of the door end switches is set on the FSM-2 using jumpers J21, J31, J71 & J81!

› Door drive without end switches: set all jumpers to 2-3. No door end switches and no bridges must be connected.

› Door drive with end switch: set all jumpers to 1-2. Connect door end switches to the FSM-2 according to the wiring diagram.

Connecting emergency call buttons and emergency light

Connect all emergency call buttons as well as the emergency light to the FSM-2 according to the wiring diagram.

To safeguard the emergency calls against wire breakage, emergency call buttons with normally closed contacts are required!

Connect all emergency call buttons as normally closed contacts according to the wiring diagram. All emergency call button inputs not in use must be bridged at the FSM-2 or at the control cabinet!

6 W max. power consumption emergency lighting on the FSM-2: The total of power of all connected emergency lights must not exceed 6 W.

Other car components

All other 230V and 24V car components must be connected to the provided terminal rails in the car top box according to the wiring diagram.

Establishing bus connections

All bus modules of the car (FSM-2, FPM-2, EAZ, etc.) must be connected using the appropriate bus cables as specified in the bus plan.

4.5.2 FPM-1

Depending on the installation position and delivery, the FPM-1 is already situated in the car top box or in the car operating panel.

If the FPM-1 is installed in the car operating panel, it is connected to the FSM-2 (X12) by means of a bus cable (X1 socket).

If the FPM-1 is installed in the car top box, the car operating panel must be connected to the FPM-1 (X4) via the 50-pin sub-D connector.

Other components are connected via X2 according to the bus plan.

Adjusting the car doors

In single door mode, the car call buttons of the FPM-1 are assigned via the jumpers of one door side (A, B, or C). In dual door mode, the FPM-1 can process car calls for door sides A and B. Details see „7.3.1 FPM-1 Jumpers“.

4.5.3 FPM-2

The FPM-2 is always incorporated into the car operating panel and is connected to the X11 socket of the FSM-2 (X12) via a bus cable. Further components are connected via X12 according to the bus plan.

Adjusting the car doors

Im single door mode, the car call buttons of the FPM-2 are assigned to a door side (A, B, or C) by jumpers. In dual door mode the FPM-2 can process car calls for door sides A and B. Details see „7.4.1 FPM-2 Jumpers“

4.6 Switching on the controller

Check the following values prior to switching on the FST-2XT controller:

› Supply line as clockwise three-phase rotation
› Function of the fuses and the residual current device (RCD)
› Function of the control cabinet components
› Proper connection of the ground wires
› Secure seating of all primary power supply lines

Display and operation of the FST-2XT controller is described in chapter „3 FST-2XT controller user interface“.

4.6.1 FST-2XT

► Switch on control cabinet with main switch.
► Switch on FST-2XT control voltage at the miniature circuit breaker (MCB) and residual current operated device (RCD) or RCBO.

During the boot process, the bottom line briefly displays a progress bar and then goes to the main screen.

```
   SAFETY CCT CLOSED
   Installation mode
>A<
 00          13:06:56
```

4.6.2 Checking the safety circuit

If line A does not display SAFETY CCT CLOSED, the wiring of the safety circuit is either incomplete or defective and must be checked or completed as required.

States of the safety circuit

Display	Description
Shk=	Emergency stop car open
Shk= K	Emergency stop open
Shk= NK	Car door C open
Shk= CNK	Car door B open
Shk= BCNK	Car door A open
Shk= ABCNK	Door lock A open
Shk= aABCNK	Door lock B open
Shk= baABCNK	Circuit board defect
Shk=ZabABCNK	Safety circuit closed

The auxiliary mode switch in the control cabinet as well as the inspection switch in the car top box control pod are in the safety circuit.

If auxiliary control is switched on, `EMERGENCY STOP` ***appears in display line A; if inspection is switched on,*** `EMERGENCY STOP CAR` ***appears in the display:***

The safety circuit closes when the UP/DOWN buttons are operated (dead man control).

4.6.3 Switching on installation mode

Select `MAIN MENU / Configuration / Installation / Installation mode`.

► Select YES.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

4.6.4 car components

Electric hazard due to live wires and parts on the FSM-2. Some terminals of the FSM-2, such as car lighting, shaft light button and emergency lighting are live even after switching off the main switch.

Check and secure unpowered state and perform installation work on electrical components in switched off and unpowered state.

Requirements

› Car installation complete
› Connected travelling cable
› Functional safety circuit
› Unassigned bus inputs and outputs are terminated
› Neither inspection nor auxiliary mode is switched on in the lift control system

Checking the EMERGENCY-STOP switch of the car top control pod

► Press the EMERGENCY-STOP switch on the car top control pod.

Line A of the FST-2XT screen displays `EMERGENCY STOP CAR`. If not, there is an installation fault that **must** be corrected.

► Release EMERGENCY STOP switch locking mechanism.

Line A of the FST-2XT screen displays `SAFETY CCT CLOSED`.

The auxiliary mode switch in the control cabinet as well as the inspection switch in the car top box control pod are in the safety circuit.

If auxiliary control is switched on, `EMERGENCY STOP` ***appears in the first display line; if inspection is switched on,*** `EMERGENCY STOP CAR` ***appears in the display:***

The safety circuit closes when the UP/DOWN buttons are operated (dead man control).

The inspection control has priority over the auxiliary control, i.e. an inspection drive is possible while the auxiliary control is switched on.

4.7 Installation drive

Installation drives to install shaft components such as (LON bus, zone switches and magnets and shaft positioning) can be performed using the car top box control pod on the car roof or the auxiliary control in the control cabinet.

The requirements mentioned must be met and the following safety regulations as well as applicable regulations regarding the prevention of accidents must be observed when carrying out installation drives.

Requirements

FST-2XT controller is in `INSTALLATION MODE` (see „4.6 Switching on the controllller“)
› FST-2XT controller is in `INSPECTION` or `AUXILIARY` mode
› Commissioned safety circuit (emergency end switch, EMERGENCY-STOP switch of the car top control pod, safety gear etc. wired and checked for operation)
› Arrest checked for proper operation
› Commissioned car incl. car doors
› Drive has been commissioned
› Knowledge of all dangers potentially occurring in the shaft and their prevention (see „2.3 Safety regulations“

In installation mode, functions and error messages are partially suppressed.

4.7.1 Installing the positioning system

Install the positioning system according to the manufacturer‘s instructions.

4.7.2 Installing magnet switch console and magnets

A magnet switch console is only required if one or more of the following conditions is met:

› Function „re-levelling with open door“ is required
› Function „approaching with open door“ is required
› An incremental positioning is available

If none of the above conditions is met, a magnet switch console is not required. All shaft positioning occurs via the absolute encoder of an absolute positioning system, e.g. ELGO LIMAX2 Lift

A magnet switch console is always necessary for hydraulic lifts.

The following table shows when to use which type of magnet switch.

Shaft positioning	Re-levelling and approaching with open door	Required magnet switch
Absolute positioning system	NO	None
Absolute positioning system	YES	Zone A, Zone B
Incremental positioning	NO	Zone B, correction top, correction bottom
Incremental positioning	YES	Zone A, Zone B, correction top, correction bottom

Installation procedure

► Install the prefabricated magnet switch console on the car guide shoe or car beam
► Level the car on each floor and install the zone magnets on the car guide rail.

According to EN81, the maximum size of the door zone is 400 mm (200 mm in each direction). The actual dimensions of the door zone are forced by the length of the door cam.

The distance to the zone magnets must not be larger than the length of the door cam. Maximum length 400 mm!

The zone magnets must be placed so both magnet switches are closed in the door zone and open outside the door zone (top north, bottom south).

Move the car to the end floors and set the correction magnets (reference position for the correction magnets is the level position of the respective end floor).

› **Correction, top (magnet KO)**
Braking distance V3 (fast speed of the HydrUnit) + 500 mm = position of magnet KO, top
› **Correction, bottom (magnet KU)**
Braking distance V3 (fast speed of the HydrUnit) + 500 mm = position of magnet KU, bottom
› The correction switches are always closed and open in the end floors (bottom floor south, top floor north).

If the specified distance between magnets and magnet switches is not observed or the car has too much play in the guide rails, the safety bypass circuit can malfunction. With incremental positioning, positioning errors and deviations in the positioning accuracy may occur. It is also possible to drive past a floor!

The distance between the magnet switch and magnet must be 10 ±2 mm!

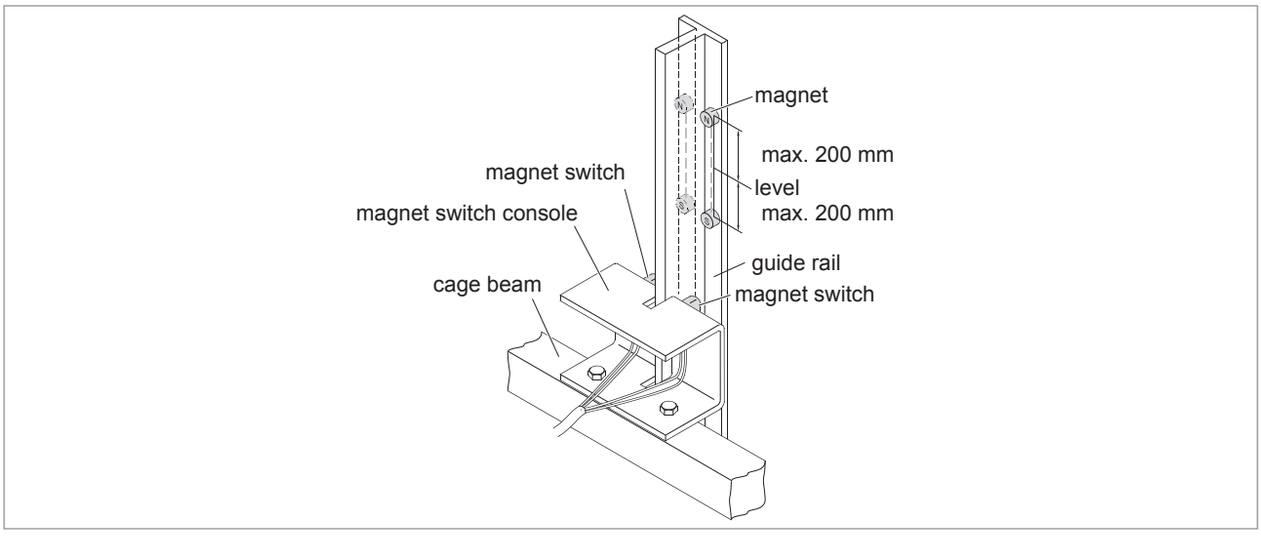


Fig. 4.6: Magnet switch console for absolute positioning: installation of the magnet switch console and magnets

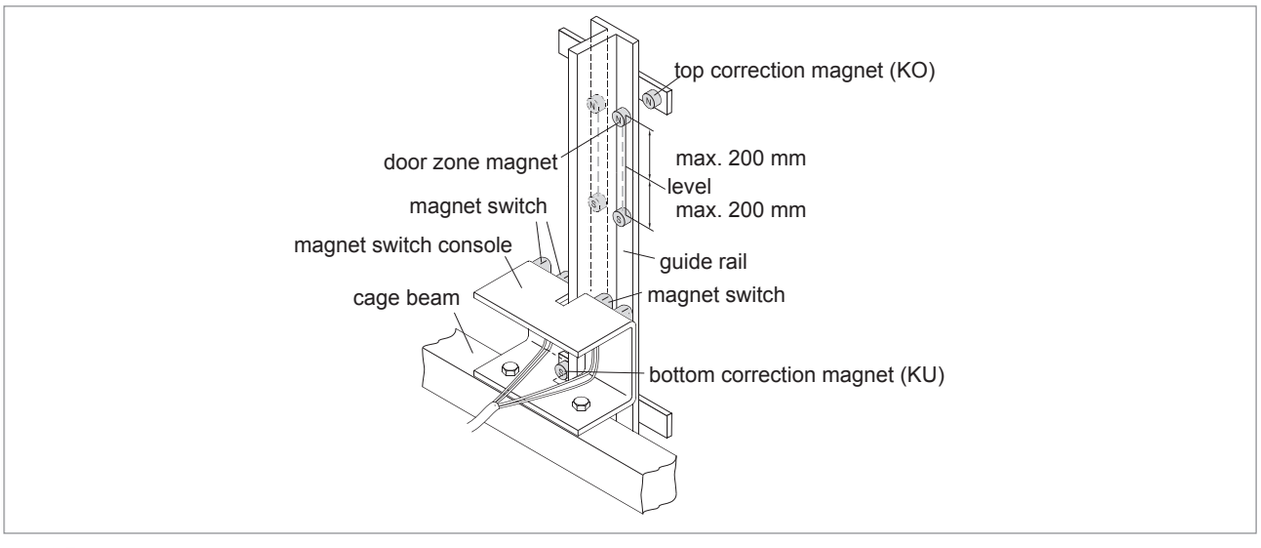


Fig.4.7: Magnet switch console for incremental positioning: installation with 4 magnets

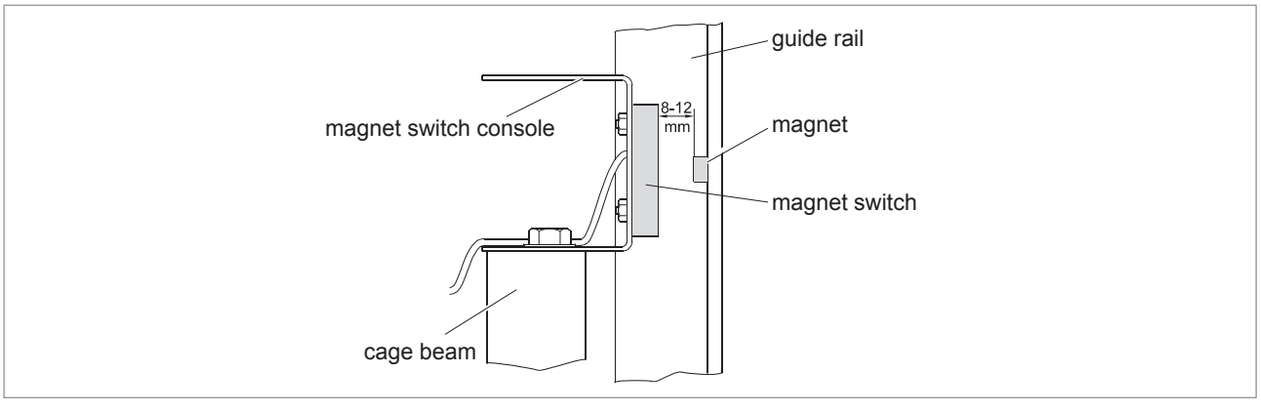


Fig. 4.8: Distance between the zone and correction switches

4.7.3 Connecting the LON bus

Bus plan

All lift systems have various bus modules and cables. For configuring each lift control, a bus plan is supplied by NEW *LIFT* together with the wiring diagrams. All bus modules and their LON bus cables are shown in the bus plan.

The bus plan of the system is used

› for checking the delivery contents prior to starting installation (all modules and cables listed in the bus plan must be part of the delivery; verify correct number and length!)

› as an overview of the used bus module types

› as a connection overview for the bus modules

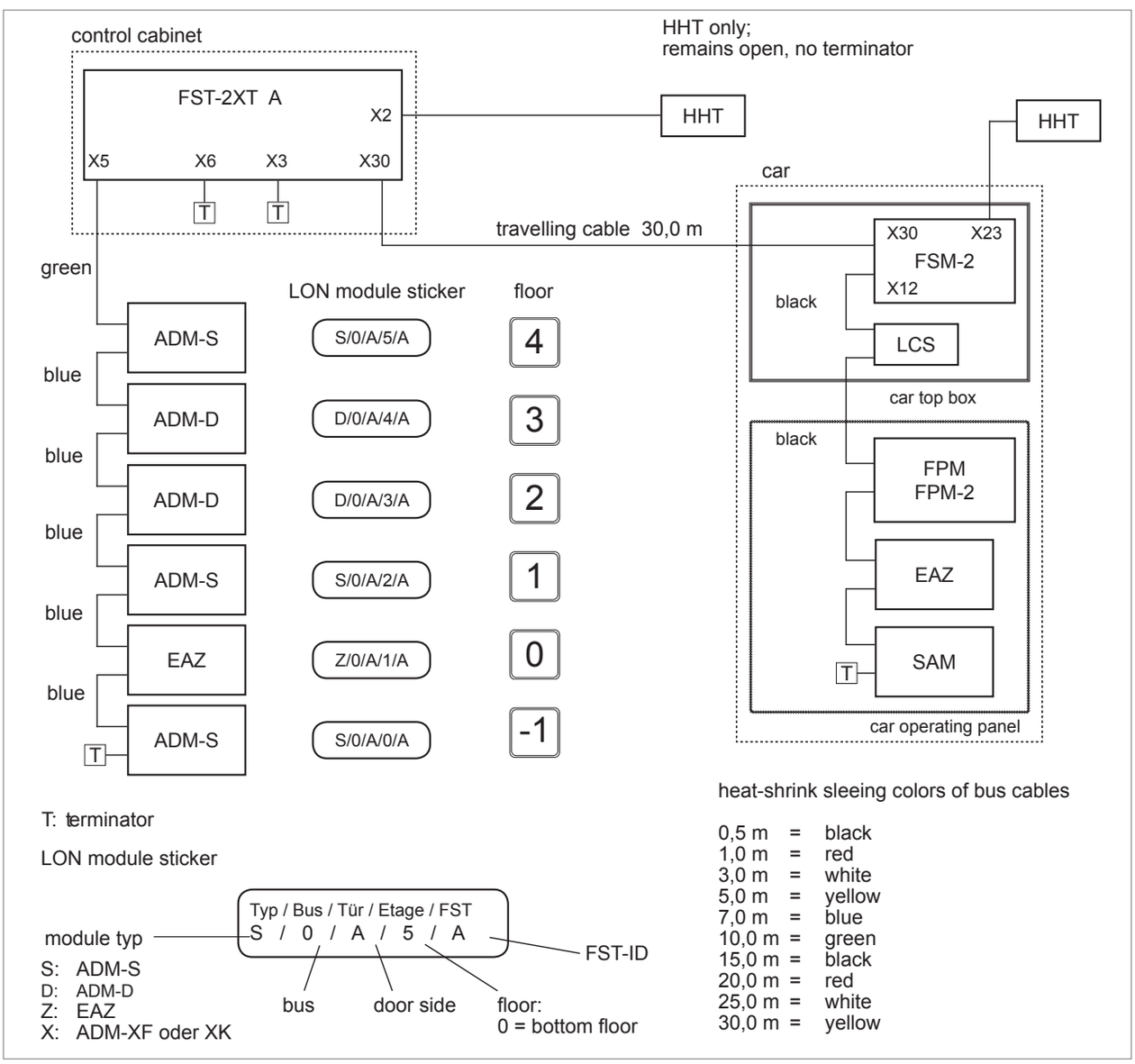


Fig. 4.9: Bus plan of the FST-2XT controller

The landing call modules (ADM) as well as some other components are labelled with stickers marking the exact installation location for the component. A copy of this information is also in the bus plan.

LON bus cables

The supplied LON bus cables are prefabricated to the correct length and have a plug-in connection. Length and number of cables must be in accordance with the bus plan.

The LON bus cables must be installed with suitable strain relief!

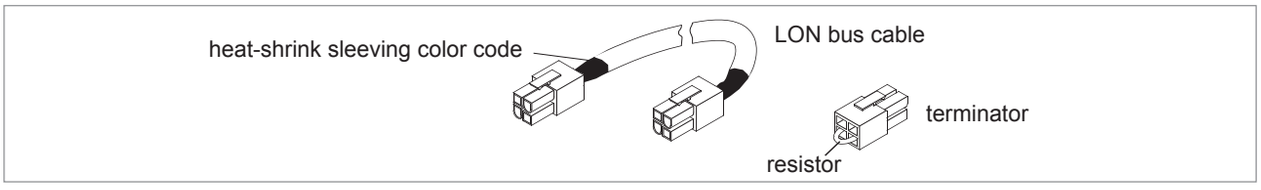


Fig. 4.10: LON bus cable

Colour code of shrink tubing

Colour	Length
black	0.5 m
red	1.0 m
white	3.0 m
yellow	5.0 m
blue	7.0 m
green	10.0 m
black	15.0 m
red	20.0 m
white	25.0 m
yellow	30.0 m

Checking assemblies

Labelling of electronic assemblies must be in accordance with the details in the bus plan; likewise, the installation location must be the planned location. Assembly settings on the FST-2XT controller can be modified at a later time, but this is time consuming.

Landing call modules

The landing call modules are mounted at their installation location either on stud bolts on the landing control panel or in housings in the shaft. The landing control panel components are connected to the landing call modules and floor position indicators according to the wiring diagram. On delivery, the respective jumper assignment is set by default.

Connecting the LON bus

The ADM landing call modules of the closest floor are connected to the FST controller according to the bus plan. The LON bus is looped through from ADM to ADM and/or EAZ floor position indicator, the bus cable is installed in the shaft, and unassigned bus inputs and outputs are terminated with a terminal resistance (terminator).

Not terminated, open bus inputs and outputs can cause the FST controller to malfunction.

Preferably, the „incoming“ bus cable should be connected to X1 (resp. X11 or X21) and the „outgoing“ cable to X2 (resp. X12 or X22). From a functional perspective, this is not relevant. It serves only the purpose of tracking the bus cables.

5 Determination of the shaft positioning system

The FST-2XT lift control system is available with different shaft positioning systems:

› Absolute positioning system
› Incremental positioning

The procedure during installation and commissioning depends on the type of shaft positioning system used! At this point, please determine which system you have.

Each positioning system is packaged separately and has its own installation instructions (in the package).

Below, you will find an overview of the systems recommended by NEW *LIFT*. These are matched to the FST lift controller and, thus, make commissioning a straightforward procedure. These systems can be ordered directly from NEW *LIFT*.

The toothed belt systems available exclusively from NEW *LIFT* are always absolute positioning systems!

5.1 Absolute positioning

The absolute positioning system is installed as described in the supplied installation instructions.

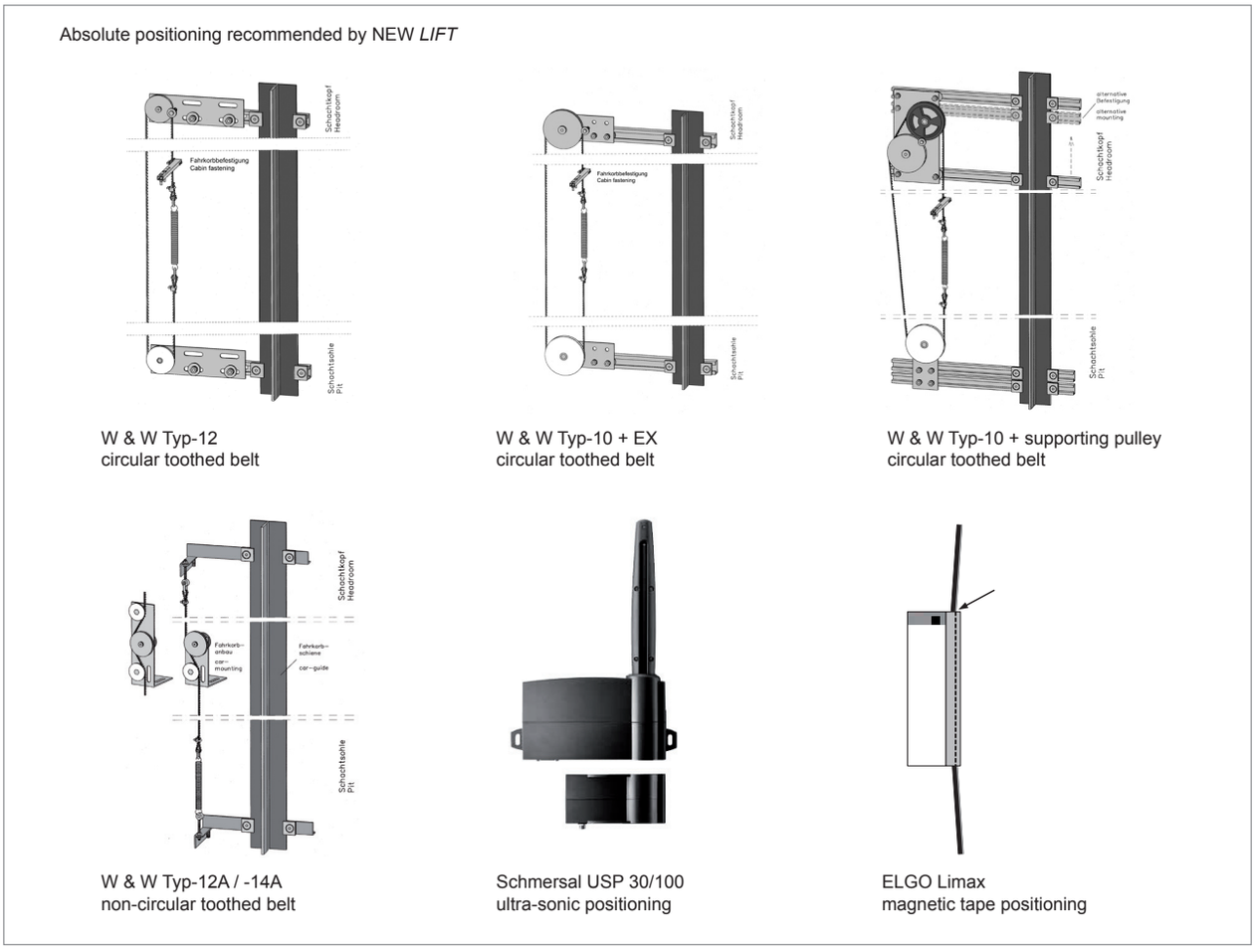


Fig. 5.1: Absolute positioning systems

If you do* not *purchase the positioning system from NEW LIFT, you must absolutely determine which type of positioning system it is.

Connecting the absolute positioning system

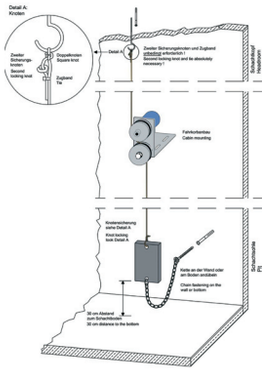
- ► Switch off the controller before connecting the encoder (F4)
- ► The absolute encoder is connected to shaft encoder socket X12 of the FST-2XT board or to X25 of the FSM-2.

The absolute encoder cables of FST-1 and FST-2 are not compatible with one another. Using the wrong absolute encoder cable can destroy electronic components! Plug X12 of the absolute encoder cable must be blue or have „FST-2“ printed on it!

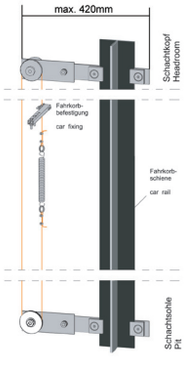
5.2 Incremental positioning

Installation of the incremental positioning system is carried out according to the supplied installation instructions.

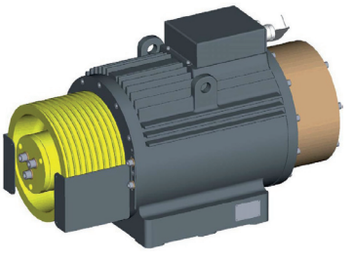
Incremental positionen recommended by NEW *LIFT*



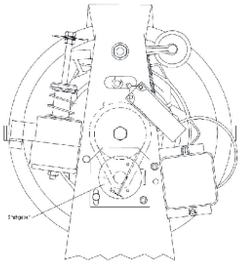
W & W Typ-16A
non-circular cord positioning



W & W Typ-15
circular cord positioning



motor mounted positioning



speed governor
incremental positioning

Fig. 5.2: Incremental positioning systems

If you do* not *purchase the positioning system from NEW LIFT, you must absolutely determine which type of positioning system it is.

The incremental encoder is connected to shaft encoder socket X12 of the FST-2XT board or to X25 of the FSM-2.

If the incremental positioning system is used in combination with function „Landing and / or readjustment with open door“, 4 magnet switches are necessary:

› Zone switch A
› Zone switch B
› Correction switch bottom
› Correction switch top

6 Commissioning the FST

The FST-2XT controller is commissioned after all installation work has been completed. Information on the FST-2XT user interface can be found in chapter „3 FST-2XT controller user interface“.

6.1 Commissioning procedure

Prerequisite for commissioning the FST-2XT controller is that all NEW *LIFT* components have been installed, connected and adjusted (see „Fig. 4.1: Recommended installation procedure for NEW LIFT components“.

The FST-2XT controller is **to be commissioned precisely according to the following worksteps**.

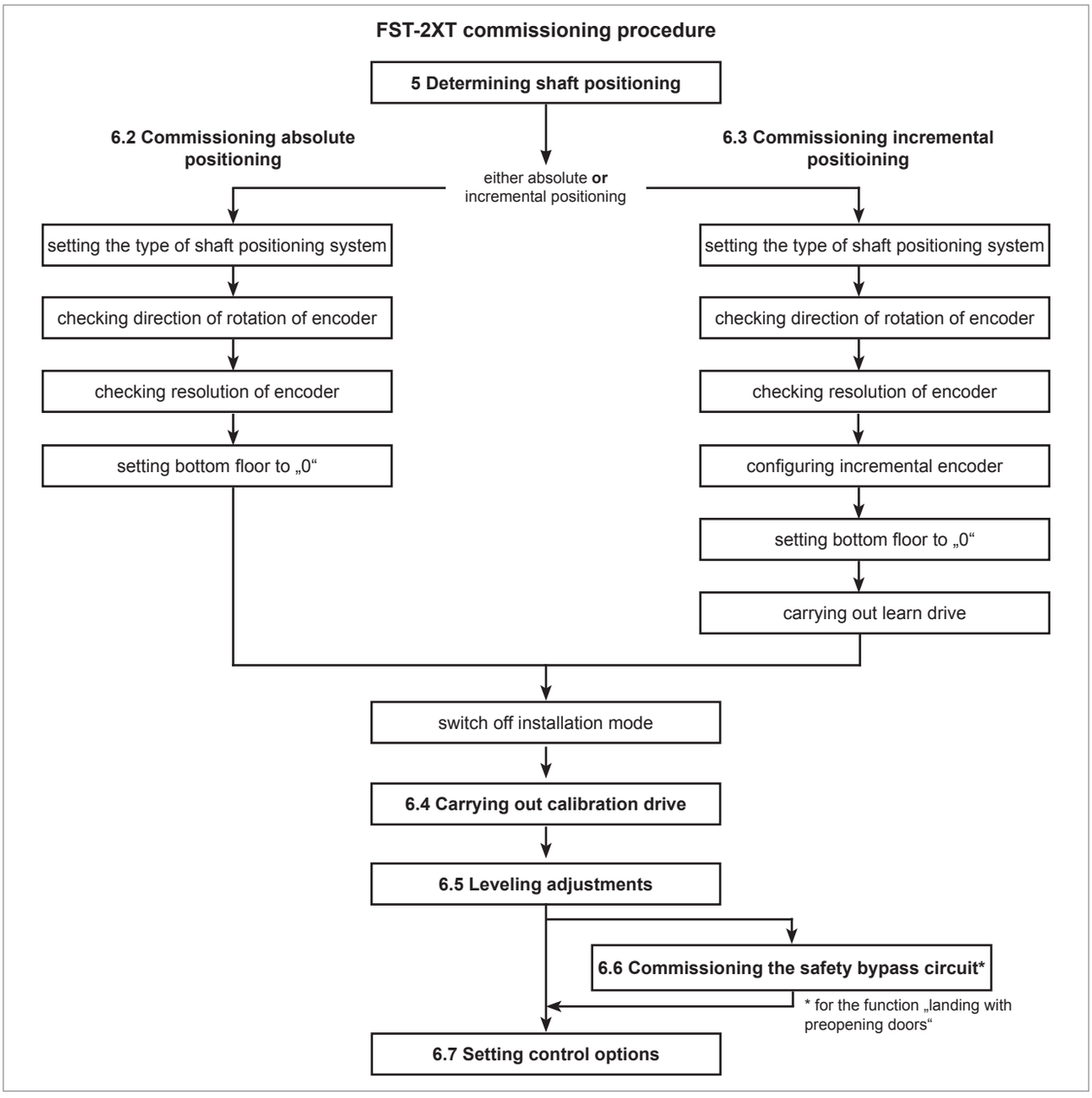


Fig. 6.1: Commissioning the FST-2XT controller

If the system is equipped with an absolute positioning system, please continue with chapter „6.2 Commissioning absolute positioning“ If it is an incremental positioning system, please continue with chapter „6.3 Commissioning incremental positioning“

6.2 Commissioning absolute positioning

Requirements

› Installation and function testing of all assemblies relevant for safety, both electrical and mechanical, has been completed.

› The shaft positioning system has been installed and connected successfully.

› The drive is fully configured.

If one of the set values is changed after commissioning shaft positioning, the determined values must be checked and adjusted if necessary.

6.2.1 Setting the type of shaft positioning system ⛔

► MAIN MENU / Positioning / Global / Encoder
► Use ▲ ▼ to set the value to Absolute.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

6.2.2 Checking the direction of rotation of the encoder

The car must be moved a few centimetres up and down to check the direction of rotation of the absolute encoder.

Checking direction of rotation

► Press Shift+► until „P=.... „ is displayed in line C. The value is the current position of the encoder in [mm].
► Move the car up and down using the auxiliary control.
► Observe the changing encoder value.

The encoder value increases when the car is moving up and decreases when the car is moving down. If the encoder value changes the other way round, the direction of rotation must be changed in the FST-2XT menu.

Example

› correct rotation of the encoder
  » when going up: 5, 6, 7, 8, 9, 10 ... or -10, -9, -8, -7, -6, -5, ...
  » when going down: 10, 9, 8, 7, 6, 5, ... or -5, -6, -7, -8, -9, -10, ...

› incorrect rotation of the encoder
  » when going up: 10, 9, 8, 7, 6, 5, ... or -5, -6, -7, -8, -9, -10, ...
  » when going down: 5, 6, 7, 8, 9, 10 ... or -10, -9, -8, -7, -6, -5, ...

Changing direction of rotation ⛔

► MAIN MENU / Positioning / Global / Direction
► Change direction of rotation with ▲ ▼
► Confirm selection with Enter.
► Exit menu and save settings with ◄.
► Check direction of rotation again.

6.2.3 Checking / setting the resolution of the encoder

The resolution of the shaft positioning system is the factor between encoder impulses and distance covered in [mm]. It depends on the mechanical and electronic design of the positioning system.

⚠ ***If the resolution is not set correctly, the programmed distances between floors are not in accordance with on-site conditions. The car can run into the end switch at nominal speed.***

The resolution must be checked before commissioning and must be changed if necessary. In the event of uncertainties, contact the NEW LIFT service line.

Determining the resolution

The resolution can be determined according to the following table:

Shaft positioning	Resolution
Absolute positioning system with 85 mm toothed wheel	8.5333
Absolute positioning system with 160 mm toothed wheel	4.4796
W&W Type-10	4.4796
W&W Type-10EX	4.4796
W&W Type-10 + supporting roller	4.4796
W&W Type-12	8.5333
W&W Type-12A (car)	8.5333
W&W Type-13	8.5333
W&W Type-13A (car)	8.5333
W&W Type-14A (car)	4.3460
SCHMERSAL USP 30	1.0000
SCHMERSAL USP 100	1.0000
ELGO LIMAX2-Lift (magnetic tape)	8.0000

Check the preset resolution and change if necessary ⛔

► `MAIN MENU / Positioning / Global / Resolution`
► Select the individual figures with ◄ ► and change the respective figure with ▲ ▼.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

When you have found and checked the resolution in the above table, directly continue with chapter „6.2.4 Setting bottom floor to 0 “.

If the required resolution is not listed in the above table, determine the value empirically. For information on doing this, read the following section.

Determining the resolution empirically - Only use if the resolution is not known or not listed!

It is useful to determine the resolution empirically if there are uncertainties regarding the actual resolution of the encoder or if no value from the above table can be used.

For empirical determination, the car is moved up a certain distance. Then the distance actually covered is measured and compared to the virtual distance (FST-2XT software). The rule of proportion is then used to calculate the actual resolution.

Procedure:

► Level car on bottom floor.
► Press Shift+► until „P=.....“ is displayed in line C. The value is the current position of the encoder in [mm].
► Make a note of the current value.
► Move the car up approx. 2 m (6 ft 6“) using the auxiliary control (the longer the distance covered, the more accurate the empirical determination). The displayed P value has changed.
► Make a note of the current value and subtract the first value from it. The calculated difference is the virtual distance covered.
► Measure the actual distance the car covered with a metre rule as accurately as possible.

If the actual distance is the same as the virtual distance, the set resolution is correct.

If the actual distance is greater or shorter than the virtual distance, the set resolution is incorrect. The correct resolution can be calculated using the rule of proportion:

$$\text{Richtige Auflösung} = \text{Momentane Auflösung} \times \frac{\text{Virtuelle Strecke}}{\text{Tatsächliche Strecke}}$$

6.2.4 Setting bottom floor to 0 ⛔

► Level car in floor 0 using the auxiliary control.
► MAIN MENU / Config / Installation / Set Floor [n]
► Use ▲ ▼ to set the value to 00.
► Confirm setting with Enter.
► Set YES with ◄ ►.
► Exit menu and save settings with ◄.

All programmed distances between floors are relative to the current car position in floor 0.

Checking programmed distances between floors

► MAIN MENU / Positioning / Floor
► The value PositionREL in FLOOR [0] is 000000.
► Select all floors with Shift+▲ and check the value PositionREL.

› The value PositionREL corresponds to the programmed distance from the floor level position to the level position of floor 0 in [mm].
› **The value PositionREL of the top floor is the travel height of the system in [mm]!**

Please continue with chapter „6.4 Carrying out calibration drive“

6.3 Commissioning incremental positioning

Requirements

› Installation and function testing of all assemblies relevant for safety, both electrical and mechanical, has been completed.

› The shaft positioning system has been installed and connected successfully.

› The drive is fully configured.

If one of the set values is changed after commissioning shaft positioning, the determined values must be checked and adjusted if necessary.

6.3.1 Setting the type of shaft positioning system ⛔

► `MAIN MENU / Positioning / Global / Encoder`
► Use ▲ ▼ to set the value to `Incremt.`
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

6.3.2 Checking the direction of rotation of the encoder

The car must be moved a few centimetres up and down to check the direction of rotation of the incremental encoder.

Checking direction of rotation

► Press Shift+► until „`P=....` „ is displayed in line C. The value is the current position of the encoder in [mm].
► Move the car up and down using the auxiliary control.
► Observe the changing encoder value.

The encoder value increases when the car is moving up and decreases when the car is moving down. If the encoder value changes the other way round, the direction of rotation must be changed in the FST menu.

Example

› correct rotation of the encoder
» when going up: 5, 6, 7, 8, 9, 10 ... or -10, -9, -8, -7, -6, -5, ...
» when going down: 10, 9, 8, 7, 6, 5, ... or -5, -6, -7, -8, -9, -10, ...

› incorrect rotation of the encoder
» when going up: 10, 9, 8, 7, 6, 5, ... or -5, -6, -7, -8, -9, -10, ...
» when going down: 5, 6, 7, 8, 9, 10 ... or -10, -9, -8, -7, -6, -5, ...

Changing direction of rotation ⛔

► `MAIN MENU / Positioning / Global / Direction`
► Change direction of rotation with ▲ ▼
► Confirm selection with Enter.
► Exit menu and save settings with ◄.
► Check direction of rotation again.

6.3.3 Checking / setting the resolution of the encoder

The resolution of the shaft positioning system is the factor between encoder impulses and distance covered in [mm]. It depends on the mechanical and electronic design of the positioning system.

⚠ ***If the resolution is not set correctly, the programmed distances between floors are not in accordance with on-site conditions. The car can run into the end switch at nominal speed.***

The resolution must be checked before commissioning and must be changed if necessary. In the event of uncertainties, contact the NEW LIFT service line.

Determining the resolution

The resolution can be determined according to the following table:

Shaft positioning	Resolution
W&W Type-15	3.7788
W&W Type-15EX	3.7788
W&W Type-16A (car)	2.4174
LM (PFB) LK200	13.0379
LM (PFB) LK250	10.4303
LM (PFB) LK300	8.6919
LM (Jungbluth) HJ200	13.5618
LM (Jungbluth) HJ250	11
LM (Jungbluth) HJ300	8.6919

Check the preset resolution and change if necessary ⛔

► `MAIN MENU / Positioning / Global / Resolution`
► Select the individual figures with ◄ ► and change the respective figure with ▲ ▼.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

When you have found and checked the resolution in the above table, please directly continue with chapter „6.3.4 Configuring the incremental encoder“ on page 37.

If the required resolution is not listed in the above table, determine the value empirically. For information on doing this, read the following section.

Determining the resolution empirically - Only use if the resolution is not known or not listed!

It is useful to determine the resolution empirically if there are uncertainties regarding the actual resolution of the encoder or if no value from the above table can be used.

For empirical determination, the car is moved up a certain distance. Then the distance actually covered is measured and compared to the virtual distance (FST-2XT software). The rule of proportion is then used to calculate the actual resolution.

Procedure:

► Level car on bottom floor.
► Press Shift + ► until „P=.....“ is displayed in line C. The value is the current position of the encoder in [mm].
► Make a note of the current value.
► Move the car up approx. 2 m (6 ft 6“) using the auxiliary control (the longer the distance covered, the more accurate the empirical determination). The displayed P value has changed.
► Make a note of the current value and subtract the first value from it. The calculated difference is the virtual distance covered.
► Measure the actual distance the car covered with a metre rule as accurately as possible.

If the actual distance is the same as the virtual distance, the set resolution is correct.

If the actual distance is greater or shorter than the virtual distance, the set resolution is incorrect. The correct resolution can be calculated using the rule of proportion:

$$\text{Richtige Auflösung} = \text{Momentane Auflösung} \times \frac{\text{Virtuelle Strecke}}{\text{Tatsächliche Strecke}}$$

6.3.4 Configuring the incremental encoder

Incremental positioning has the additional menu `Increm. Positng.` where the following parameters must be set.

Setting the control register ⛔

► `MAIN MENU / Positioning / Increm. Positng. / Control`
► Select the individual figures with ◄ ► and change the respective figure with ▲ ▼.
► Set the numbers according to „Fig. 6.2: Control register incremental positioning“; the default setting is: `00000000`.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

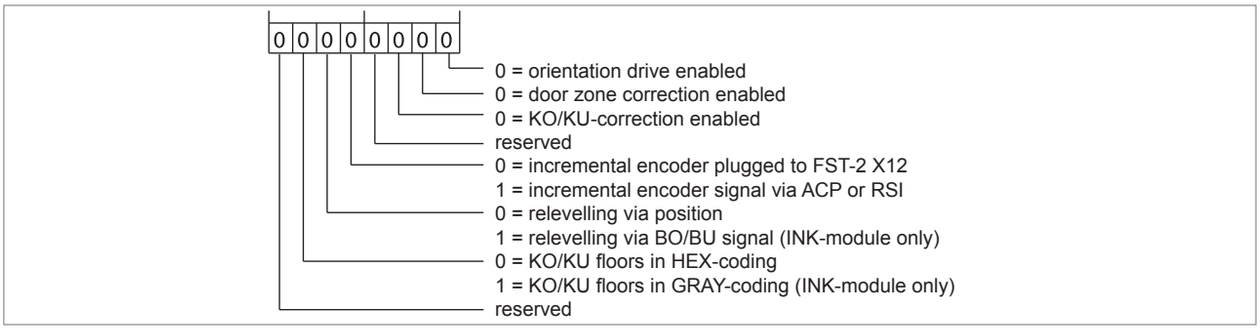


Fig. 6.2: Control register incremental positioning

Setting the zone level ⛔

► `MAIN MENU / Positioning / Increm. Positng. / Zone-B Level`
► Set the value `HI` with ▲ ▼.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

Setting the correction level ⛔

► `MAIN MENU / Positioning / Increm. Positioning. / TC/BC level`
► Set the value `LO` with ▲ ▼.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.

6.3.5 Setting bottom floor to 0 ⛔

► Level car in floor 0 using the auxiliary control
► `MAIN MENU / Config / Installation / Set Floor [n]`
► Use ▲ ▼ to set the value to `00`.
► Confirm setting with Enter.
► Set `YES` with ◄ ►.
► Exit menu and save settings with ◄.

All programmed distances between floors are relative to the current car position in floor 0.

⚠ ***If the zone switches and magnets or the correction switches and magnets are not installed and connected correctly, the car can run into the end switch at inspection speed.***
Checking the installation and wiring of the zone switches, correction switches and correction magnets.

6.3.6 Carrying out learn drive

► MAIN MENU / Configuration / Installation / Learn Drive
► Set YES with ▶ and confirm with Enter.
► Monitor floor position indicator in line D of the FST display. The learn drive is only successful if the floor position indicator changes correctly.

A learn drive is carried out and the values determined for the level position are entered in MAIN MENU / Positioning / Floor / Position ABS.

During the learn drive, the car travels at inspection speed to the second highest floor. There, the speed is reduced to the approach speed. As soon as the car has reached the highest floor, the car comes to an abrupt stop. The car then returns to the second highest floor, again at approach speed.

As soon as the car stops at this floor, a successful learn drive is confirmed in the FST-2XT display with LEARN DRIVE OK.

Checking learn drive results

► Select MAIN MENU / Positioning / Increm. Positng. / Corr.Bottom.
► Select MAIN MENU / Positioning / Increm. Positng. / Corr.Top
► The learn drive was successful if the values entered correspond to the positions of the TC / BC magnets in [mm] relative to the bottom floor.
► Select MAIN MENU / Positioning / Floor.

The learn drive was successful if the values entered in PositionREL, Zone Sw.UP and Zone Sw.DOWN correspond to the position of each floor and its zone magnets in [mm] relative to the bottom floor.

► Use Shift + ▲ to select the individual floors.

6.4 Carrying out calibration drive

The deceleration distances of all possible drive speeds are determined during the calibration drive. The switch-off points for all speeds are calculated using these measured values.

Requirements

› Level positions checked manually (all systems) or learn drive carried out successfully (with INK-incremental positioning only)

› Shaft positioning commissioned

Switching off installation mode

► MAIN MENU / Configuration / Installation / Installation Mode
► Select OFF.
► Confirm selection with Enter.
► Exit menu and save settings with ◄.
►

The start position of the car in the shaft is not relevant for the calibration drive.

Carrying out calibration drive

► MAIN MENU / Config. / Installation / Calibration Drive
► Set YES with ◄ ►.
► Confirm selection with Enter.

Four measuring drives are carried out automatically for each drive speed.

› CALIBRATION-START flashes several times in line B of the FST-2XT display.

› During the measuring drives, a ticker text is displayed in line B. This text provides information on the total number of calibration drives and on the currently performed calibration drive.

› If the measuring drives were successful, CALIBRATION-OK flashes several times in line B of the FST-2XT display.

Following a successful calibration drive, please continue with chapter „6.4.1 Checking positioning accuracy“.

If the calibration drive is not completed successfully despite a number of attempts, the control is unable to determine the deceleration distances for the different speeds.

The deceleration distances of the individual speeds must then **and only then** be adjusted manually.

Manual adjustment of the deceleration distances - only use if the calibration drive was not successful!

The controller requires the approach distance for each drive speed as well as the levelling distance for each floor according to the following figure:

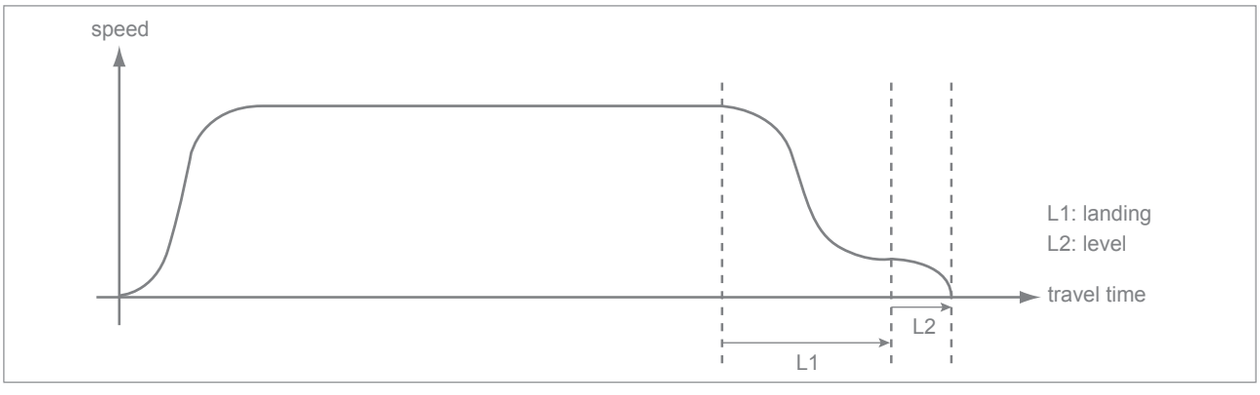


Fig. 6.3: Drive curve with approach distance and level position value

Manual adjustment of the approach distance

► Select MAIN MENU / Positioning / Landing.

Landing [V1] shows the approach distances for speed V1 in both directions.

► Select desired velocity with Enter.

► Select the individual figures with ◄ ► and adjust the respective figure with ▲ ▼.

The approach distances are at their optimum if a crawl drive of approx. 100 mm can be observed during each drive.

Manual adjustment of level position values

► Select MAIN MENU / Positioning / Floor / Level UP or Level DOWN.

Floor [00] shows the level position values for both directions.

► Select desired velocity with Enter.

► Select the individual figures with ◄ ► and adjust the respective figure with ▲ ▼.

The level position values are at their optimum when a positioning accuracy of Pd = ±2 mm can be achieved with every drive (see next step: „Checking positioning accuracy“).

6.4.1 Checking positioning accuracy

The Pd-value indicates whether the drive actually moves its specified distance to exactly within 0 mm. The current physical level position is not relevant at this point in time!

► Use Shift+◄ to set „`Pd = ...`“ in line C.
► Select `TEST MENU / TEST Drive ON`.
► Approach any 2 floors once from above and below.
► Approach the bottom floor from the top floor.
► Approach the top floor from the bottom floor.
► In case of short floor stops, approach each of them once from above and below.

If the deviation of the Pd value for each floor is less than or equal to ±2 mm, the calibration drive has been completed successfully and the level position values have been set correctly.

If the deviation is greater:

► Check drive settings
► Check positioning accuracy of motor
► Check load dependency of motor
► Check the slippage in the positioning system (toothed belt, toothed wheel, springs, cables, etc.)
► Re-level the level position values again (see „Manual adjustment of the deceleration distances - only use if the calibration drive was not successful!“)

6.5 Levelling adjustment

Each floor is approached with a car call and the positioning accuracy measured.

⚠ ***When using the incremental positioning, the positioning accuracy in the car may depend on the direction of travel, even though the Pd value displayed by the controller is within the specified tolerance.***

► In this case, the positioning accuracy in the car is only measured when going up.
► Correct the PositionREL values by the amount of the inaccuracy measured when going up.
► Determine the positioning accuracy for downward travel and optimise it by changing parameter `Positioning / Increm. Positng. / ZoneB-Hysters.`

If the car is too high in the downwards direction, the value is to be increased; if it is too low, the value is to be reduced.

Example: Car is 10 mm too high → `ZoneB-Hysters: -8` → Decrease value to `-18`.

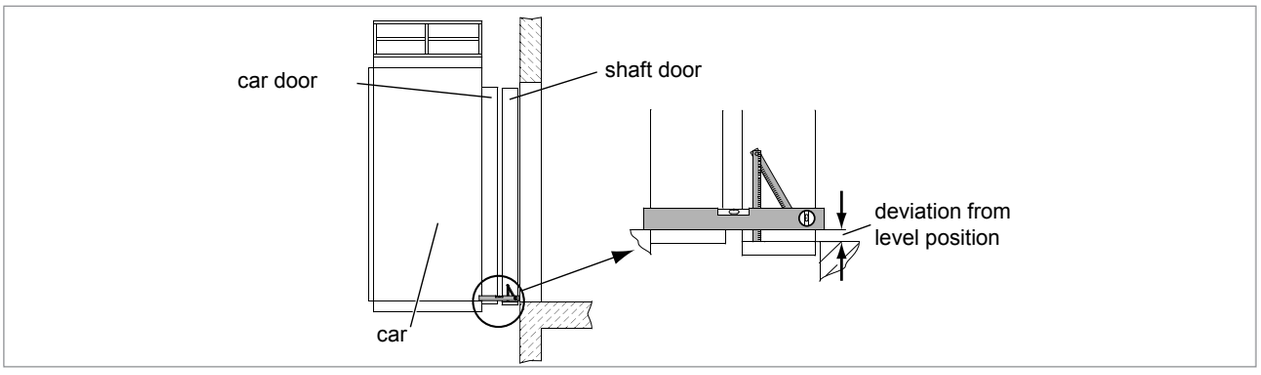


Fig. 6.4: Measuring car deviation relative to level position

Correct the level position

3 options are available for the levelling adjustment:

› Via the FST-2XT controller
Note the positioning accuracy of each floor in order to be able to subsequently make the adjustments on the FST-2XT.

› Via the HHT hand-held terminal
connect the HHT to the bus module in the car. Now you can enter corrections directly and conveniently from the car.

› Via the FPM-1 / FPM-2
If position indicators have been installed in the installation NEW *LIFT*, you can enter corrections directly and conveniently from the car or via the FPM-1 or FPM-2.

A levelling adjustment can only be performed if a sufficient positioning accuracy (Pd value) of 2 mm is ensured!

► Check the Pd value on the FST-2XT controller on all floors (see „6.4.1 Checking positioning accuracy“). Only if the Pd value is less than or equal to 2 mm (optimum: 0 mm) can the levelling adjustment be performed in the car!

The levelling adjustment always applies to the floor on which the car is located at the time the correction is made.

6.5.1 Levelling adjustments on the FST-2XT controller

► `MAIN MENU / Configuration / Installation / Correct-levelling`
► Use ▲ ▼ to set the measured deviation from the level position
► Car is too low: negative sign
► Car is too high: positive sign
► Confirm with Enter
► Select `YES` with ◄ ► and confirm with Enter.
► Exit menu and save settings with ◄ after all floors have been corrected.

6.5.2 Levelling adjustment via HHT handheld terminal

Connect the HHT to a bus connector of the FPM-1 or FPM-2, the EAZ or other bus module located in the car. You can also use the X23 connector on the FSM-2 in the car top box.

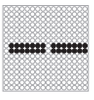
The HHT can also be used to perform the levelling adjustment of all participants of a group without needing to unplug and reconnect the HHT. Connect the HHT to any group participant, press S and select the participant that you would like to adjust.

The settings are made as described in chapter „6.5.1 Levelling adjustment on the FST-2XT controller“.

6.5.3 Level adjustment via FPM-1 or FPM-2

► Select `MAIN MENU / Config / Installation / Correct-levelling Select FPM / ON` on the FST-2XT.

After activating parameter `Correct-Levels-COP`-2, the landing control is disabled and the car remains stopped on the floor with open car doors. Line B of the FST-2XT display shows „`Level adjustment FPM`“ and the car operating panel is released for level adjustment. The following buttons on the car operating panel can now be used for levelling correction:

Car panel button	EAZ display	Function
		Press down the door open button for three seconds: adjustment mode is activated, the floor position indicator displays "--". In adjustment mode, all drives (including re-levelling) are suppressed.
		Car too low: Enter the measured value in mm by successively pressing the **door open button**. The floor position indicator displays the entered value with a down arrow (too low). Here: 9 mm too low
		Car too high: Enter the measured value in mm by successively pressing the **car call for the bottom floor**. The floor position indicator displays the entered value with an up arrow (too high). Here: 8 mm too high.
		Pressing a higher car call (floor 01 or higher) activates the entry in 10 mm increments (car call 01 is acknowledged). Again pressing a higher car call activates the entry in mm increments (car call 01 is not acknowledged).
		Press down the door open button for three seconds: adjustment mode is ended, the floor position indicator briefly displays "OK". Use the car call to move to the next floor at which corrections are to be made. There, adjustment mode can again be activated.

Disabling the car panel for levelling adjustments
`Config / Installation / Correct-Levels-COP / OFF`

After switching the FST-2XT controller off and on, the lift automatically returns to normal operation.

6.6 Commissioning the safety circuit bypass control

The safety circuit bypass control is integrated on the FST circuit board (K20 - K23) and enables car movements in the door zone with open shaft and car doors. This makes approaching and re-levelling with open doors possible.

The safety circuit bypass control requires two magnet switches on the car roof: Zone A (S27) and Zone B (S28)

► The safety circuit bypass control can only be activated and commissioned if these two magnet switches, including magnets, have been installed and connected (see „4.7.2 Installing magnet switch console and magnets“).

► If the two functions „Re-levelling with open doors“and „Approaching with open doors“ are not required, the safety circuit bypass control is not activated and the magnet switches Zone A & B are not required. The following section can be skipped. Commissioning can continue with „6.7 Setting control options“.

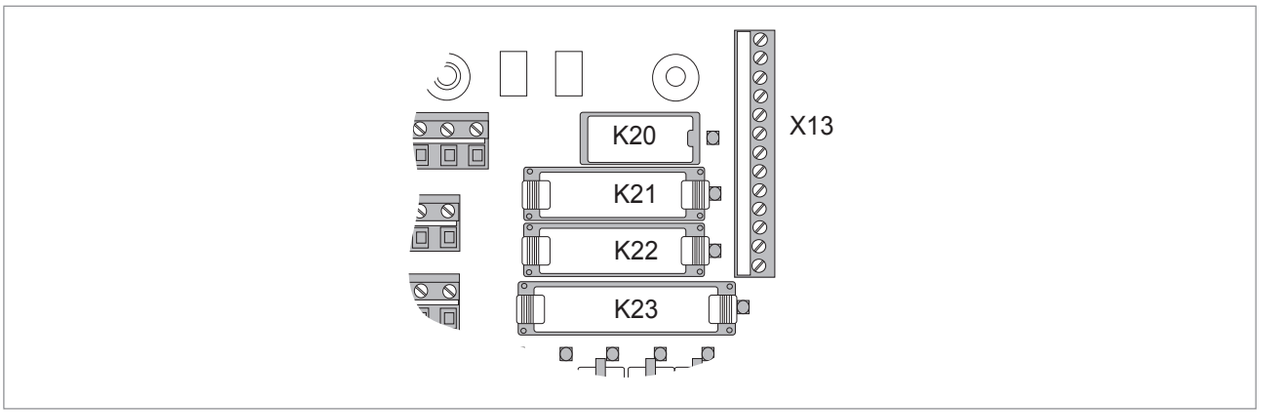


Fig. 6.5: Safety circuit bypass control K20, K21, K22, K23

Please refer to the FST manual for a detailed description of the available functions.

The safety circuit bypass control can be activated in the FST-2XT menu with the following parameters if the zone switches A & B are installed and connected:

Approaching with open doors

► `MAIN MENU / Doors / Doors-Basic / Pre-Opening / Yes`
► Exit menu and save settings with ◄.
► Approach all floors and check if:
»the doors open on approach
»the car is in levelled position

Re-levelling with open doors ⛔

► `MAIN MENU / Drive / Re-levelling`
► Set `YES` with ▲ ▼ and confirm with Enter.
► Exit menu and save settings with ◄.
► Check and optimise re-levelling.

6.6.1 Operating principle of the safety circuit bypass control

The relays K20, K21, K22, K23 are released in the initial state.

If the car approaches the target floor, K21 (zone enabling) is activated by the control.

If the car reaches the door zone, the magnet switches of zone A (S27) and zone B (S28) trigger and activate the two relays K22 and K23. The relays K22 and K23 provide the zone message for the control (car is in the door zone).

If the control software has received the zone message, bypass relay K20 is activated if required, thereby causing K21 to release again. This relay state (K20 activated, K21 released, K22 activated, K23 activated) bridges the door contacts in the safety circuit and allows drive movements with the doors open.

6.6.2 Checking the safety circuit bypass control

The safety circuit bypass control is designed so that malfunction of the two magnet switches is detected and results in a system shutdown.

The two following error states must be checked after commissioning the safety circuit bypass control:

› Zone switch A (S27) is permanently open
› Zone switch A (S27) is permanently closed

Zone switch A (S27) permanently open

► Disconnect zone switch A at terminal FST X13.11

The error is detected while the car is at rest. The control shuts the system down with the error message `DRM-MISSING ZONE`.

Zone switch A (S27) permanently closed

► Bridge zone switch A at terminal FST X13.11 with terminal X1.24.
► Set any call.

The error is detected when the car is approaching the target floor. The control shuts the system down with the error message DRM-MISSING ZONE.

6.6.3 Optimising re-levelling

Re-levelling performance can be optimised with the following parameters found under MAIN MENU / Positioning / Re-levelling Limits.

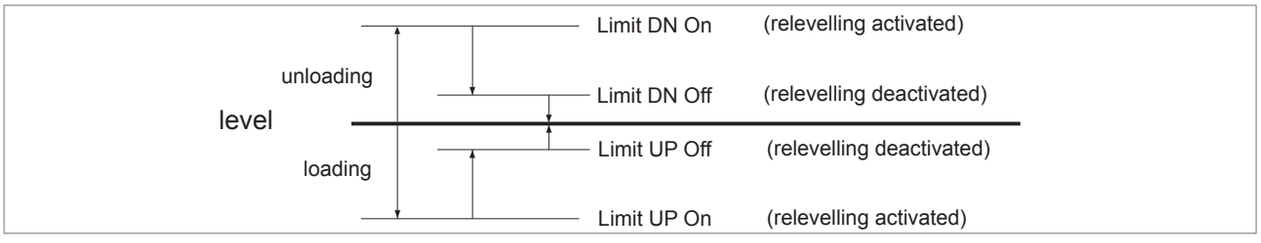


Fig. 6.6: Definition of re-levelling parameters

Activation of re-levelling can be delayed by the time set in MAIN MENU / Drive / Re-levelling Delay.

6.6.4 Readjustment

Adjusting re-levelling limits ⛔

MAIN MENU / Positioning / Re-levelling Limits / Limit UP ON or Limit UP OFF

Set parameter Limit UP ON to approx. 20 mm.

For hydraulic systems, actuate the emergency drain valve or the hand pump; for rope lifts, actuate the auxiliary control and move the car 21 mm over level. Switch off the auxiliary control. The drive will now readjust.

Use Shift+▶ to check „Pd = ...“ in line C

› If Pd=0, readjustment is optimally set.
› If Pd=-x, the drive stops too early
► Increase the value of Limit UP OFF
› If Pd=x, the drive stops too late
► Reduce the value of Limit UP OFF

Perform these settings in an analogous way for MAIN MENU / Positioning / Re-levelling Limits / Limit DN ON and Limit DN OFF.

6.7 Setting control options

6.7.1 Password

The FST-2XT controller is password protected to prevent unauthorised manipulation of control parameters and endangerment of persons or impairment of the lift system resulting from unauthorised manipulation. Three security levels are available for commissioning, customer service and maintenance.

Security levels

No.	Access	Activity
1	High	Commissioning
2	Medium	Customer service
3	Low	Maintenance

The password of the FST controller has four digits. The password is set to „0000“ on delivery.

Setting the password

► MAIN MENU / System / Password setting / High

► Select the individual figures with ◄ ►, adjust the respective digit of the password with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

The same procedure is used for the other levels.

Blocking the main menu

► Select MAIN MENU / Lock Menu and activate passwords with Enter.

► Exit menu and save settings with ◄.

The password must be entered the next time you change from the main screen to the main menu.

6.7.2 Crawl drive

Setting crawl drive ⛔

► MAIN MENU / Positioning / Global / Crawl Distance

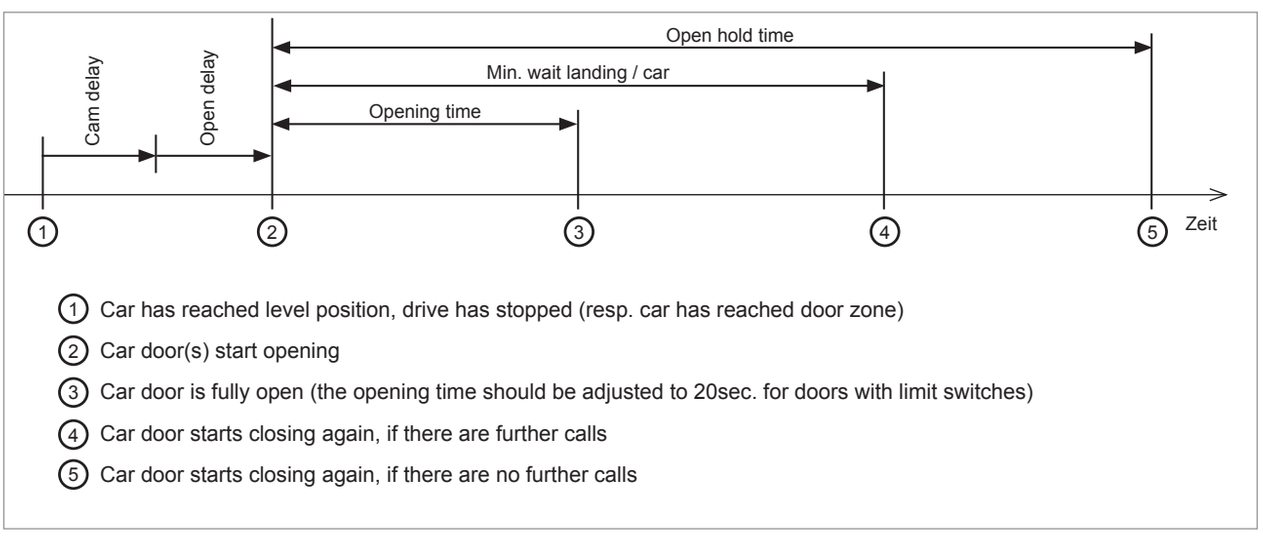
► Select the individual figures with ◄ ► and adjust the respective figure with ▲ ▼.

► Confirm selection with Enter.

► Exit menu and save settings with ◄.

6.7.3 Door times

The function of the different door times is shown in the following diagram:



① Car has reached level position, drive has stopped (resp. car has reached door zone)

② Car door(s) start opening

③ Car door is fully open (the opening time should be adjusted to 20sec. for doors with limit switches)

④ Car door starts closing again, if there are further calls

⑤ Car door starts closing again, if there are no further calls

Fig. 6.7: Diagram of door times

Setting opening time

Opening and closing time for doors without end switches.

► MAIN MENU / Doors / Doors-Selective / Opening Time

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

Setting opening period

Opening period is the time doors remain open when there is no car or landing call.

► MAIN MENU / Doors / Doors-Selective / Open Hold Time

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

Setting reversing time

After a reversing cycle, the door is kept open for the time set under Reversing Time.

► MAIN MENU / Doors / Doors-Selective / Reversing Time

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

Setting change delay

Change delay is the interval between a change of direction of moving doors.

► MAIN MENU / Doors / Doors-Selective / Change Delay

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

Setting minimum wait landing

Minimum wait time on a floor with pending landing calls.

► MAIN MENU / Doors / Doors-Selective / Min.Wait Land

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

Setting minimum wait car

Minimum wait time on a floor with pending car calls.

► MAIN MENU / Doors / Doors-Selective / Min.Wait Car

► Select the individual figures with ◄ ►, adjust the respective figure with ▲ ▼ and confirm with Enter.

► Exit menu and save settings with ◄.

6.7.4 Test triggering of the monitoring function according to EN 81

Unless otherwise noted, you can reset the following errors by performing a fault reset in the test menu (► + Enter) or by switching controller fuse „F4“ OFF / ON.

Contactor monitoring test

If the car moves out of the level position of if the drive contactors have not triggered after an adjustable time, the FST-2XT brings the lift system to a standstill in accordance with EN81/12.7. Error message DRM CONTACTOR MONIT. is displayed.

Test actuation:

› Prevent the contactor monitoring contact or the contactor itself from activating. Important! Hold pressed down for at least 2 sec.

Brake monitor test

For rope lifts, the function of the electric brake can be monitored either separately or together for brake A / B. If, upon start of movement, the brake is not vented after an adjustable time or if the brake is not closed upon stopping, the lift comes to a standstill at the next floor and error message DRM-BRAKE FAILURE is output.

Test actuation:

› Prevent brake monitoring contacts on the drive or brake contactor from closing and opening.

› Enter a drive command.

› Upon completion of the drive, message DRM-BRAKE FAILURE appears.

Drive monitor test

If, during a drive, the car comes to a standstill outside of the target position in spite of the drive being controlled or if the position messages of the car are implausible, the FST-2XT brings the lift system to an immediate standstill. Fault message DRM-DRIVE MONITOR is displayed.

Test actuation:

› TEST MENU / DRM Test

End switch test

A function test of the emergency end switch can be performed by means of test drive `End switch Test Top` and `End switch Test Bot`. To start an end switch test drive, the car must be at least one floor from the test end floor.

The end switch test occurs at approach speed, i.e. the car reduces the speed as with a regular drive, but ignores the levelling reference. If the emergency end switch is functioning correctly, `EMERGENCY STOP` (end switch in the shaft) or `EMERGENCY STOP CAR` (end switch on the car) is displayed in the FST display, depending on the installation location.

Test actuation with rope lifts

› `TEST MENU / End switch Test Top`

› The car drives to the top end switch, where it comes to a standstill. `EMERGENCY STOP` or `EMERGENCY STOP CAR` appears in the display.

› The error can be reset by moving the car outside of the actuation range of the end switch by means of the auxiliary control.

› `TEST MENU / End switch Test Bot`

› The car drives to the bottom end switch, where it comes to a standstill. `DRM-EMERG.LIMIT SW` appears in the display.

Test actuation with hydraulic lifts

› `TEST MENU / End switch Test Top`

› The car drives to the top end switch. `EMERGENCY STOP` or `EMERGENCY STOP CAR` appears in the display.

› As soon as the car is moved outside of the actuation range of the end switch as a result of emergency drainage or leakage in the hydraulic cylinder, it drives to the bottom end switch, where it comes to a standstill. `DRM-EMERG.LIMIT SW` appears in the display.

The switching point of the end switch can be determined by reading the „Pd“ value in the FST-2XT display. Shift + ▶ until „Pd“ appears.

Buffer drive test

During the buffer drive, the car moves **immediately** against the removable buffer at **nominal speed**!

Provided that safety switches are installed on the buffer, the safety circuit, if functioning properly, is interrupted upon operation of the switch. EMERGENCY STOP then appears in the first line of the FST-2XT display.

To start a buffer drive, the car must be at least one floor from the test end floor.

Test actuation:

› Select `TEST MENU / End switch Test Top`, press Enter and keep pressed down until the car comes into contact with the buffer.

› `EMERGENCY STOP` appears in the display.

Deceleration control/monitoring test

By means of these tests, the function of the deceleration control/monitoring (internal software function) at the end floors can be checked. The test is only possible with the deceleration monitoring function activated.

To start a deceleration control/monitoring test, the car must be at least one floor from the test end floor.

Test actuation:

› Select `TEST MENU / V-Mon. Test Top` or `V-Mon. Test Bot.`, press Enter and keep pressed down until the car stops.

› `ES. SPEED MON. TEST!` appears in the display.

Checking the safety circuit bypass control

See chapter „6.6 Commissioning the safety circuit bypass control“.

Motor temperature-monitoring test

If an operational fault occurs at the drive (e.g. due to overheating), it can be reported to the FST-2XT via the motor monitoring input.

If the car is in motion, the drive is ended at the next floor in the current direction of travel and the lift is brought to a standstill for the duration of the operational fault. DRM-MOTOR FAILURE appears in the display.

>In case of oil-hydraulic installations, the car is moved to the bottom floor prior to shutdown.

Test actuation:

› Disconnect the resistor (PTC) sensor during a drive.

› This error is reset by connecting the temperature sensor.

Emergency light and emergency call test

To test the emergency light and the emergency call, park the lift with open doors on any floor. Switch off controller fuse F4 and light fuse F21. The emergency light in the car must then illuminate. Now press the emergency call button in the car, in the shaft pit or on the car roof to test the emergency signal.

6.7.5 LON module configuration

For various reasons, it is occasionally necessary to reconfigure a LON module. Previously, this was not possible if a laptop was not available at the installation site.

For this case, an „emergency editor“ is now (beginning with software version V1.100-0301) embedded in the FST LON configuration menu for editing individual LON module configuration data bytes.

Requirements

The LON module editor can be used with the following modules:

› ADM xx

› EAZ xx

› RIO-ADM2 (RIO)

› SPK (speech computer I/F)

Only modules that are in the FST LON module list can be edited. This list is created each time SEARCH LON MODULES is called from the LON CONFIGURATION menu.

Please note that all ADMs in the LON module list appear as ADR.

Expert knowledge is necessary for using the editor since no help functionality is provided and each of the individual bytes of the LON module configuration has a different function.

Please always contact NEW *LIFT* if you do not know exactly which change is necessary for your needs.

Procedure

► Enable Edit mode with LON-EDIT ENABLE=YES.
This value is not stored and is always reset to NO following an FST restart!

► Byte-wise navigation through the configuration data.
For modules that do not appear in the list mentioned above, the changed value is not stored. (see „Fig. 6.8 Overview: editing LON modules“).

► Save value with E.

Before editing, please write down the old values so that they can be restored in case of doubt.

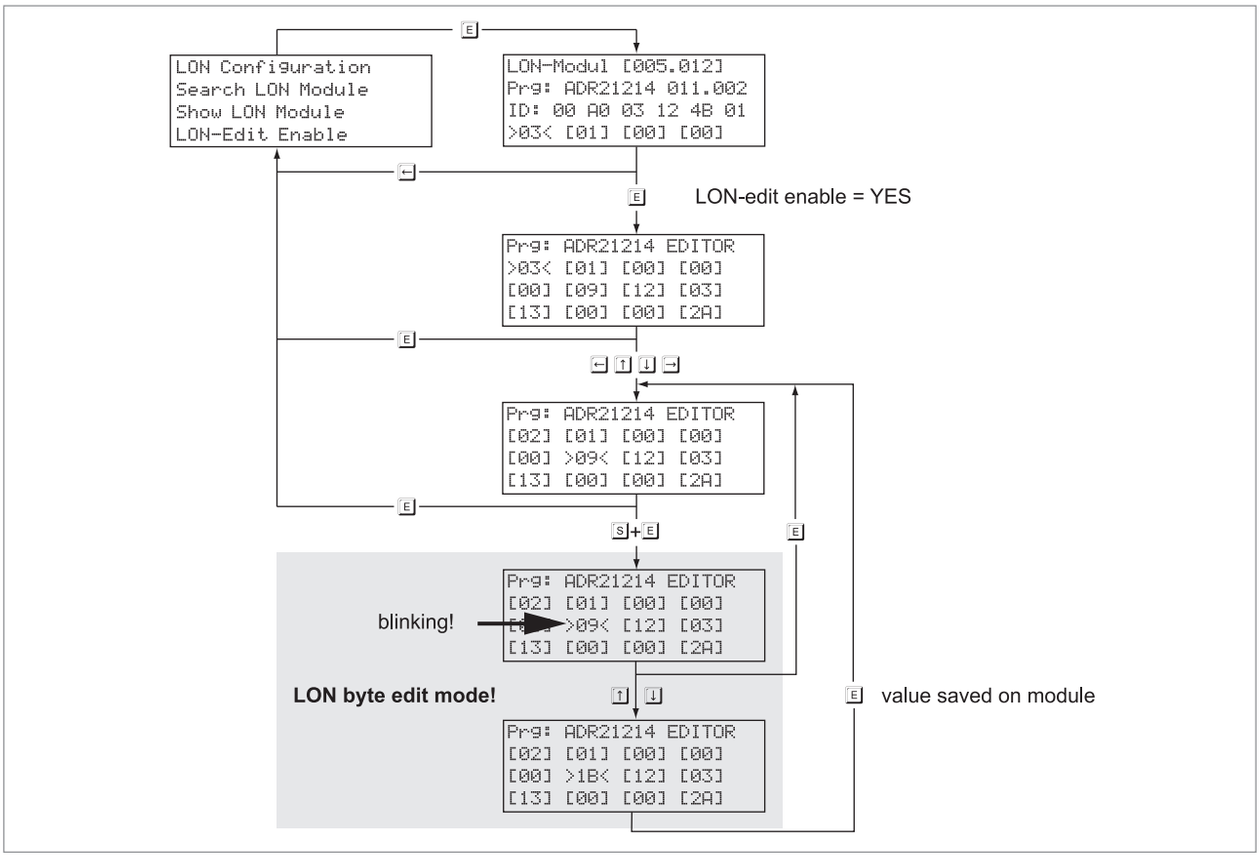


Fig. 6.8 Overview: editing LON modules

Some of the changed configuration values do not take effect until after a cold start of the LON module. This applies, in particular, to the configuration of RIO-2 or SPK modules to another FST-ID number (e.g. FST-A / FST-B). Please note that, in this case, the LON module with the new FST-ID will no longer be visible in the LON module list.

Byte addresses

Prg: ADR21214 EDITOR

[Byte-01] [Byte-02] [Byte-03] [Byte-04]

[Byte-05] [Byte-06] [Byte-07] [Byte-08]

[Byte-09] [Byte-10] [Byte-11] [Byte-12]

Set values

The following lists show important set values in HEX format and their locations in the menu table. Please contact NEW *LIFT* if you require detailed information.

○ Re-start required

Set values ADR20, ADR20B, ADR20E

Byte	Uses	Set values	Comment
01	Floor	[00]-[3F]	
02	Door ○	A=[00], B=[01], C=[02]	
03	Bus no. ○	[00]-[07]	
04	FST-Host ID ○	[RL] 0=FST-A, 1=FST-B, 2=FST-C etc.	R=right FST; L=left FST Exmpl.: R=FST-B, L=FST-C → [12]
05	Special	0=FST-A, 1=FST-B, 2=FST-C etc.	FST selection for ADM-20E
06	Config. bits	Bit 0 / configured Bit 1 / selectivity: 1=call only for left FST Bit 2 / arrow mode lock: 0=FST-controlled; 1= ADM-controlled Bit 3 / arrows: 0=direction arrows; 1=departure arrows Bit 4,5 / reserved Bit 6 / occupied display option Bit 7 / disabled option	Must be set! Normally 0 only if bit 2 = 1
07 08	Input pin 12 Input pin 13	12: Fire recall	
		03: Landing prio	
		14: Remote shutdown	
		15: Fire recall selective	
		16: Remote shutdown selective, left FST	
		36: Remote shutdown selective, right FST	
		17: Smoke alarm	
		09: Landing prio selective	Byte-11 FST-mask: A=01, B=02, C=04, D=08, E=10, F=20, G=40, H=80 Exmpl: A+B=03; A+C=05, A+B+F=23
		1A: Special function	Please enquire with NEW *LIFT*
		0B. Fire recall reset (SIA)	
		0C: Landing superprio	
		0D: Landing superprio selective	See landing prio selective
09	Output pin 7,14	Bit 0-3=output function no. pin 14 Bit 4-7=output function no. pin 7	
10	Add. info	Input-function dependent info pin 12	
11	Add. info	Input-function dependent info pin 13	
12	Not used		

Set values ADR21, ADR22 (penthouse), ADR23 (bank)

Byte	Uses	Set values	Comment
01	Floor	[00]-[3F]	
02	Door ○	A=[00], B=[01], C=[02]	
03	Bus no. ○	[00]-[07]	
04	FST-Host ID ○	[0L]: 0=FST-A, 1=FST-B, 2=FST-C etc.	Left FST
05	Reserved		
06	Config. bits	Bit 0 / configured Bit 1 / selectivity: 1=call only for left FST Bit 2 / arrow mode lock: 0=FST-controlled; 1= ADM-controlled Bit 3 / arrows: 0=direction arrows; 1=departure arrows Bit 4,5/ EAZ mode: 0=hex 1=grey 2=1-of-N Bit 6 / occupied display option Bit 7 / disabled option	Must be set! Normally 0 only if bit 2 = 1

Byte	Uses	Set values	Comment
07 08	Input pin 12 Input pin 13	12: Fire recall	
		03: Landing prio	
		14: Remote shutdown	
		15: Fire recall selective	
		16: Remote shutdown selective, left FST	16: left FST; 36: right FST
		36: Remote shutdown selective, right FST	
		17: Smoke alarm	
		09: Landing prio selective	Byte-11 FST-mask: A=01, B=02, C=04, D=08, E=10, F=20, G=40, H=80 Exmpl: A+B=03; A+C=05, A+B+F=23
		1A: Special function	Please enquire with NEW *LIFT*
		0B. Fire recall reset (SIA)	
		0C: Landing superprio	See landing prio selective
09	Output pin 7,14	Bit 0-3: output function no. pin 14 Bit 4-7: output function no. pin 7	
10	Add. info	Input-function dependent info pin 12	
11	Add. info	Input-function dependent info pin 13	
12	Not used		

Set values ADR30 (EAZ-256)

Byte	Uses	Set values	Comment
01	Floor	[00]-[3F]	
02	Door ○	A=[00], B=[01], C=[02]	
03	Bus no. ○	[00]-[07]	
04	FST-Host ID ○	[0L]: Left FST, A=0, B=1 etc.	
05	Reserved		
06	Config. bits	Bit 0 / configured Bit 1 / selectivity: 1=call only for left FST Bit 2 / arrow mode lock: 0=FST-controlled; 1= ADM-controlled Bit 3 / arrows: 0=direction arrows; 1=departure arrows Bit 4,5, 6, 7: reserved	Must be set! Normally 0 only if bit 2 = 1
07 08	Input pin 8 Input pin 9	12: Fire recall	
		03: Landing prio	
		14: Remote shutdown	
		15: Fire recall selective	
		16: Remote shutdown selective	16: left FST; 36: right FST
		17: Smoke alarm	
		09: Landing prio selective	Byte-11 FST-mask: A=01, B=02, C=04, D=08, E=10, F=20, G=40, H=80 A+B=03; A+C=05, A+B+F=23 etc.
		1A: Special function	Please enquire with NEW *LIFT*
		0B. Fire recall reset (SIA)	
		0C: Landing superprio	Please enquire with NEW *LIFT*
09	Reserved		
10	Add. info	Input-function dependent info pin 8	
11	Reserved		
12	Not used		

6.7.6 CMM activation

CMM (Critical Module Monitoring) modules ensure monitoring of LON modules with critical inputs, e.g. fire and smoke alarms, fire department key and super PRIO key (e.g. bed drives).

Detect modules:

`MAIN MENU / Config / LON Configuration / Generate CMM List / YES`

`Critical Module = 1` means that a CMM module was found.

Activate modules:

`MAIN MENU / Config / LON Configuration / Active CMM / ON`

Test modules:

Unplug LON bus plug to interrupt the bus connection to the CMM module. Error message `DRM-CMM FAILURE` occurs. As a result, a system stop forces the system to come to a standstill.

It may take up to 3 min. for the error message to occur.

6.7.7 Emergency call filter

Acc. to EN81-28, precautions must be taken to enable the emergency call system to filter out non-genuine emergency calls. For this purpose, the emergency-call filter must be capable of deleting an emergency call if one of the following events occur:

› The car is in the unlocking zone and car and shaft doors are completely open

› The car is moving and the doors open on the next stop on a floor

Adjustment options for FST-2XT controllers

`Main menu / Config / Emergency-Call -`

► `No Filter`
► `Observe door status`
► `Ignore door status`

To ensure that the emergency call relays trigger, `No Filter` is set by NEW *LIFT* at the factory; there is one emergency call relay on the FST and one on the FSM-2.

As stipulated in the standard, filtering can occur by setting the following parameters:

► `Observe door status:`
(End switch) emergency-call suppression occurs during the drive and while the car door(s) is/are open.
► `Ignore door status:`
Emergency-call suppression only occurs during the drive.

6.7.8 Creating & loading a backup

The FST has a backup memory function. Stored in this memory is the configuration of all system parameters most recently stored following delivery from the factory. It is recommended that a configuration only be written to the controller backup memory following successful commissioning.

The previously stored backup is overwritten in this process.

If parameters are now changed (e.g. due to an application error) that cause a malfunction or other undesired effect, the „functioning parameters“ can be restored by loading the backup. The prerequisite for this is that a „functioning parameter set“ be stored in the backup.

Create backup: `System / Config --> Backup`

Load backup: `System / Config <--Backup`

On the information page (Shift+Enter) under `CfgBk: DD.MM.YY hh:mm`, you can find the exact time of the last backup.

7 Pin assignment components

7.1 FST-2XT

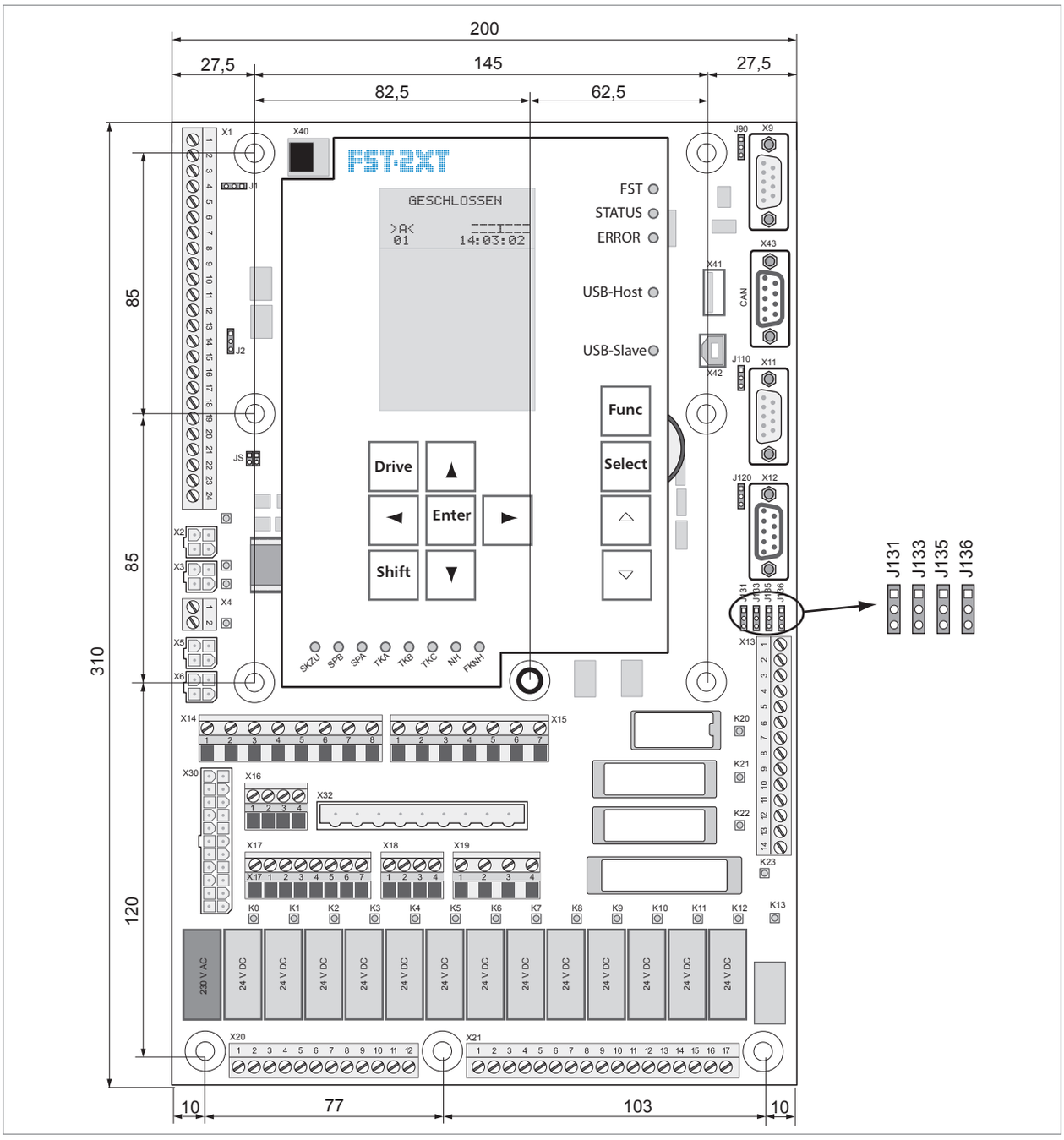


Fig. 7.1: FST-2XT main circuit board

7.1.1 FST-2XT Jumpers

The service jumper J1 is not plugged in.

Load measurement inputs	J2
Switched GND for load measurement inputs	1-2✶
Switched +24 V for load measurement inputs	2-3

Shielding X9	J90
Shielding of the connecting cable on PE	1-2
Shielding of the connecting cable on GND	2-3
Shielding of the connecting cable insulated	open✶

Shielding X10	J100
Shielding of the connecting cable on PE	1-2
Shielding of the connecting cable on GND	2-3
Shielding of the connecting cable insulated	open✶

Shielding X11	J110
Shielding of the connecting cable on PE	1-2
Shielding of the connecting cable on GND	2-3
Shielding of the connecting cable insulated	open✶

Shielding X12	J120
Shielding rotary encoder cable on PE	1-2
Shielding rotary encoder cable on GND	2-3

Position of the shaft positioning system	J131	J133	J135	J136
on the car; FSM-2 X25	1-2	1-2	1-2	1-2
in the shaft / motor room; FST X12	2-3	2-3	2-3	2-3

7.1.2 FST-2XT Terminal strips and sockets

Bus connections

X2: HHT hand-held terminal, remains constantly open and is not equipped with a terminator!

X3: Option bus

X5/X6: Shaft bus A/B

FST: X1	Power supply / Messages / Inputs/outputs
1	+24 V / 2 A (supply voltage of the FST)
2	GND
3	+24 V / 2 A (supply voltage of the FST)
4	Programmable I/O port 0
5	Programmable I/O port 1
6	Programmable I/O port 2
7	Programmable I/O port 3
8	Programmable I/O port 4
9	Programmable I/O port 5
10	Programmable I/O port 6
11	Programmable I/O port 7
12	GND
13	Car lighting OFF
14	Landing calls OFF
15	GND
16	Temperature monitoring motor room
17	Overload
18	Full load
19	Monitoring of brake A
20	Monitoring of brake B
21	Drive monitoring
22	Motor monitoring
23	Standstill monitoring
24	+24 V / 2 A (supply voltage of FST)

FST: X4	Power supply shaft bus / Groups
Pin1	+24 V
Pin 2	GND

FST X9 (J90)	X9: Service PC (RS-232 interface)
1	DCD Data Carrier Detected
2	RxD Receive Data
3	TxD Transmit Data
4	DTR Data Terminal Ready
5	GND
6	DSR Data Set Ready
7	RTS Request To Send
8	CTS Clear To Send
9	RI Ring Indicator

FST: X11 (J110)	DCP for regulator activation
1	Not assigned
2	Not assigned
3	Not assigned
4	+ Tx
5	GND
6	Not assigned
7	+ Rx
8	- Rx
9	- Tx

FST: X12 (J120)	Shaft positioning
1	GND
2	INK A+ / ABS CLK +
3	GND
4	INK B+ / ABS DATA +
5	GND
6	+24 V
7	INK A - / ABS CLK -
8	INK B - / ABS DATA -
9	VCC +5 V

FST: X13	Safety circuit bypass control (SCBC) / TC BC for incremental positioning
1	FSM-2 X15.3 (only if J131 2-3)
2	Top correction switch "TC" (only for incremental positioning)
3	FSM-2 X15.4 (only if J133 2-3)
4	Bottom correction switch "BC" (only for incremental positioning)
5	FSM-2 X15.2 (only if J135 2-3)
6	FSM-2 X15.1 (only if J136 2-3)
7	SCBC zone release (with external SCBC) Input
8	SCBC zone bypass (with external SCBC)
9	SCBC zone signal (with external SCBC)
10	SCBC encoder zone switch A (always bridged with X13.11)
11	SCBC encoder zone switch A
12	SCBC encoder zone switch B
13	Simulation zone switch B (bridge with 13.12 if applicable)
14	SCBC zone release (with external SCBC) Output

FST: X14	Safety circuit query 1
1	Safety circuit closed
2	Door lock or bolt contact door side B closed
3	Door lock or bolt contact door side A closed
4	Car door contact of door side A closed
5	Car door contact of door side B closed
6	Car door contact of door side C closed
7	Emergency stop shaft closed
8	Car emergency stop closed

FST: X15	Safety circuit query 2
1	Bypass UP
2	Bypass DOWN
3	L safety circuit
4	L safety circuit
5	Auxiliary mode bridging function
6	N safety circuit
7	Output bypass doors

FST: X16	Intercom
1	Intercom A or A
2	Intercom A or B
3	Intercom A or C
4	Intercom A or D

FST: X17	Emergency call device
0	+24 V or HSG +12 V (beginning of the emergency call loop)
1	Emergency call
2	Emergency power supply
3	GND
4	Level switch +
5	Level switch -
6	Emergency call line A
7	Emergency call line B

FST: X18	Auxiliary control 24 V
1	+24 V
2	Auxiliary control ON
3	Auxiliary control travel direction UP
4	Auxiliary control travel direction DOWN

FST: X19	Auxiliary control 230 V AC
1	Auxiiary control ON
2	Auxiliary control bridging function
3	L auxiliary control
4	Auxiliary control UP or DOWN

FST: X20	Pre-selection
1	Safety circuit "CLOSED"
2	N safety circuit
3	Pre-selection contact K0,K1 COM
4	Pre-selection contact K0 NO
5	Pre-selection contact K1 NO
6	Pre-selection contact K2, K3 COM
7	Pre-selection contact K2 NO
8	Pre-selection contact K3 NO
9	Pre-selection contact K4,K6 COM

FST: X20	Pre-selection
10	Pre-selection contact K4 NO
11	Pre-selection contact K5 NO
12	Pre-selection contact K6 NO

FST: X21	Pre-selection
1	Pre-selection contact K7 - K8 COM
2	Pre-selection contact K7 NO
3	Pre-selection contact K7 NC
4	Pre-selection contact K8 NO
5	Pre-selection contact K8 NC
6	Pre-selection contact K9, K11, K12 COM
7	Pre-selection contact K9 NO
8	Pre-selection contact K10 COM
9	Pre-selection contact K10 NO
10	Pre-selection contact K10 NC
11	Pre-selection contact K11 NO
12	Pre-selection contact K12 NO
13	Emergency call relay contact K13 COM1
14	Emergency call relay contact K13 NO1
15	Emergency call relay contact K13 NC1
16	Emergency call relay contact K13 COM2
17	Emergency call relay contact K13 NC2

FST: X30 FSM-2: X30	Travelling cable
1	+24 V
2	LON bus car A
3 twisted with pin 15	Twisted with pin 15; assignment options: › Incremental encoder on car: track B+ › Incremental encoder in shaft: bottom correction BC › Absolute encoder on car: SSI DATA+ › Absolute encoder in shaft: freely available
4	Assignment options. › Incremental encoder on car: track A- › Absolute encoder on car: SSI CLK- › Incremental or absolute encoder in shaft: freely available
5 twisted with pin 17	Assignment options: › Speak A › Not assigned
6 twisted with pin 18	Assignment options: › Speak C › Not assigned
7	Door zone encoder A
8	Telephone A
9	Assignment options: › Incremental encoder on car: BC › Level reference A
10	Emergency power +
11	GND
12	GND
13	Emergency call
14	LON bus car B

FST: X30 FSM-2: X30	Travelling cable
15 twisted with pin 3	Assignment options: › Incremental encoder on car: track B- › Incremental encoder in shaft: top correction TC › Absolute encoder on car: SSI DATA- › Absolute encoder in shaft: freely available
16	Assignment options: › Incremental encoder on car: track A+ › Absolute encoder on car: SSI CLK+ › Incremental or absolute encoder in shaft: freely available
17 twisted with pin 5	› Speak B › Not assigned
18 twisted with pin 6	› Speak D › Not assigned
19	Door zone encoder B
20	Telephone B
21	Incremental encoder on car: TC Level reference B
22	+ 24 V

FST: X32 FSM-2: X32	Travelling cable
1	Car door side A
2	Car door side B
3	Car door side C
4	Emergency stop car
5	Bypass UP
6	Bypass DOWN
7	Bypass ON
8	Bypass
9	N safety circuit

FST:X41	USB Host
FST:X42	USB Slave
FST:X43	CAN-interface

7.2 FSM-2

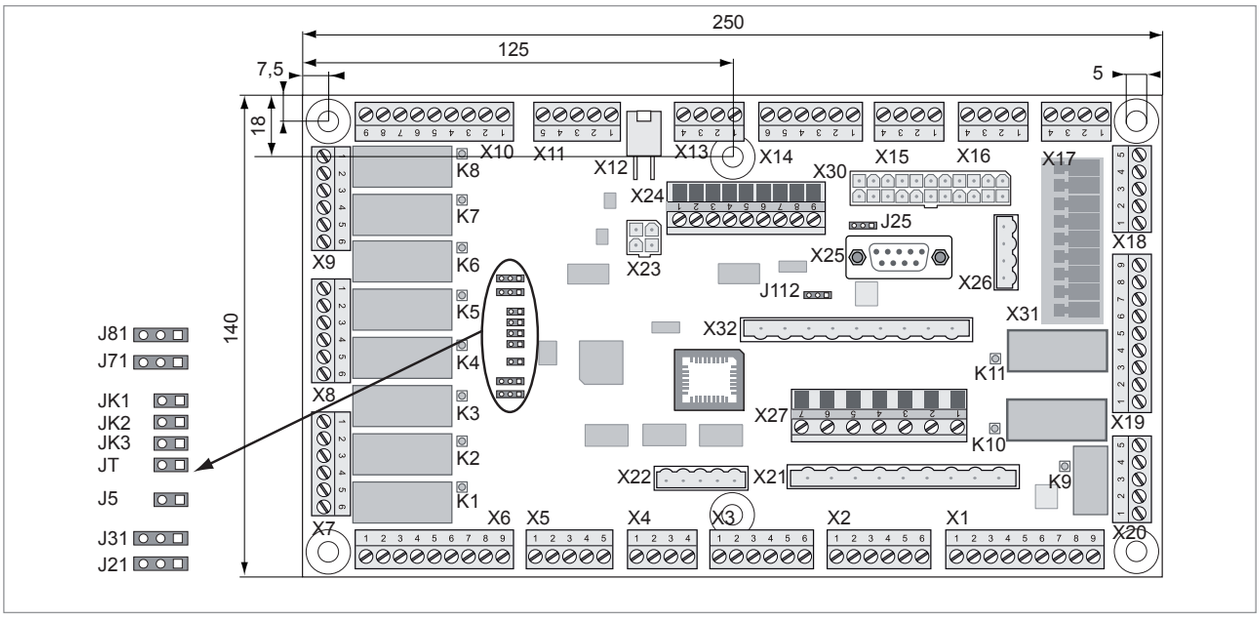


Fig. 7.2: FSM-2

7.2.1 FSM-2 Jumpers

The service jumper J5 is not plugged in.

Car door assignment	JT
Door A or door A & B	open
Door C	plugged

FST / car assignment	Operating mode	JK1	JK2	JK3
FST A	single or group mode	open	open	open
FST B	group mode	plugged	open	open
FST C	group mode	open	plugged	open
FST D	group mode	plugged	plugged	open
FST E	group mode	open	open	plugged
FST F	group mode	plugged	open	plugged
FST G	group mode	open	plugged	plugged
FST H	group mode	plugged	plugged	plugged

Car assignments of the FSM-2 car control module and the FPM-2 car panel module must be identical.

Door end switch CLOSED	J21: Door A	J71: Door B
Door CLOSED end switch must be present, compulsorily switches the door CLOSED relay K3 (door A) or K8 (door B) off	1-2	1-2
Door CLOSED end switch can be present, does not act directly on the door CLOSED relay K3 (door A) or K8 (door B)	2-3	2-3

Door end switch OFF	J31: Door A	J81: Door B
Door OPEN end switch must be present, compulsorily switches the door OPEN relay K2 (door A) or K7 (door B) off	1-2	1-2
Door OPEN end switch can be present, does not act directly on the door OPEN relay K2 (door A) or K7 (door B)	2-3	2-3

encoder cable screen X25	J25
screen connected to GND	1-2
screen connected to PE	2-3

Car lighting monitor	J112
Internal voltage monitoring	1-2
External light sensor (X11)	2-3

7.2.2 FSM-2 Terminal strips and sockets

Bus connections

X12: LON bus car

X23: HHT hand-held terminal, remains constantly open and is not equipped with a terminator!

FSM-2 X1	Safety circuit without bypass 230 V
1	Switch 1
2	PE
3	Switch 1
4	Switch 2
5	PE
6	Switch 2
7	Switch 3
8	PE
9	Switch 3

FSM-2 X2	Safety circuit with bypass 230 V
1	Arrest switch
2	PE
3	Arrest switch
4	Switch 4
5	PE
6	Switch 4

FSM-2 X3	Safety circuit door contacts 230 V
1	Door contact of car door A
2	PE
3	Door contact of car door A
4	Door contact of car door B
5	PE
6	Door contact of car door B

FSM-2 X4	Outputs approach chime
1	+24 V
2	Approach chime UP
3	Approach chime DOWN
4	GND

FSM-2 X5	Inputs load measurement device
1	+24 V
2	Input empty load
3	Input full load
4	Input over load
5	GND

FSM-2 X6 FSM-2 X10	Inputs car door A
1	+24 V
2	End switch door open
3	+24 V
4	End switch door closed
5	+24 V
6	Reversing contact door
7	+24 V
8	Light barrier door
9	GND

FSM-2 X7 FSM-2 X9	Outputs car door A
1	Relay K2, K3 common door signals
2	Relay K3 door signal open door
3	Relay K2 door signal close door
4	Relay K1 for push function / light curtain test NO
5	Relay K1 for push function / light curtain test NC
6	Relay K1 for push function / light curtain test COM

FSM-2 X8	Lock magnets
1	Relay K5 curve door side A NC
2	Relay K5 curve door side A COM
3	Relay K5 curve door side A NO
4	Relay K4 curve door side B NC
5	Relay K4 curve door side B COM
6	Relay K4 curve door side B NO

FSM-2 X11	Car lighting sensor
1	+24 V
2	External sensor
3	+ HSG
4	+8 V (max. 50mA)
5	GND

FSM-2 X13	Emergency call button / Emergency lighting
1	Emergency lighting +
2	Emergency lighting -
3	Emergency call button car NC
4	Emergency call button car COM

FSM-2 X14	Zone switch
1	+24 V resp. +HSG +12 V for A
2	Zone switch A
3	GND
4	+24 V for B
5	Zone switch B
6	GND

FSM-2 X15	Spare conductors for shaft positioning system Only use if the position encoder in the shaft or in the motor room is connected!
1	USP+R
2	USP-R
3	USP+T / TC
4	USP-T / BC

FSM-2: X16	Spare conductors for intercom
1	Speak D
2	Speak C
3	Speak B
4	Speak A

FSM-2: X17	Spare conductors LMS 24/7
1	Level switch -
2	Level switch +
3	Exchange line B
4	Exchange line A

FSM-2: X18	AC door 400V AC
1	PE
2	L3
3	L2
4	L1
5	N

FSM-2: X19	Car lighting / ventilator
1	Relay K10 car lighting
2	PE
3	N car lighting
4	Relay K11 car ventilator
5	PE
6	N car lighting
7	L car lighting
8	PE
9	N car lighting

FSM-2: X20	Emergency call
1	Emergency call button under car
2	Emergency call button under car
3	Relay K9 emergency call forwarding COM
4	Relay K9 emergency call forwarding NC
5	Relay K9 emergency call forwarding NO

FSM-2: X21	Inspection control pod
1	Inspection control pod UP
2	Inspection control pod DOWN
3	Inspection control pod ON
4	Auxiliary control bridging function
5	With bypass safety circuit switches 1 - 3
6	Without bypass safety circuit switches 1 - 3
7	N socket control pod
8	PE
9	L socket control pod

FSM-2: X22	Inspection controller 24 V
1	+24 V
2	Inspection On
3	Inspection UP
4	Inspection DOWN
5	Inspection drive fast

FSM-2: X24	Spare inputs and outputs
1	GND
2	Programmable I/O port72
3	Programmable I/O port73
4	Programmable I/O port74
5	Programmable I/O port75
6	Programmable I/O port76
7	Programmable I/O port77
8	Programmable I/O port78
9	+24 V

FSM-2: X25	Shaft positioning
1	GND
2	INK A+ / ABS CLK +
3	GND
4	INK B+ / ABS DATA +
5	GND
6	+24 V
7	INK A - / ABS CLK -
8	INK B - / ABS DATA -
9	+5 V

FSM-2: X26	Car top box
1	Emergency call button
2	Emergency call button
3	L shaft light button
4	L shaft light

FSM-2: X27	Inspection end switch
1	Inspection end switch UP
2	Inspection end switch UP
3	Inspection end switch DOWN
4	Inspection end switch DOWN
5	Foldaway railing contact
6	Foldaway railing contact
7	N safety circuit

FSM-2 X30: Identical construction with FST X30

FSM-2: X31	Travelling cable 400V AC	FSM-2 Terminal strip
1	N	X18.5
2	L1 AC door	X18.4
3	L2 AC door	X18.3
4	L3 AC door	X18.2
5	N car lighting	X19.3
6	L car lighting	X19.7
7	L shaft light button	X26.3
8	L shaft light	X26.4
9	PE	X19.5

FSM-2: X32	Travelling cable	FSM-2 terminal strip
1	Car door side A	X3.1
2	Car door side B	X3.4
3	Car door side C	X3.6
4	Car emergency stop	X2.1
5	Bypass UP	X27.1
6	Bypass DOWN	X27.3
7	Bypass ON	X27.5
8	Bypass	X214.
9	N safety circuit	X27.7

7.3 FPM-1

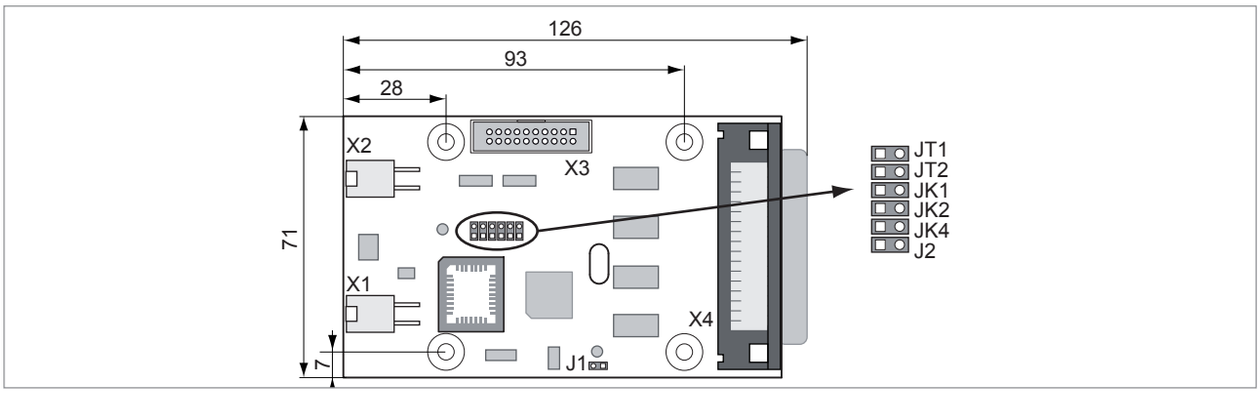


Fig. 7.3: Circuit board drawing FPM-1

7.3.1 FPM-1 Jumpers

The service jumper J1 is not plugged in.

Car door assignment	Mode	JT1	JT2	J2
Door A	single door mode	open	open	open
Door B	single door mode	plugged	open	open
Door C	single door mode	open	plugged	open
Door A+B	dual door mode	open	open	plugged
Door A + B (fireman input X4.4, loading button X4.34 act on door B.)	dual door mode	open	plugged	plugged
Door B + A (calls A and B switched)	dual door mode	plugged	open	plugged

FST / car assignment	Operating mode	JK1	JK2	JK4
FST A	single or group mode	open	open	open
FST B	group mode	plugged	open	open
FST C	group mode	open	plugged	open
FST D	group mode	plugged	plugged	open
FST E	group mode	open	open	plugged
FST F	group mode	plugged	open	plugged
FST G	group mode	open	plugged	plugged
FST H	group mode	plugged	plugged	plugged

Car assignments of the FSM-2 car control module and the FPM-2 car panel module must be identical.

7.3.2 FPM-1 Terminal strips and sockets

Bus connections

X1, X2 LON bus car

FPM-1: X3	car call button extension
1	+ 24 V
2	+ 24 V
3	+ 5 V
4	+ 5 V
5	Reset of SPI drivers
6	GND
7	Serial cycle
8	GND
9	Serial output
10	GND
11	Serial input
12	GND
13	SPI select 3
14	GND
15	SPI select 2
16	GND
17	SPI select 1
18	GND
19	FPE detection
20	GND

FPM-1: X4	Colour code	Car operating panel signals in "single door mode"	Car operating panel signals in "dual door mode"	Technical data
1	wh	Button "Fan ON"	Button "Fan ON"	I; L
2	br	Button "Close door B"	Button "Close door B"	I; L
3	gn	Button "Close door A"	Button "Close door A"	I; L
4	ye	Key switch fireman service	Key switch fireman service	I; L
5	gr	Display 2	Display 2	I/O; L 250 mA / 24 V
6	pk	Overload display	Overload display	I/O; L 250 mA / 24 V
7	bl	Direction "UP"	Direction "UP"	I/O; L 250 mA / 24 V
8	rd	+ 24 V	+ 24 V	P
9	bk	Position indicator 6	Position indicator 6	I/O; L 250 mA / 24 V
10	pr	Position indicator 3	Position indicator 3	I/O; L 250 mA / 24 V
11	gr pk	Position indictor 0 (LSB)	Position indictor 0 (LSB)	I/O; L 250 mA / 24 V
12	rd bl	car call 15	car call 07 door side B	I/O; L 250 mA / 24 V
13	wh gn	car call 12	car call 04 door side B	I/O; L 250 mA / 24 V
14	br gn	car call 09	car call 01 door side B	I/O; L 250 mA / 24 V
15	wh ye	car call 06	car call 06 door side A	I/O; L 250 mA / 24 V
16	ye br	car call 03	car call 03 door side A	I/O; L 250 mA / 24 V
17	wh gr	car call 00	car call 00 door side A	I/O; L 250 mA / 24 V
18	gr br	GND	GND	P
19	wh pk	GND	GND	P
20	pk br	GND	GND	P
21	wh bl	GND	GND	P
22	br bl	+ 24 V	+ 24 V	P
23	wh rd	+ 24 V	+ 24 V	P
24	br rd	+ 24 V	+ 24 V	P
25	wh bk	Position indicator 7 (MSB)	Position indicator 7 (MSB)	I/O; L 250 mA / 24 V
26	br bk	Position indicator 4	Position indicator 4	I/O; L 250 mA / 24 V
27	gr gn	Position indicator 1	Position indicator 1	I/O; L 250 mA / 24 V

FPM-1: X4	Colour code	Car operating panel signals in "single door mode"	Car operating panel signals in "dual door mode"	Technical data
28	ye gr	car call release	car call release	I/O; L 250 mA / 24 V
29	pk gn	car call 13	car call 05 door side B	I/O; L 250 mA / 24 V
30	ye pk	car call 10	car call 02 door side B	I/O; L 250 mA / 24 V
31	gn bl	car call 07	car call 07 door side A	I/O; L 250 mA / 24 V
32	ye bl	car call 04	car call 04 door side A	I/O; L 250 mA / 24 V
33	gn rd	car call 01	car call 01 door side A	I/O; L 250 mA / 24 V
34	ye rd	Landing control OFF or button "Loading control"		I; L
35	gn bk	Button "Open door B" resp. "Partition door"		I; L
36	ye bk	Button "Open door A"	Button "Open door A"	I; L
37	gr bl	Key switch car priority	Key switch car priority	I; L
38	pk bl	Display 1	Display 1	I/O; L 250 mA / 24 V
39	gr rd	Display 0	Display 0	I/O; L 250 mA / 24 V
40	pk rd	Direction "DOWN"	Direction "DOWN"	I/O; L 250 mA / 24 V
41	gr bk	GND	GND	P
42	pk bk	Position indicator 5	Position indicator 5	I/O; L 250 mA / 24 V
43	bl bk	Position indicator 2	Position indicator 2	I/O; L 250 mA / 24 V
44	rd bk	car call release secondary (only active with card readers in car)		I/O; L 250 mA / 24 V
45	wh br bk	car call 14	car call 06 door side B	I/O; L 250 mA / 24 V
46	ye gn bk	car call 11	car call 03 door side B	I/O; L 250 mA / 24 V
47	pk gr bk	car call 08	car call 00 door side B	I/O; L 250 mA / 24 V
48	bk bl rd	car call 05	car call 05 door side A	I/O; L 250 mA / 24 V
49	wh gn bk	car call 02	car call 02 door side A	I/O; L 250 mA / 24 V
50	gn br bk	+ 24 V	+ 24 V	A

7.4 FPM-2

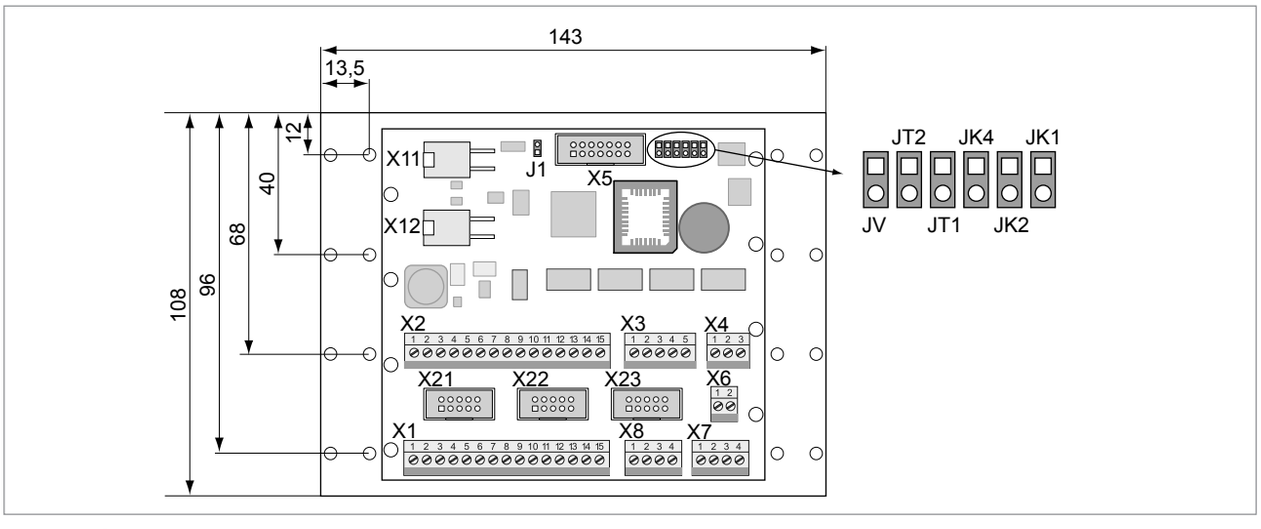


Fig. 7.4: Circuit board drawing FPM-2

7.4.1 FPM-2 Jumpers

The service jumper J1 is not plugged in.

Car door assignment	Door mode	JT1	JT2
Door A ✶	single door mode	open	open
Door B	single door mode	plugged	open
Door C	single door mode	open	plugged
Door A+B	dual door mode	plugged	plugged

FST / car assignment	Operating mode	JK1	JK2	JK4
FST A ✶	single or group mode	open	open	open
FST B	group mode	plugged	open	open
FST C	group mode	open	plugged	open
FST D	group mode	plugged	plugged	open
FST E	group mode	open	open	plugged
FST F	group mode	plugged	open	plugged
FST G	group mode	open	plugged	plugged
FST H	group mode	plugged	plugged	plugged

Installation position EAZ-256.64	JV
Vertical installation position	plugged ✶
Horizontal installation position	open

7.4.2 FPM-2 terminal strips and sockets

Bus connections

X11, X12 LON bus

FPM-2 X1	Function single door mode	Function dual door mode	Connected to	Technical data
1	+24V	+24V	FPM-2 X21.10	P
2	car call 00	car call 00 A	FPM-2 X21.1	I/O; L; 250 mA / 24 V
3	car call 01	car call 01 A	FPM-2 X21.2	I/O; L; 250 mA / 24 V
4	car call 02	car call 02 A	FPM-2 X21.3	I/O; L; 250 mA / 24 V
5	car call 03	car call 03 A	FPM-2 X21.4	I/O; L; 250 mA / 24 V
6	car call 04	car call 04 A	FPM-2 X21.5	I/O; L; 250 mA / 24 V
7	car call 05	car call 05 A	FPM-2 X21.6	I/O; L; 250 mA / 24 V
8	car call 06	car call 06 A	FPM-2 X21.7	I/O; L; 250 mA / 24 V
9	car call 07	car call 07 A	FPM-2 X21.8	I/O; L; 250 mA / 24 V
10	car call release 01	car call release 01	FPM-2 X21.9	O; L; 250 mA / 24 V
11	door OPEN	door A OPEN	FPM-2 X23.1	I/O; L; 250 mA / 24 V
12	door CLOSED	door A CLOSED	FPM-2 X23.2	I/O; L; 250 mA / 24 V
13	key switch car priority	key switch car priority	FPM-2 X23.7	I/O; L; 250 mA / 24 V
14	dar fan	car fan	FPM-2 X23.5	I; L; 250 mA / 24 V
15	GND	GND	FPM-2 X23.9	P

FPM-2 X2	Function single door mode	Function dual door mode	Connected to	Technical data
1	+24V	+24V	FPM-2 X22.10	P
2	car call 08	car call 00 B	FPM-2 X22.1	I/O; L; 250 mA / 24 V
3	car call 09	car call 01 B	FPM-2 X22.2	I/O; L; 250 mA / 24 V
4	car call 10	car call 02 B	FPM-2 X22.3	I/O; L; 250 mA / 24 V
5	car call 11	car call 03 B	FPM-2 X22.4	I/O; L; 250 mA / 24 V
6	car call 12	car call 04 B	FPM-2 X22.5	I/O; L; 250 mA / 24 V
7	car call 13	car call 05 B	FPM-2 X22.6	I/O; L; 250 mA / 24 V
8	car call 14	car call 06 B	FPM-2 X22.7	I/O; L; 250 mA / 24 V

FPM-2 X2	Function single door mode	Function dual door mode	Connected to	Technical data
9	car call 15	car call 07 B	FPM-2 X22.8	I/O; L; 250 mA / 24 V
10	car call release 02	car call release 02	FPM-2 X22.9	O; L; 250 mA / 24 V
11	door OPEN	door B OPEN	FPM-2 X23.3	I; L; 250 mA / 24 V
12	door CLOSED	door B CLOSED	FPM-2 X23.4	I; L; 250 mA / 24 V
13	fireman service	fireman service	FPM-2 X23.6	I; L; 250 mA / 24 V
14	pin 34 function	pin 34 function	FPM-2 X23.8	I; L; 250 mA / 24 V
15	GND	GND	FPM-2 X23.9	P

FPM-2 X3	Designation	Technical data
1	+24V	P
2	display 1	O; L; 250 mA / 24 V
3	display 2	O; L; 250 mA / 24 V
4	display 0	O; L; 250 mA / 24 V
5	GND	P

FPM-2 X4	Designation	Technical data
1	direction UP	O; L; 250 mA / 24 V
2	direction DOWN	O; L; 250 mA / 24 V
3	+24V	P

FPM-2 X6	Designation	Technical data
1	car call release 01	O
2	car call release 02	O

FPM-2 X7 FPM-2 X8	Designation	Technical data
1	emergency light	P
2	GND	P
3	emergency call (COM)	
4	emergency call (NC)	

The EAZ-256.64 can be connected to the FPM-2 X5. This EAZ does not then require its own LON nodes.

The LON bus is connected to X11 and X12 with the usual 4-pin bus connector.

The following pin headers X21, X22 and X23 serve for the connection of the so-called HUNIOLIFT buttons by means of a 10-pin ribbon cable.

FPM2- X21	Designation	Technical data
X21.1	car call 00	I/O; L; 250 mA / 24 V
X21.2	car call 01	I/O; L; 250 mA / 24 V
X21.3	car call 02	I/O; L; 250 mA / 24 V
X21.4	car call 03	I/O; L; 250 mA / 24 V
X21.5	car call 04	I/O; L; 250 mA / 24 V
X21.6	car call 05	I/O; L; 250 mA / 24 V
X21.7	car call 06	I/O; L; 250 mA / 24 V
X21.8	car call 07	I/O; L; 250 mA / 24 V
X21.9	car call release 01	O; L; 250 mA / 24 V
X21.10	+24V	P

FPM2- X22	Designation	Technical data
X22.1	car call 08	I/O; L; 250 mA / 24 V
X22.2	car call 09	I/O; L; 250 mA / 24 V
X22.3	car call 10	I/O; L; 250 mA / 24 V
X22.4	car call 11	I/O; L; 250 mA / 24 V
X22.5	car call 12	I/O; L; 250 mA / 24 V
X22.6	car call 13	I/O; L; 250 mA / 24 V

FPM2- X22	Designation	Technical data
X22.7	car call 14	I/O; L; 250 mA / 24 V
X22.8	car call 15	I/O; L; 250 mA / 24 V
X22.9	car call release 01	O; L; 250 mA / 24 V
X22.10	+24V	P

FPM2- X23	Designation	Technical data
X23.1	door A OPEN	I; L; 250 mA / 24 V
X23.2	door A CLOSED	I; L; 250 mA / 24 V
X23.3	door B OPEN	I; L; 250 mA / 24 V
X23.4	door B CLOSED	I; L; 250 mA / 24 V
X23.5	fan	I; L; 250 mA / 24 V
X23.6	fire recall	I; L; 250 mA / 24 V
X23.7	priority	I; L; 250 mA / 24 V
X23.8	loading	I; L; 250 mA / 24 V
X23.9	GND	P
X23.10	+24V	P

7.5 EAZ-256/40 and EAZ-256/64

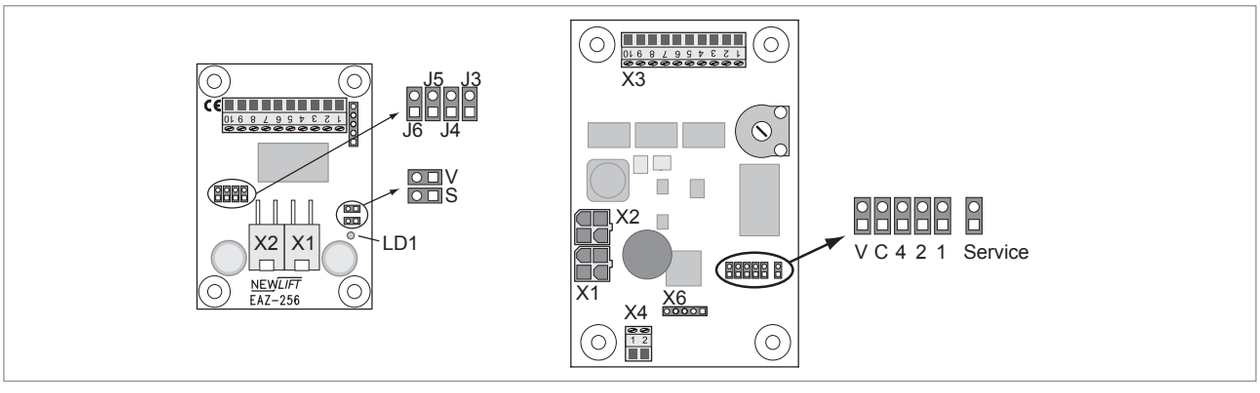


Fig. 7.5: Circuit board drawing position indicators EAZ-256/40 and EAZ-256/64

7.5.1 EAZ-256/40 and EAZ-256/64 Jumpers

The service jumper JS (EAZ-256/40) resp. JService (EAZ-256/64) is not plugged in.

FST / car assignment	EAZ-256/40 J3 EAZ-256/64 J1	EAZ-256/40 J4 EAZ-256/64 J2	EAZ-256/40 J5 EAZ-256/64 J4
FST A	open	open	open
FST B	plugged	open	open
FST C	open	plugged	open
FST D	plugged	plugged	open
FST E	open	open	plugged
FST F	plugged	open	plugged
FST G	open	plugged	plugged
FST H	plugged	plugged	plugged

Installation location	EAZ-256/40 J6 EAZ-256/64 JC
landing	open
car	plugged

Installation position	EAZ-256/40 JV EAZ-256/64 JV
horizontal	open
vertical	plugged

7.5.2 EAZ-256/40 and EAZ-256/64 terminal strip

X3	EAZ-256/40	EAZ-256/64
1	+ 24 V	+ 24 V
2	landing call UP	landing call UP
3	landing call DOWN	landing call DOWN
4	landing call release	landing call release
5	direction UP	direction UP
6	direction DOWN	direction DOWN
7	chime trigger	+24 V
8	key switch 1	key switch 1
9	key switch 2	key switch 2
10	GND	GND

7.6 ADM-S and ADM-D

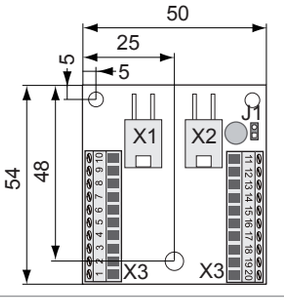


Fig. 7.6: Circuit board drawing hardware ADM-S and ADM-D

ADM-S X3 ADM-D X3	ADM-S Function / programming	ADM-D Function / programming	Technical data
1	+ 24 V	+ 24 V	P
2	Landing call UP	Landing call UP	I/O; L; 350 mA / 24 V
3	Landing call DOWN	Landing call DOWN	I/O; L; 350 mA / 24 V
4	Landing call release	Landing call release	O; L; 350 mA / 24 V
5	+ 24 V	+ 24 V	P
6	Out-of-order, occupied display, special drive	Occupied display, left	O; L; 350 mA / 24 V
7	Chime, floor position 5, Landing prio display	Chime left, special drive	O; L; 350 mA / 24 V
8	Direction UP	Direction UP left	O; L; 350 mA / 24 V
9	Direction DOWN	Direction DOWN left	O; L; 350 mA / 24 V
10	GND	GND	P
11	GND	GND	P

ADM-S X3 ADM-D X3	ADM-S Function / programming	ADM-D Function / programming	Technical data
12	Key switch 1: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	Key switch 1: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	I; L
13	Key switch 2: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	Key switch 2: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	I; L
14	Floor position 4, landing prio display, soft output 0, soft output 1, acoustic click	Landing prio display, acoustic click	O; L; 350 mA / 24 V
15	+ 24 V	+ 24 V	P
16	Floor position bit 0	Direction DOWN right	O; L; 350 mA / 24 V
17	Floor position bit 1	Direction UP right	O; L; 350 mA / 24 V
18	Floor position bit 3	Occupied display, right	O; L; 350 mA / 24 V
19	Floor position bit 2	Chime right, special drive	O; L; 350 mA / 24 V
20	GND	GND	P

7.7 ADM-3

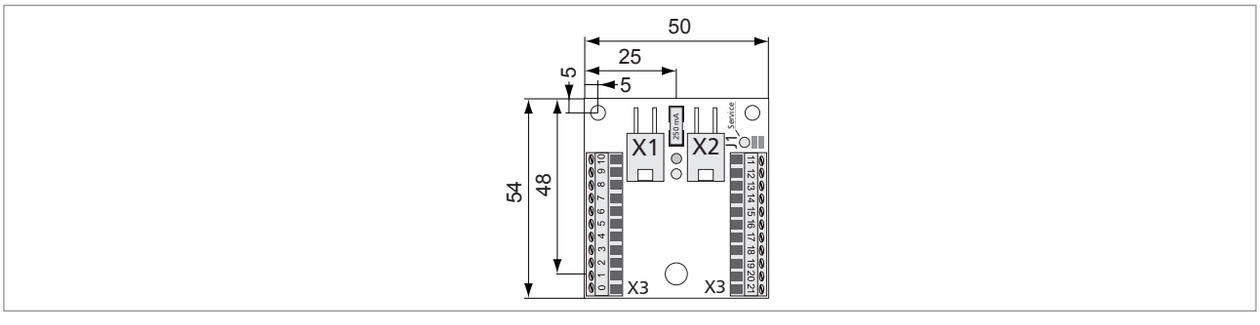


Abb. 7.7: Circuit board drawing hardware ADM-3

ADM-3 X3	Singel-Function / programming	Double-Function / programming	Technical data
0	Attika, bank controlle mode with user-groups, prio selective call	prio selective call	
1	+ 24 V	+ 24 V	P
2	Landing call UP	Landing call UP	I/O; L; 350 mA / 24 V
3	Landing call DOWN	Landing call DOWN	I/O; L; 350 mA / 24 V
4	Landing call release	Landing call release	O; L; 350 mA / 24 V
5	+ 24 V	+ 24 V	P
6	Out-of-order, occupied display, special drive	Occupied display, left	O; L; 350 mA / 24 V
7	Chime, floor position 5, Landing prio display	Chime left, special drive	O; L; 350 mA / 24 V
8	Direction UP	Direction UP left	O; L; 350 mA / 24 V
9	Direction DOWN	Direction DOWN left	O; L; 350 mA / 24 V
10	GND	GND	P

ADM-3 X3	Singel-Function / programming	Double-Function / programming	Technical data
11	GND	GND	P
12	Key switch 1: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	Key switch 1: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	I; L
13	Key switch 2: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	Key switch 2: fire recall, fire recall selective, fire recall reset, landing prio, landing prio selective, landing prio super, remote shutdown, remote shut-down selective, smoke alarm, soft switch	I; L
14	Floor position 4, landing prio display, soft output 0, soft output 1, acoustic click	Landing prio display, acoustic click	O; L; 350 mA / 24 V
15	+ 24 V	+ 24 V	P
16	Floor position bit 0	Direction DOWN right	O; L; 350 mA / 24 V
17	Floor position bit 1	Direction UP right	O; L; 350 mA / 24 V
18	Floor position bit 3	Occupied display, right	O; L; 350 mA / 24 V
19	Floor position bit 2	Chime right, special drive	O; L; 350 mA / 24 V
20	GND	GND	P
21	Attika, bank controlle mode with user-groups, prio selective call	prio selective call	

7.9 ADM-XF and ADM-XK

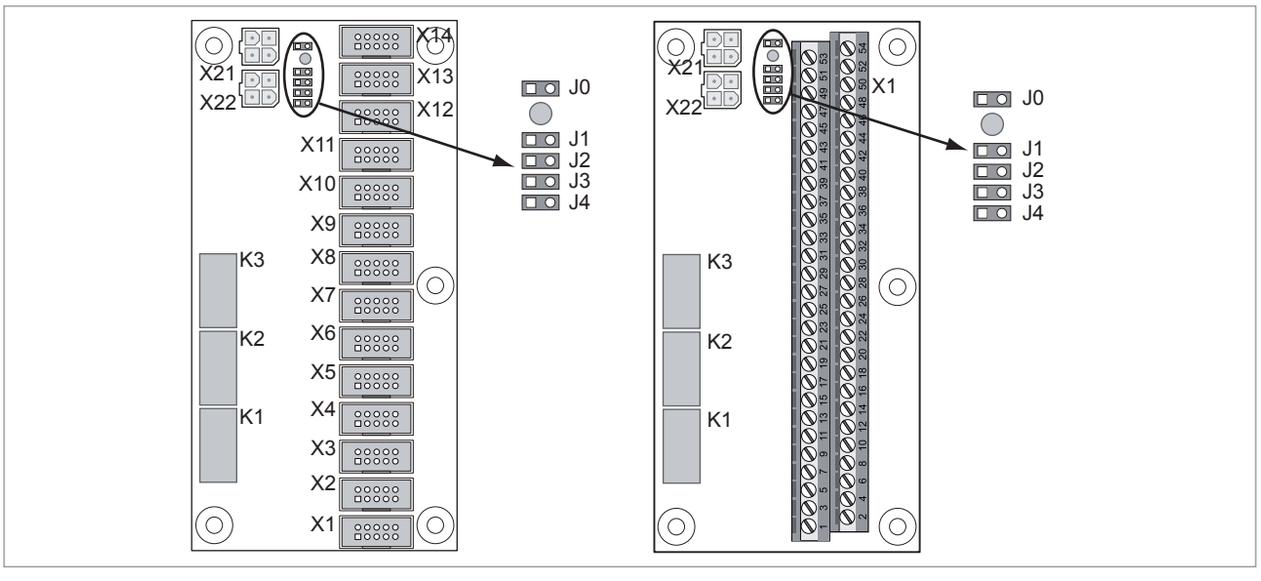


Fig. 7.8: Circuit board drawing ADM-XF and ADM-XK

7.9.1 ADM-XF and ADM-XK Jumpers

The following table lists the floor and door side assignment for the ADM.XF and the ADM.XK. The binary value comprises from right to left the jumper positions of jumpers J1, J2, J3 and J4 (1=closed, 0=open).

Column ADM-XF lists the respective sockets, column ADM-XK the respective terminals for the settings.

ADM-XF	ADM-XK	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110
X1	27 / 28	0A	0B	0B	0B	0B	0A	0A	0A	0A	0A	0A	0A	0B	14A	28A
X2	29 / 30	1A	1A	1B	1B	1B	1B	1A	1A	1A	1A	1A	1B	1A	15A	29A
X3	31 / 32	2A	2A	2A	2B	2B	2A	2B	2A	2A	2A	2A	2A	2B	16A	30A
X4	33 / 34	3A	3A	3A	3A	3B	3A	3A	3B	3A	3A	3A	3B	3A	17A	31A
X5	35 / 36	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A	4B	18A	32A
X6	37 / 38	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5A	5B	5A	19A	33A
X7	39 / 40	6A	6A	6A	6A	6A	6A	6A	6A	6A	6A	6A	6A	6B	20A	34A
X8	41 / 42	7A	7A	7A	7A	7A	7A	7A	7A	0B	7A	7A	7B	7A	21A	35A
X9	43 / 44	8A	8A	8A	8A	8A	8A	8A	8A	1B	8A	8A	8A	8B	22A	36A
X10	45 / 46	9A	9A	9A	9A	9A	9A	9A	9A	2B	9A	9A	9B	9A	23A	37A
X11	47 / 48	10A	10A	10A	10A	10A	10A	10A	10A	3B	10A	0B	10A	10B	24A	38A
X12	49 / 50	11A	11A	11A	11A	11A	11A	11A	11A	4B	0B	1B	11B	11A	25A	39A
X13	51 / 52	12A	12A	12A	12A	12A	12A	12A	12A	5B	1B	2B	12A	12B	26A	40A
X14	53 / 54	13A	13A	13A	13A	13A	13A	13A	13A	6B	2B	3B	13B	13A	27A	41A

7.9.2 ADM-XF and ADM-XK Terminal strips sockets

ADM.XF X1 ... X14	Function	Wire colour	Technical data
1	+24 V	white (wh)	P
2	Landing call UP	brown (br)	I/O; L; 250 mA / 24 V
3	Landing call DOWN	green (gn)	I/O; L; 250 mA / 24 V
4	Release	yellow (ye)	O; L; 25 mA / 24 V °
5	Occupied indicator	grey (gr)	O; L; 40 mA / 24 V *
6	Direction UP	pink (pk)	O; L; 40 mA / 24 V *
7	Direction DOWN	blue (bl)	O; L; 40 mA / 24 V *
8	Key switch 1	red (rd)	I; L
9	Key switch 2	black (bk)	I; L
10	GND	purple (pr)	P

ADM.XK X1	Function	Technical data
1, 3, 5, 7	Occupied display	O; L; 140 mA / 24 V *
2, 6	GND	P
4	Key switch 2 (switched in parallel or jointly used with terminal 8 - 16, 18, 20, 22, 24, 26)	I; L
8	Key switch	I; L
9, 11, 13, 15	Direction UP	O; L; 140 mA / 24 V *
10, 12, 14, 16	Direction DOWN	O; L; 140 mA / 24 V *
17, 19, 21, 23, 25	+24V	P
18, 20, 22, 24, 26	Release	O; L; 70 mA / 24 V °
27	Landing call 00 UP	I/O; L; 250 mA / 24V
28	Landing call 00 DOWN	I/O; L; 250 mA / 24V
29, 31, ..., 53	Landing call 01 UP, landing call 2 UP, ... landing call 13 UP	I/O; L; 250 mA / 24V
30, 32, ..., 54	Landing call 01 DOWN, landing call 2 DOWN, ..., landing call 13 DOWN	I/O; L; 250 mA / 24V

8 Commissioning the GST-XT

8.1 General

On delivery, the FST GROUP Controller (GST-XT) is preconfigured to your specific requirements. Commissioning the GST-XT controller therefore only involves setting (checking) a few parameters and performing a few simple tests to check the group function. The GST-XT controller is not commissioned until after all FST controllers participating in group mode have been commissioned. The following requirements must be met for all lifts participating in group mode prior to commissioning of the FST-GROUP-Controller:

› Fully commissioned shaft positioning (calibration drive successfully completed)
› All landing call modules are connected to the appropriate control cabinets as per the bus plan
› Enabled and functional landing control
› All shaft buses are functional
› Released and functional car doors (test menu)

All parameters mentioned in the following can be found in the GST menu. The GST-XT menu will be available on all FST controllers participating in group mode.

The GST menu is called up via the user interface of the host FST under `MAIN MENU / GST-Menu!`

8.2 LEDs FST GROUP

Following LEDs are located on GST-XT controller.

LED	Colour	State	Meaning	Reason / Remedy
A - H	Green	On	Group participant participates in group mode	
		Flashing ▬ ▬ ▬	FST is detected but does not participate in group mode because it is not configured as a group member	Check parameters under Config_ Groups Settings._Group Member
			FST is detected but does not participate in group mode because the landing control on the FST is switched off.	Landing control OFF › manually via keypad › manually via key switch › as a result of active special function
			FST is detected but does not participate in group mode because the FST is automatically and temporarily excluded from group mode due to a special function.	Special function such as the following is active: › fire recall- or evacuation drive › priority drives › transport of dangerous goods or similar
		Briefly flashes ▪ ▪ ▪	Group enable is deactivated	
		Rapid flashing ▬ ▬ ▬ ▬ ▬ ▬	FST GROUP is currently loading changed FST configurations into the GST memory	Changed configuration used only for the update and comparison of the GST memory.
		Off	FST is not detected because it is switched off.	Switch on FST and/or check power supply
			FST is not detected because it is not connected.	Check cable connection (group)

8.3 Commissioning steps

The GST-XT controller is commissioned according to the following steps

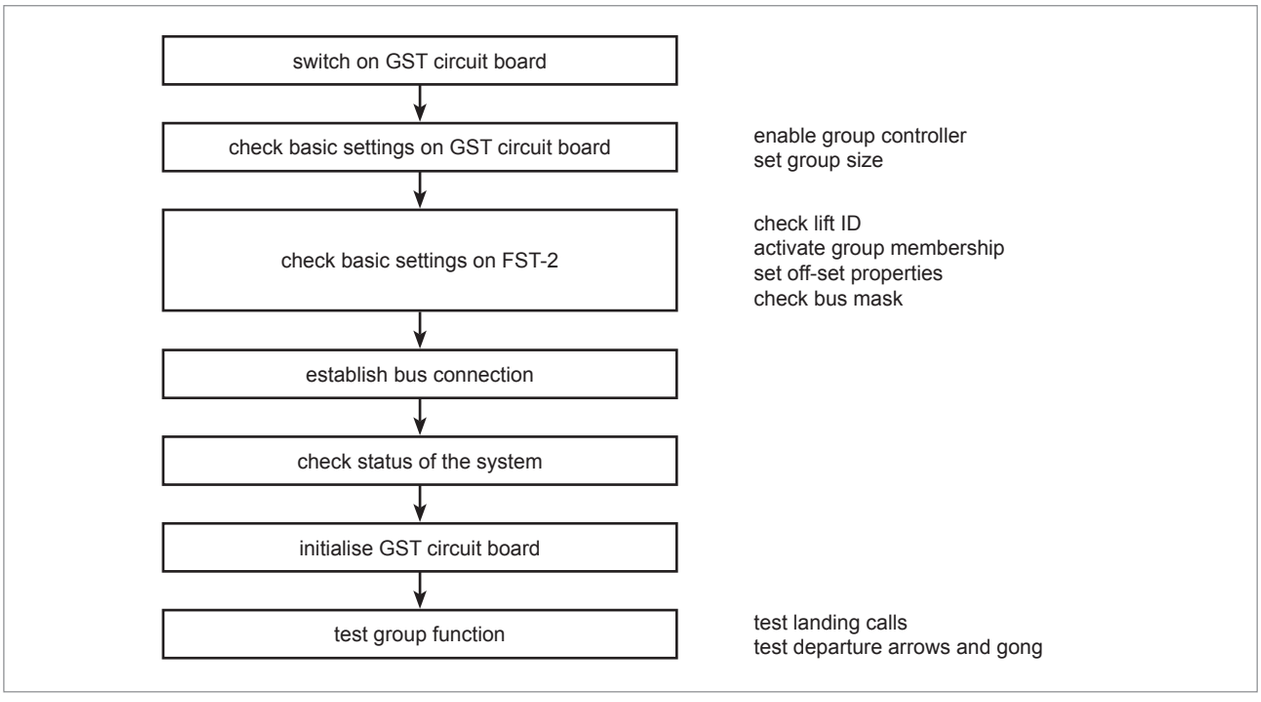


Fig.8.1: Steps for commissioning the FST GROUP

8.3.1 Switching on the GST controller board

Normally the GST-XT controller has its own power supply which should be connected to socket X1 of GST-XT. The GST-XT controller should be connected to FSST controller via LON Bus for GST's menu availability on FST controllers.

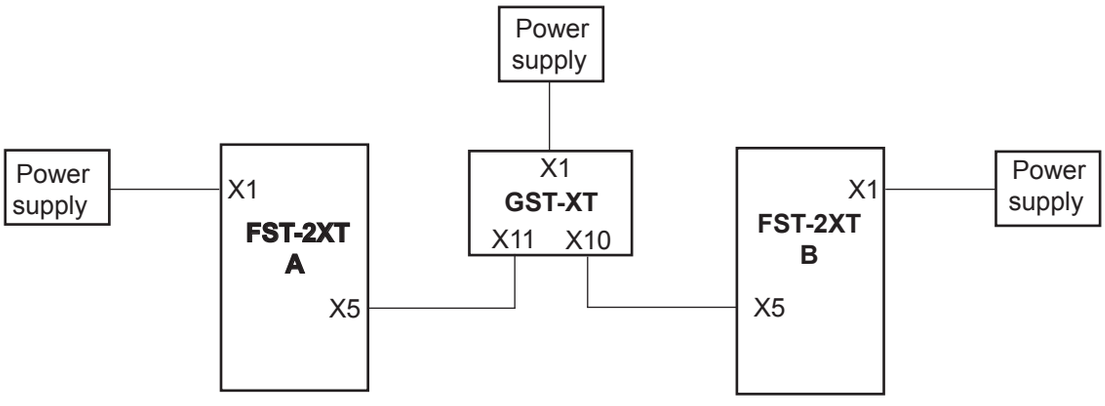


Fig. 8.2: switching on the FST Group

Switching on the GST-XT controller board

► Switch on all the FST Controllers participating in Group.
► Switch on the GST-XT controller.

The LED on GST-XT controller illuminates.

8.3.2 Checking basic settings on the GST-XT controller

The „GST Enable“ and „Number of cars“ basic settings must be checked.

Enabling the group controller

► Select `MAIN MENU / GST-Menu / Configuration / GST Enable.`
► Confirm selection with Enter.
► Select `YES` with ▲ and confirm with Enter.

Setting the group size

► Select `MAIN MENU / GST-Menu / Configuration / Number of cars.`
► Confirm selection with Enter.
► Use ▲/▼ to set the number of lifts participating in group mode and confirm with Enter.

8.3.3 Checking basic settings in FST controllers

The basic settings of all FST controllers participating in group mode must be checked in the FST menu under `MAIN MENU / Config - Group Settings.`

Checking the lift ID-number

All FST-Controllers participating in group mode must have a unique lift ID-number (FST-A (No.0) ... FST-H (No.7)).

The lift ID-number must correspond to the jumper settings of bus modules FSM-2 and FPM-2 as well as the configuration of the landing call modules. If not observed, function of the FST-Controllers cannot be guaranteed!

Only change the lift ID-number upon consultation with the NEW *LIFT* service line!

► Select `MAIN MENU / Config / Group Settings / Lift ID-Number.`
► Note the lift ID-number.
► Repeat the procedure for all FST controllers participating in group mode.

All FST-Controllers participating in group mode have a unique lift ID-number.

Activating group membership ⛔

► Select `MAIN MENU / Config / Group Settings / Group Member.`
► Set `YES` with ▲ ▼ and confirm with Enter.

Setting offset properties

The group offset is the offset between the shafts of the FST-Controllers participating in group mode.

If the bottom floor of all FST-Controllers is the same physical floor of the building, the group offset = 0 (normal case). If this is not the case, the group offset of the FST-Controller that travels to the bottom floor is to be set to 0; for the other FST-Controllers, the value is to be set so that it corresponds to the floor offset of the shafts.

Error-free function of the GST-XT controller board is ensured only if the group offset is set correctly.

In the event of uncertainties regarding the group offset, contact the NEW *LIFT* service line!

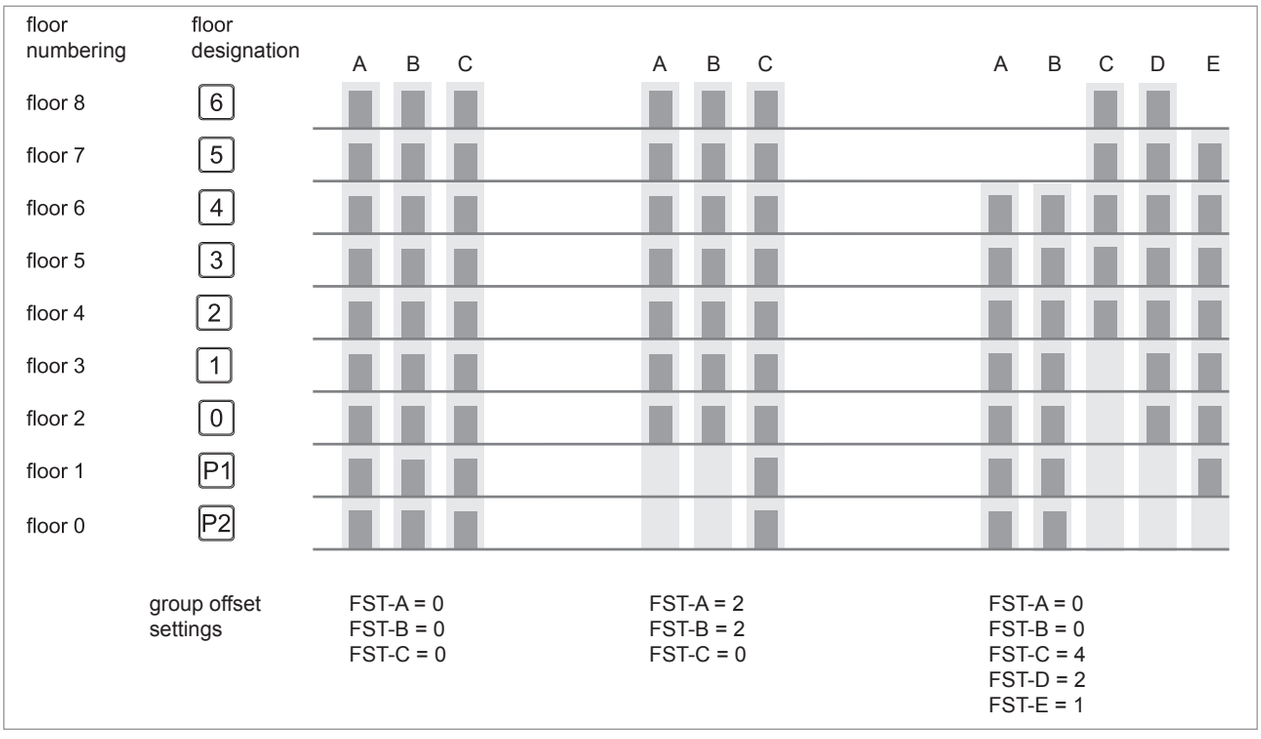


Fig. 8.3: Group offset

Setting offset properties

- ► MAIN MENU / Config / Group Settings / Group Floor Offset.
- ► Use ▲ to set the group offset and confirm with Enter.
- ► Repeat the procedure for all FST controllers participating in group mode.

If one of the FST-Controllers has a group offset > 0, specify for this FST-Controller whether or not the set value is to affect control of the floor position indicator and departure arrow. This occurs separately for the position indicators in the car (flr offset-car) and on the floors (flr offset-landing).

Offset properties for position indicators car & landing

- ► Select MAIN MENU / Config / Group Settings / Flr Offset-Car or Flr Offset-Landing.
- ► Use ▲▼ to set YES or NO and confirm with Enter.
- ► Repeat the procedure for all FST-Controllers whose group offset is > 0.

How the group offset affects control of the floor position indicators and departure arrows is now set.

Correct function of the floor position indicators and departure arrows is only ensured if parameters Flr Offset-Car/ Landing are set correctly.

In the event of uncertainties, contact the NEW *LIFT* service line.

Checking bus masks

The FST menu of each FST-2XT Controller has two bus masks that define to which bus lines of the landing control this FST-2XT Controller responds (ADM-Bus Mask-1 and ADM-Bus Mask-2). Bus-Mask 1 defines to which landing lines the FST-Controller responds in normal group mode. Bus-Mask 2 defines to which bus lines the FST-Controller responds if individual lifts were separated from the group (e.g. by a programmable input/output).

The Bus-Mask 1/2 parameters are 8-bit registers with the following structure:

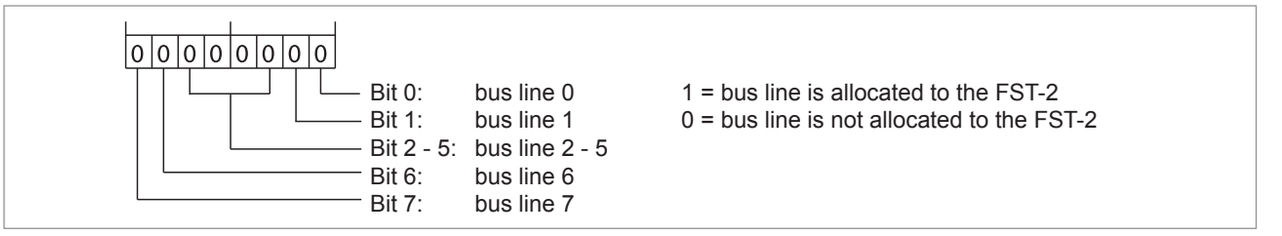


Fig. 8.4: Structure of the Bus-Mask 1 / 2 parameters

Adjust standard setting bus masks

► Select MAIN MENU / Config / Group Settings / ADM-Bus Mask-1.
► Select the individual figures with ◄ ⇨ and adjust both figures to F with ▲ ▼ and confirm with Enter.
► Repeat the procedure for all FST-Controllers.

Normally, the value FF is set for both bus masks, i.e. calls from all bus lines can be sent to all participating FST-Controllers.

Only in special cases or if lifts are dynamically separated from the group is a setting other than FF necessary.
Proper function of the GST-XT controller is ensured only if the bus masks are properly set.
In the event of uncertainties, contact the NEW LIFT service line.

8.3.4 Establishing bus connections

To ensure communication of the FST-2XT Controllers participating in group mode with the GST-XT controller, the connection cables between the individual FST control cabinets must be plugged-in according to the bus plan.

Plugging-in bus cables

► Have the wiring diagrams of each of the FST-2XT Controllers participating in group mode at hand and open the bus plan (last page before the legend: „Bus topology“).
► Establish the cross connections between the FST-2XT control cabinets specified in the bus plan using the bus cables intended for this purpose.

8.3.5 Check the status of the systems

Communication between the FST controllers and the GST-XT controller is functioning properly if:

› LEDs A ... H of the respective FST-Controllers constantly illuminate
› A „G“ appears in line D, column 10 of the display of all FST-Controllers
› The FST-Controllers participating in group mode run in normal mode

Checking the status

The status of the FST-Controllers participating in group mode is shown in the GST menu.

► Select MAIN MENU / GST-Menu / Status Display.
► Confirm selection with Enter.
► Use ▼ to display the status of all systems.

8.3.6 Initialising GST-XT controller

Initialisation of the GST-XT controller is used for the initial reading-in of the control parameters of all connected FST-2XT Controllers, particularly the assignment table for landing calls and shaft doors.

Afterward, the GST-XT Controller is ready for operation.

Loading FST parameters

► Select MAIN MENU / GST-Menu / Configuration / Load FST Config.
► Select YES with ► and confirm with Enter.

The parameter sets of all connected FST-Controllers are transferred to the GST-XT controller via the LON bus. This procedure takes several seconds. The corresponding LEDs A ... H flash several times to indicate that process has completed.

8.3.7 Testing group function

The function of the GST-XT controller is tested by actuating the landing call and observing the call acknowledgement and the departure arrows and floor position indicators. This procedure must be repeated step-by-step on all floors and access sides.

Testing landing calls

► Actuate landing calls in both directions and observe the call acknowledgement.

The call acknowledgements of all landing calls (all bus lines) illuminate in both directions of travel.

One of the group lifts arrives on the floor and extinguishes all call acknowledgements in one direction of travel (all bus lines).

► Use a car call to send the lift that arrived in the direction of travel that was extinguished to a different floor (ideally, one as far away as possible).

A second lift arrives at the floor and extinguishes the still-illuminated call acknowledgements (all bus lines).

► Repeat the procedure on all floors.

Test departure arrows and chime

► Actuate landing calls in both directions and observe the departure arrows.

One of the group lifts arrives at the floor and activates its departure arrow in the current direction of travel.

The arrival gong sounds.

After the car call priority time elapses, both departure arrows are activated.

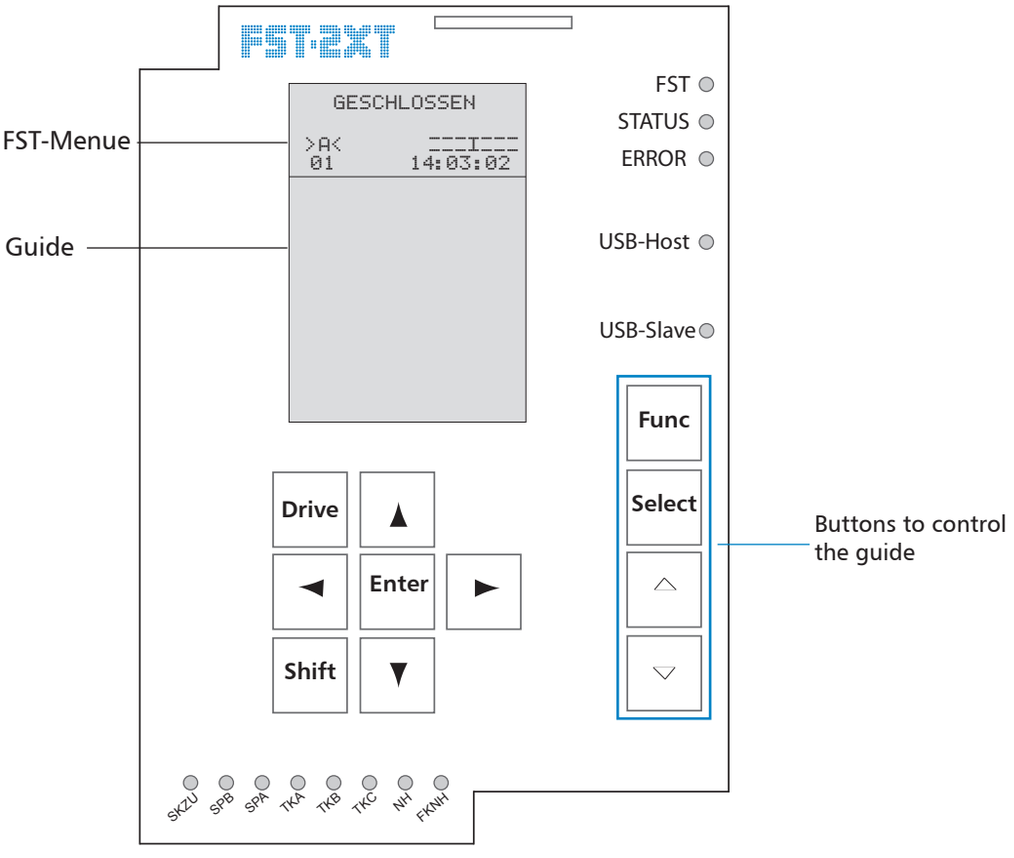
► Use a car call to send the lift to a different floor (ideally, one as far away as possible) and again actuate the landing calls.
► Repeat the procedure until the departure arrows and gongs of all group lifts have been activated once.
► Repeat the procedure on all floors.

The GST-XT controller has been commissioned.

9 Guide

9.1 General

The guide is an extension of the FST-2XT. It engages in any operations of the FST and is operated by a different set of keys. The four blue buttons that are responsible for the guide, are located on the right side of the front panel of the FST-2XT.



9.2 The Display

The display is divided into two parts and consists of the following parts:

› FST-2XT Menue

The upper part of the display (with a dark background), the FST-2XT screen, with the same features, menus and navigation, as well as at previous versions of FST controls. These four lines are the known display controllers and the FST consists of 4 lines of 20 columns. They are served with the underlying white arrow 4 and 3 gray keys. To the appearance and functions of the buttons has not changed, this is all done on proven ways. After switching on and in normal operation, the FST-2XT control to the main screen.

› Guide

The lower part of the display (with light background) shows the guide. The information about the individual menu items and menus of the FST-2XT has additional functions which are described below.

9.3 The buttons

The button Func, Select, ▲ und ▼ arrow are NOT required from the FST-2XT parameters to alter the menu. They serve only to navigate the guides.

Use the buttons ▲ / ▼ arrow, the cursor can be moved in the text box. The color-highlighted text sections may, if the cursor is about to be selected with the Select button. Is not deposited section of text is selected, can be switched back with the Select button to the previous text section.

With the Func button is the Function menu, accessed with a renewed and you press the button, you can leave this menu.

The four functions of the guide can be on the Func button to select.

› Call List
› Help
› Menu Help
› Event List

The desired function is on the colored background of the term chosen by the arrow buttons and selected using the Select button.

Back to the standard menu help you cross the Func button, the cursor with the arrow keys on the Help menu item and make your selection with the Select button, or if another parameter or menu item is called up to the FST-2XT , the guide will automatically switch to the help function.

9.4 The Functions

Call List

Specifies the position of the car, and all internal and external calls.

The resulting table contains three columns:

› In the left column of the existing floors are shown from bottom to top floor with its name.
› The middle column shows the IDR has not received and processed inside calls, they are depending on the side door with an „x“. If no car call before, this is shows „-“.
› The right column ADR indicates the received and not processed outside call, these are either (in direction) on the door side and direction with a „U“, marked with a „D“ (direction from) or with a „B“ (both directions . If there is no landing call before, this is a - shows „-“.

The current destination is marked next to the corresponding floor designation with a „T“.

The position of the car is recognizable by a black rectangle next to the floor designation.

Help

General guidance on the operation of the new FST-2XT.

Menu Help

When navigating in the FST-2XT menu appears automatically on the current menu item or parameter, a short description in the guide.

Is another function of the guides about the Func button is selected while navigating in the FST-2XTmenu, the Help menu in the Function menu function, with the help of the current FST-2XT menu item can be retrieved.

Event List

Shows a filtered list of events in the controller.

10 Error list

The FST-2XT controller stores up to 100 event and error messages. These messages can be called up on the user interface of the FST (3 x Enter), with the USB-Stick or via remote data transmission at any time.

LC-Display

```
ERROR[00037/00040]
28.09 10:18:26    [012]
Door close failed
FLOOR:03 V00 R01 I00
```

A	Event/error no. 37 of 40 total
B	Date / Time / Message Code
C	Text description of event/error
D	Floor Generated signals (V) Actual signals (R) Information byte Infobyte 1 (I)

10.1 Error messages

Code	Message	Description	Comment
1	NMI	Serious CPU error detected via the watchdog monitor through internal fault.	There is a possibility of a hardware error. In this case the circuit board must be replaced.
3	EMERGENCY STOP-ON EMERGENCY STOP-OFF	"ON" and "OFF" states of the emergency device that has triggered are displayed. Interruption of the safety circuit before terminal FST X14.7. All safety circuit inputs are de-energised.	Check the safety circuit inputs.
5	DRIVE-BOOT	Error during start up of drive process.	Internal error
6	DRIVE-WATCHDOG	Major CPU error in drive process area determined by watchdog supervision.	Internal error
7	DRIVE-XFER	Error during transmission of data relevant for drive process.	Internal error
9	OPEN DOOR LOCK	Door contact open while the car is moving. Infobyte2: Safety circuit status: Bit 0 .. 2: not assigned Bit 3: emergency stop Bit 4: door contact C Bit 5: door contact B Bit 6: door contact A Bit 7: door lock ("0" = interrupted, "1" = closed)	The safety circuit of the door circuit was interrupted while the car was moving. Whether the interruption was caused by a car door or shaft door is encoded in Infobyte2.
10	MISSED TARGET	Upon arrival at the target floor, the programmed level position was exceeded or not reached	› Drive is not working accurately or is load dependent. › Increase crawl distance. › Carry out another calibration drive. › Check switch-off points prior to levelling.

Code	Message	Description	Comment
11	DOOR OPEN FAILED	Car door does not open. Infobyte2: 0 = door A 1 = door B 2 = door C Infobyte 3: 1 = door still closed 2 = door partially open	› Check door drive. › Check wiring of the safety circuit. › Check operation of door relays on FSM-2. › Check operation of door end switches and jumpers FSM-2 J21, J31, J71, J81. › State of the safety circuit at the time of the error message is encoded in Infobyte 2.
12	DOOR CLOSE FAILED	Car door does not close. Infobyte2: 0 = door A 1 = door B 2 = door C Infobyte 3: 1 = completely open, OPEN end switch is active 2 = does not close completely, CLOSE end switch does not activate	› The car door is mechanically or electrically blocked. › Check operation of door relays on FSM-2. › Check operation of door end switches and jumpers FSM-2 J21, J31, J71, J81.
13	DOOR LOCK RETRY CNT	Error during closing of doors. Infobyte2: 0 = door A 1 = door B 2 = door C The number of failed lock attempts is displayed under MAIN MENU – Doors – Doors-Basic – Lock fail.	The shaft door contact (lock) does not close even after n attempts.
14	DRM–START PROBLEM	Reset TEST MENU – Fault Reset.	The car does not start moving even with pre-selection active.
15	DRM–DRIVE MONITOR	Monitoring or drive error. No movement of the car could be determined during the drive. Reset TEST MENU – Fault Reset.	› The encoder position does not change even with pre-selection active. › The encoder is faulty. › No electric connection to encoder. › The drive does not move.
16	DRM–ENCODER FAILURE	Plausibility testing of car position with the encoder is faulty. Reset TEST MENU – Fault Reset.	› The encoder is faulty. › Check electric connection of the encoder. › During commissioning: check direction of rotation of the encoder and execute Set floor 0. › Encoder value is outside of the shaft range.

Code	Message	Description	Comment
17	DRM–CAR COMMS FAIL	Communication between the FST controller and the FSM-2 car control module is faulty.	› Plug-in connections of the trailing ribbon cable are not plugged or are loose. › Line break in trailing ribbon cable. › car control module FSM-2 defective. › Check jumper settings JK1, JK2, JK3 on the car control module.
18	DRM–END FLOOR SPEED	Reset TEST MENU – Fault Reset.	The delay control circuit at the top and bottom end floors has triggered.
19	DRM–MISSING ZONE	No zone message available. Reset TEST MENU – Fault Reset.	› The car has reached a level position but does not receive a zone message from the safety device. › Check safety device and zone magnet switches.
20	DRM–BRAKE FAILURE	The brakes do not react or cannot be released. Reset TEST MENU – Fault Reset.	› The brake does not release even with pre-selection active. › The brake does not close even with the car stopped. Monitoring via input FST X1.19, X1.20.
21	DRM–MOTOR FAILURE	Temperature monitoring of the drive has triggered.	Motor overheated. Monitoring via input FST X1.22
22	DRM–FORCED STOP	Input signal "Forced Stop" was active at a programmable input. The car is brought to a standstill with open door on the floor.	Refer to the order-specific wiring diagrams to determine which signal triggered the forced stop. See chapter "5.1 Absolute positioning" on page <?>).
23	DRM–EMERG.LIMIT SW	Overtravel of the bottom floor (rope lifts) or highest floor (hydraulic lifts) according to EN81. Reset TEST MENU – Fault Reset.	The lower or upper emergency end switch has triggered. The contact is queried by terminal FST X14.6 ("TC").
24	DRM–DOOR FAILURE	The car door cannot be moved. Reset TEST MENU – Fault Reset. See menu item DRM-Door.	In spite of active door control, the car door does not move; the control stops the lift.
25	DRM CONTACTOR MONIT.	Contactor monitoring has triggered.	Terminal FST X1.23 must be supplied with 24V while at a standstill. Check circuit according to the wiring diagram. If necessary, increase parameter contactor monitoring time.
26	DRM-SPECIAL I/O-PORT	The special function monitored by a programmed input "Special I/O-Port" has failed.	One of the terminals X1.4 ... X1.11 is occupied with function "Special I/O port" (see wiring diagram). Check the switching sequence of this input.
27	SLIP OUTSIDE LEVEL	Unexpected car movement out of the stopping position.	Car moves outside of the level range.
28	SLIP OUTSIDE ZONE	Unexpected car movement out of the zone.	Car moves outside of the zone range.
29	DRIVE: CHKSUM-ERROR	Error during transmission of drive data from/to drive processor	Internal error

Code	Message	Description	Comment
30	BUS-I/F TIMEOUT	Fault in LON-bus interface.	Internal error
31	START-ABORT	Drive start sequence cancelled.	The drive cannot be started. No return signals from drive or signals delayed: › See FST X1.19, X1.20 brake monitoring. › See wiring diagram FST X1.11. › See drive / brake delay.
32	STOP-ABORT	Drive stop sequence cancelled.	The drive cannot be stopped. No return signals from drive or signals delayed: › See FST X1.19, X1.20 brake monitoring. › See brake delay in chapter "2 General safety regulations" on page <?>.
33	RELEVELLING ABORT	An error has occurred during re-levelling and the re-levelling process was cancelled.	› Check drive and pre-selection. › Check safety circuit bypass control. › Check bypass relay FST K20. › See Doors / Doors basic/ Byp-off delay.
34	BYPASS FAILURE	Safety circuit bypass not available despite zone message.	› Check FST K20. › Check wiring of the safety circuit. › Check the safety circuit bypass control. › See Doors / Doors basic/ Byp-off delay.
35	DOOR LOCK TIMEOUT	The set door lock timeout is not long enough.	The car door is closed but the lock contact has not closed in the specified time. › Perform mechanical check of shaft doors (smooth running). › Check door lock contacts. › Increase door lock timeout (see Doors / Doors basic/ Door lock timeout).
36	CAR LIGHT FAILURE	Sensor on FSM-2 reports defective car lighting.	Check car lighting. Check sensor on FSM-2 (jumper J112).
37	REGULATOR ERROR	Error message from frequency inverter when using serially controlled inverters.	Check error list of the frequency inverter. The number of the regulator error corresponds to the error code in the documentation of the frequency inverter.
38	REFILL PUMP TIMEOUT	Error during refilling of the hydraulic counterweight.	The cut-off pressure for refilling was not reached after 30 sec. Check function and control of the refill valve.

Code	Message	Description	Comment
39	SAFETY CURTAIN BRK.	The safety curtain was interrupted while the car was moving.	Check unction and activation of the safety curtain (see Doors / Doors basic/ Light curtain).
40	SAFETY CURTAIN FAIL	Error during test of safety curtain.	The FST controller outputs a test signal to the FSM-2 X7 or X9 for the safety curtain prior to each drive. The safety curtain acknowledges the test signal with an interruption of the safety circuit. › Check operation of the safety curtain test. › Check length of test impulse under MAIN MENU - Doors - Doors Basic - Safety Curtain Fail (see Doors / Doors Basic / Safety Curtain Fail)
41	X12-SERIAL OFF	No serial connection to the frequency inverter (FST X11, DCP)	› Check connection cable between FST X11 and frequency inverter. › Check settings in frequency inverter (DCP03).
42	X12-SERIAL BAD	Serial connection to the frequency inverter is faulty (FST X11, DCP)	› Check connection cable between FST X11 and frequency inverter. › Check shielding of connection cable.
43	UPS FAILURE OFF UPS FAILURE ON	State change at programmable input "UPS FAILURE" for monitoring a UPS error message	Check function of the UPS.
44	APRON CONTACT FAIL	The apron cannot be folded in again.	
45	EMERGENCY STOP TEST FAIL	The emergency stop test for inclined lifts has failed.	
46	UNEXPECTED STOP	Error in DCP communication between FST and frequency inverter.	
47	ASV ERROR	Error in controlling the pawl-control.	Check signal interface of the pawl-control (see system description of the pawl-control).
48	MOTOR-ROOM OVERHEAT	The thermostat in the motor room has triggered (temperature > 40 °C).	Monitoring via terminal FST X1.16.
49	REVISION TOO FAST	Inspection speed or auxiliary speed over 800 mm/s.	Check drive speeds and shaft positioning.
50	FAST-START DOOR SW.	The quick start door "almost closed" switch closed too early.	Check door switch.
51	DRM-ZONE BRIDGED	No movement was detected in the door zone switch during the last drive.	Door zone switches A and B are permanently connected to 24V.
52	SAFETY CCT BRIDGED	During the last arrival and door opening, the safety circuit did not open.	Check door lock/door switch safety circuit.
53	DRM-CMM FAILURE	"Critical Module Monitoring" does not receive feedback from one of the modules.	The list number of the missing module is in the info byte. This can be displayed in Show-LON-Modules.
54	DRM-BELT SLIPPAGE	Toothed belt monitoring has triggered. The toothed belt has slipped more than 100 mm.	› Check tension of toothed belt. › Check toothed belt and wheel for dirt deposits.

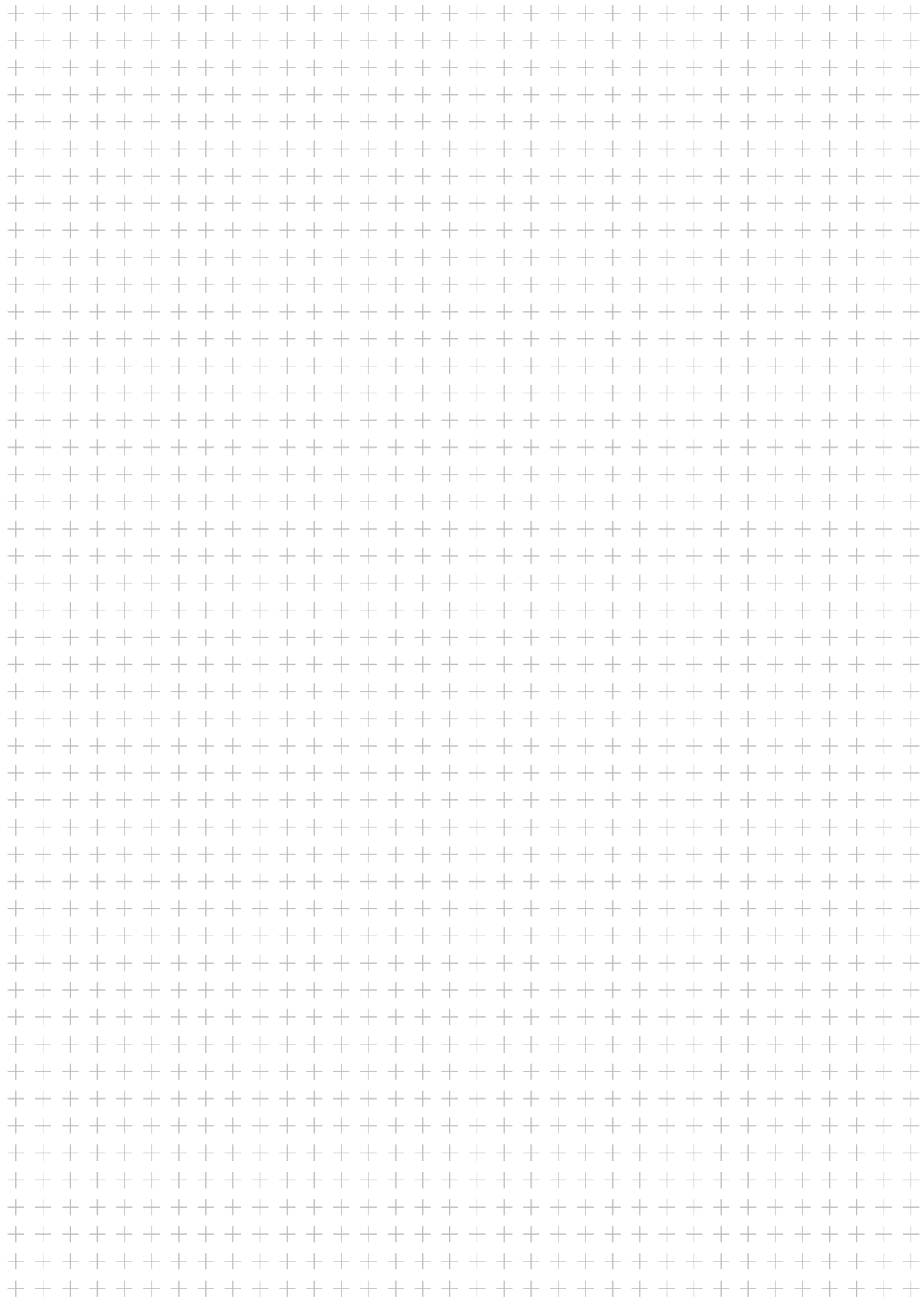
Code	Message	Description	Comment
55	WRONG ENCODER DIR.	During a learn or calibration drive: encoder position moves against the controlled direction.	› Change → Positioning → Global → Direction to other direction. › Check connections from the drive.
56	DRM-AUXILIARY BRAKE	Error at auxiliary brake monitoring contact.	› Check monitoring contacts. › Extend → Drive → Aux. Brake Max Time.
57	DRM-RELEVEL.TIMEOUT	The maximum allowed re-levelling time of 60 sec. has been exceeded.	Check drive.
58	ROPE-TENSION-ERROR	Input port signal contact has triggered.	Input port is only used for signalling.
59	LCS DATA MISSING	FST does not receive load measurement from LCS.	Check LCS and, if applicable, jumper on LCS.
60	DRM LITHIUM BATTERY	The battery voltage integrated in the FST is too low. This message must be activated with MISCEL-9=01000000.	Battery is empty and must be replaced.
61	DRM PROGRAMMABLE1	The I/O port "LSU program1" (System/ factory menu) is active.	Correction depending on individual programming
62	DRM PROGRAMMABLE2	The I/O port "LSU program2" (System/ factory menu) is active.	Correction depending on individual programming
63	DRM PROGRAMMABLE3	The I/O port "LSU program3" (System/ factory menu) is active.	Correction depending on individual programming
64	DRM DRIVE ERROR	The monitoring input of the drive (X1.21 NC) has switched on. The regulator error message contact is connected here as standard.	Check regulator. If no regulator error message contact is connected, the monitoring function must be deactivated (Drive / Drive monitor=NO)

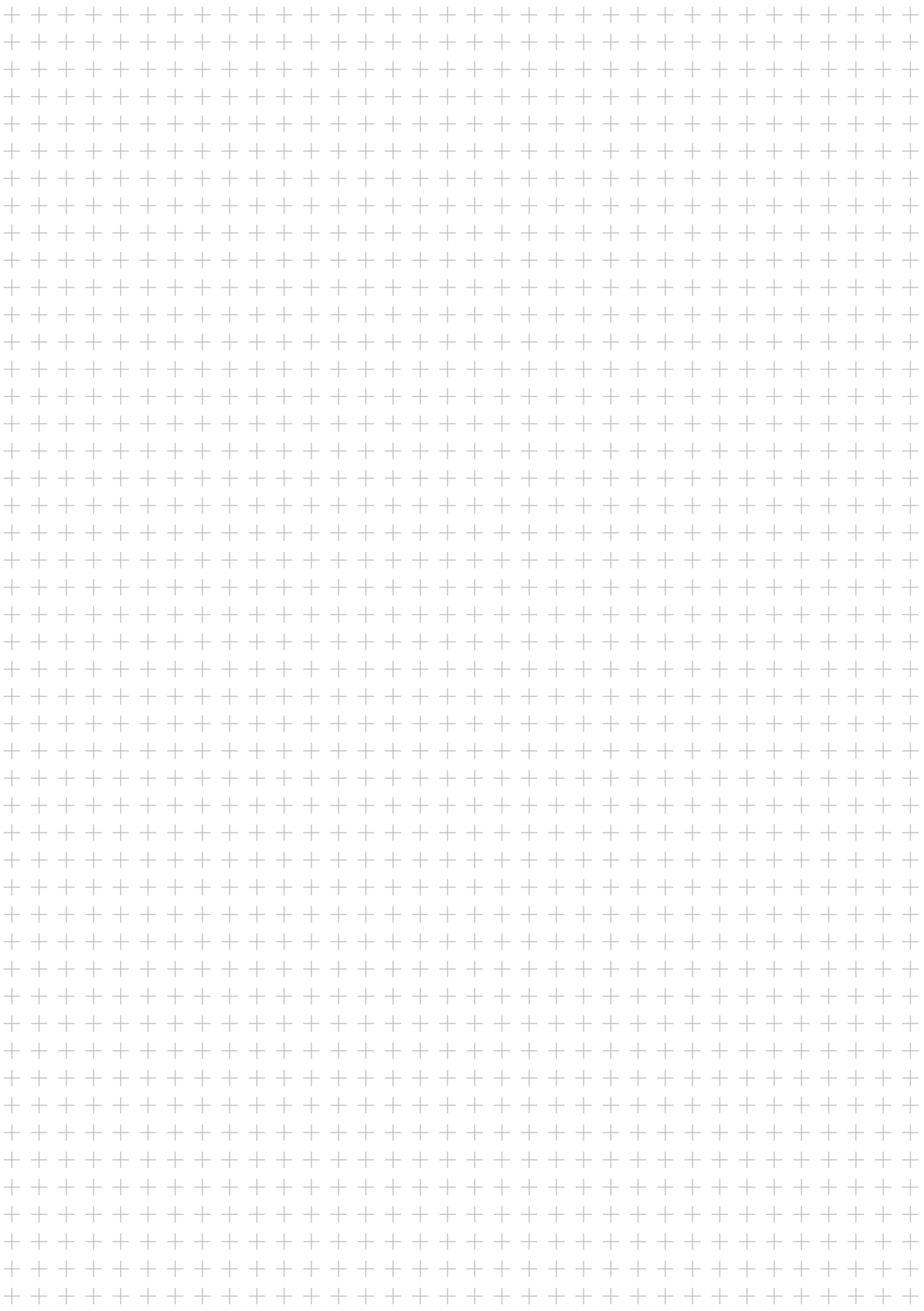
10.2 Event messages

Code	Message	Description	Comment
128	COLDSTART	Restart of FST controller	› FST controller was switched off and on again on the fuse or the main switch. › Power failure › All 4 arrow buttons were pressed simultaneously. › Menu item FST-Reset was performed.
129	INSPECTION-ON INSPECTION-OFF	Inspection work is being carried out.	The inspection changeover switch on the car roof is set to INSPECTION.
131	POWER LOST	Failure of the 24V power supply.	System was switched off or power supply defective.
132	REMOTE RESET	The FST controller was reset by the GST Group Controller.	The FST was reset through the serial interface.
133	CALIBRATION-START CALIBRATION-OK! CALIBRATION-ABORT!	Calibration progress is displayed.	A calibration drive was triggered.
134	LEARN DRIVE-START LEARN DRIVE--OK! LEARN DRIVE-ABORT!	Learn drive progress is displayed.	A learn drive was triggered.
135	SOFTWARE UPDATE	The software of the FST was updated with a PC-Card.	
136	EVACUATION-ON EVACUATION-OFF EVACUATION-OK	An evacuation drive was carried out.	The evacuation signal on a programmable input/output was active.
137	X12-SERIAL OK	DCP-interface X12 in operation.	The serial DCP-interface X11 between FST and the frequency inverter was initialised without error (e.g. after being switched on).
138	MONITOR-SIGNAL-ON MONITOR-SIGNAL-OFF	State change at programmable input "Monitor"	The programmable input "Monitor" has changed its state. This input can be used to register the state change of a given signal in the error list (see "6 Programmable I/O ports" on page <?>).
139	APRON OUT-ON APRON OUT-OFF	State change at input "Apron monitoring".	For very small shaft pits, the state of the electrically monitored apron is registered as a message in the error list.
140	ORIENTATION	Orientation drive during incremental positioning.	› Power failure for non-level car › Serious inconsistency in magnet switch states TC, BC and Zone B.
141	BATTERY EMPTY	FST battery is empty and must be replaced.	
142	AUXILIARY-ON AUXILIARY-OFF	Auxiliary control was switched on and off.	The auxiliary mode switch in the control cabinet was actuated.
143	FIREMAN MODE-ON FIREMAN MODE-OFF	Fire recall was switched on or off.	› Fire recall received at FST, RIO or ADM. › FIREMAN MODE-OFF is always displayed if fire-recall I/O ports are used (normally closed contacts).
144	ENCODER RE-ALIGNED	Toothed belt monitoring for absolute positioning: Automatic correction has occurred Positioning→Global→Enc. Belt Mon. = ON	If the read position of an upward drive from the bottom floor is different from the reference position of the zone signal. The shaft table was shifted accordingly.

Code	Message	Description	Comment
145	LCS-DRIFT-ADJUSTMENT	Load measuring system LCS automatically performed an empty load calibration. Config→Weight Sensor→LCS Settings→Auto-Adjust-ments→Drift Compensation = YES	A constant additional load in excess of 30 kg has been present in the car for more than 2 hours.
146	BLDG. AUTOM. STATUS	I/O-Port "GLT-signals" can be used to display changes for external signals in the event list of the FST. I/O-Port=000n34F2 n=0...9, A...F Placeholder n is registered in infobyte 1 of the event list.	Change of the signal status from inactive to active.
147	ARREST TEST ACTIVATED	The arrest test has been performed.	The remote-controlled arrest test device has been triggered. TEST MENU / Automatic arrest test or Immediate arrest test

11 Notes





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