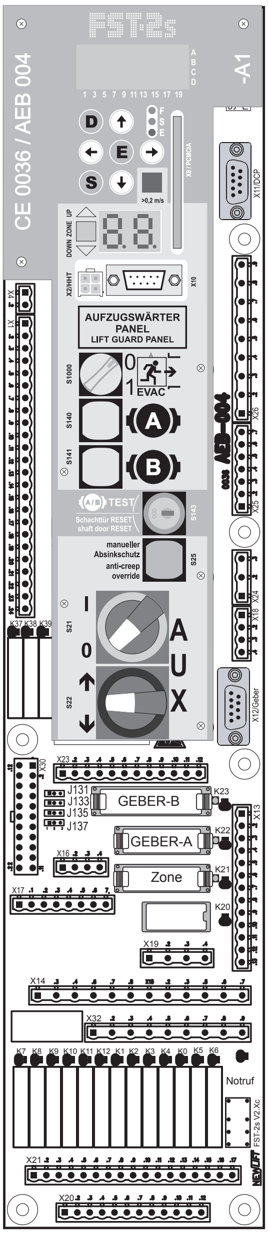
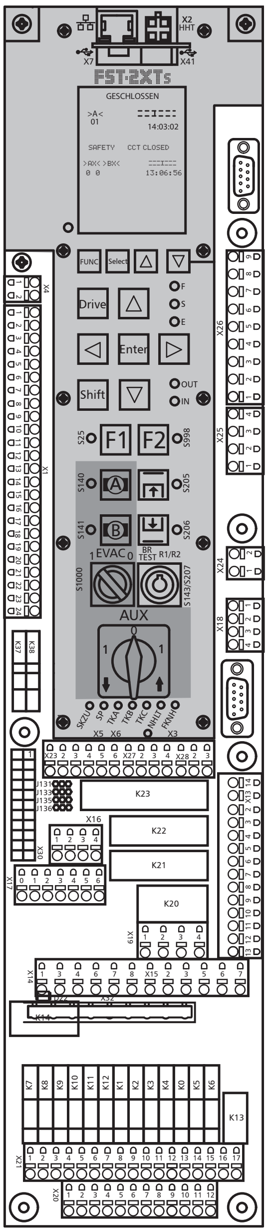
NEUE ELEKTRONISCHE WEGE

Replacing FST-2s with FST-2XTs

MANUAL

FST-2s > FST-2XTs





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Content

1 General

This manual is intended to simplify the replacement of the FST-2s circuit board with the FST-2XTs circuit board.

► Read this manual carefully and observe the FST-2s/XTs Installation & Commissioning manual as well as the included circuit diagrams and jumper settings for the circuit boards before beginning the replacement.
► After replacing, perform the tests listed under certificates “FST-2XTs 51 00 - notices” on pages 1 and 3.
► Update the documents of the lift system on-site as well as other documents that may be present at the “designated entity”. A check of the parameters and functions transferred from the FST-2s circuit board or of the NEW *LIFT* factory parameter set is the responsibility of the person who performs the replacement.

As assistance here, the test actuations as described in the FST-2XT or FST-2XTs Installation & Commissioning manual under 6.7.4 are to be performed. The FST-2XTs circuit board is generally compatible with the FST-2s circuit board. There are, however, additional functions resulting from further developments, relating to the EN81-1/2:1998 + A3:2009 A3 in particular, that are to be observed.

1.1 Abbreviations, characters and symbols used

EAZ position indicators

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

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

Safety-relevant information

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

Information notice

This symbol is located in front of relevant information.

1.2 Further information

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

› FST Installation & Commissioning
› FST manual
› ADM manual
› FPM manual
› SAM manual
› EAZ-256 manual
› EAZ-LCD and EAZ-VFD manual
› Fire recall manual

These and other current manuals can be found in the download area of our website under Service at http://www.newlift.de/en/service/download

1.3 How to contact us

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

Tel +49 89 – 898 66 – 110
Mail service@newlift.de

Mon. - Thurs.: 8:00 a.m. – 12:00 p.m. and 1:00 p.m. – 5:00 p.m.
Fr: 8:00 a.m. – 3:00 p.m.

1.4 General safety regulations

The FST-2XTs microprocessor control must only be operated in perfect working condition in a proper manner, safely and in compliance with the instructions, the valid accident prevention regulations and the guidelines of the local power company.

The safety guidelines of the FST manual and the FST Installation and Commissioning manual always apply.

1.4.1 Applicable standards and guidelines

All FST-2XTs microprocessor controls satisfy:

› the safety guidelines for the construction and installation of passenger and goods passenger lifts (DIN EN 81 Part 1 and 2).

› the conditions for the erection of high voltage installations with nominal voltages up to 1 kV (DIN VDE 0100).

› the contact protection measures in the machine room (VDE 0106).

› the data sheet on safety measures for the installation, maintenance and commissioning of lift systems (ZH 1/312).

1.4.2 Electromagnetic compatibility (EMC)

An accredited inspection authority has inspected the FST control system and its components in accordance with the standards, thresholds and severity levels named in EN 12015/1995 and EN 12016/1995.

The FST control system and its components are:

› immune to electrostatic discharge (EN 61000-4-2/1995)

› immune to electrostatic fields (EN 61000-4-3/1997)

› immune to fast transient disturbances (EN 61000-4-4/1995)

The electromagnetic disturbance field strengths created by the FST control system and its components do not exceed the permissible thresholds. (EN 55011/1997).

1.4.3 Handling electronic assemblies

► Keep the electronic assembly in its original packaging until installation.
► Touch a grounded piece of metal before opening the original packaging to discharge any static electric charge on the electronic assembly.
► During work on electronic assemblies, periodically repeat this discharge procedure.
► Fit all bus inputs and outputs that are not in use with a terminator except slot X3.

2 FST-2XTs compared to FST-2s

The FST-2XTs is nearly fully compatible with the FST-2s.

► Note the improvements and expansions listed in the following!

Improvements and expansions

› **Adoption of the FST-2XT properties**

MMI (man-machine interface - keyboard/display), processor structure, connectivity (USB, CAN Open LIFT, Ethernet), NEW *LIFT* Guide (online configuration aid).

› **Emergency mode monitor**

The emergency mode monitor for emergency release for the lift attendant was integrated in the display of the FST-2XTs.

› **Auxiliary mode control (AUX)**

Auxiliary mode control switches S21/S22 were grouped together in a single cam switch.

› **Keypad**

The keypad has the full functionality of the FST-2XT keypad.

› **BUS connector plugs**

Bus connectors X3, X5 and X6 were repositioned for easier use.

› **Connectivity**

Interface expansion to Ethernet, Mini USB, USB 2.0, CAN Open LIFT

› **Operating elements of the lift attendant panel**

- » The operating elements in the lift attendant panel area were, in part, implemented as pressure mats.
- » Adjacent to the pushbuttons, LEDs have been added as button acknowledgement.
  - » LED illuminated ->button pressed, function active
  - » LED off - > button not pressed, function not active
- » **Function button “F1”** (currently without function) and the **selection buttons** for controlling external safety devices for protected area safeguarding for shaft head and shaft pit were added to the previous operating elements **(brake release button A/B**, **anti creep device**, **evacuation switch**, **brake test key switch** and **shaft door reset button)**.

› **Improved visual signalling.**

- » The LEDs, IN/OUT (BUS traffic), safety circuit inputs and 24VDC power supply for shaft bus (X5/6) are now located directly on the front panel.
- » Upon actuation of the evacuation switch, the LED of the toggle flashes in sync with the acoustic message.

Note the following important changes

› **Terminal strips X1, X23, X24, X25, X27, X28**

Due to expanded functionality, the plugs listed above have been changed.

► For detailed information, see *4.1 Overview of terminal strips relevant to replacement*.
► Reconnect wires of these terminal strips according to *4.2 Adaptation table*.

All terminal strips not listed can be connected unchanged to the FST-2XTs.

› **Group controller circuit board for FST-2s "GSTs"**

The GSTs group controller circuit board has been discontinued; the GST-XT is available as a replacement.

› **DRM-contactor monitoring**

The positively driven, normally closed contacts of the brake activation relay located on the FST-2XTs are now also integrated in the contactor monitoring. The normally closed contacts that are integrated in the safety circuit remain included unchanged as with the FST-2s.

› **Drive monitoring input**

Input X1:21 was implemented as motor monitoring as with the FST-2XT.

3 FST jumpers

FST-2XT jumper J1: service jumper

This jumper must always remain open.

FST-2XTs jumper J1: encoder - incremental / CAN Open LIFT

Function	J1
Incremental 24V	1-2✶
CANopen Lift ground	2-3

FST-2XT and FST-2XTs jumper J2: load measurement inputs

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

FST-2XTs jumper J3: encoder - incremental / CAN Open LIFT

Function	J3
Incremental 5V	1-2✶
CANopen Lift 24V	2-3

FST-2XTs jumper J4: encoder - incremental / CAN Open LIFT

Function	J4
Incremental track A	1-2✶
CANopen Lift channel L	2-3

FST-2XTs jumper J5: encoder - incremental / CAN Open LIFT

Function	J5
Incremental track A negated	1-2✶
CANopen Lift channel H	2-3

FST-2XT and FST-2XTs jumper J90: shielding X9

This jumper is in the open position on delivery. Set only after consulting with NEW *LIFT*.

The shielding of service-PC cable X9 is connected to PE or GND potential with J90.

Function	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✶

FST-2XT and FST-2XTs jumper J100: shielding X43

This jumper is in the open position on delivery. Set only after consulting with NEW *LIFT*.

The shielding of modem cable X10 is connected to PE or GND potential with J100.

Function	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✶

FST-2XT and FST-2XTs jumper J110: shielding X11

This jumper is in the open position on delivery. Set only after consulting with NEW *LIFT*.

The shielding of DCP cable X11 is connected to PE or GND potential with J110.

Function	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✶

FST-2XT and FST-2XTs J120: shielding X12

The shielding of encoder cable X12 is connected to PE or GND potential with J120.

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

FST-2XT and FST-2XTs jumper J131-J136: definition of the shaft positioning

The position of the shaft positioning system (car or shaft) is defined with J131, J133, J135, J136.

Shaft positioning system on the car; FSM-2 X25:

› all jumpers are jumped to 1-2.

Shaft positioning system in the shaft or machine room; FST X12:

› all jumpers are jumped to 2-3

› depending on the type of shaft positioning, two (incremental positioning with zone magnets) or four (absolute value positioning) freely travelling cable cores are available at terminal FSM-2 X15 / FST X13.

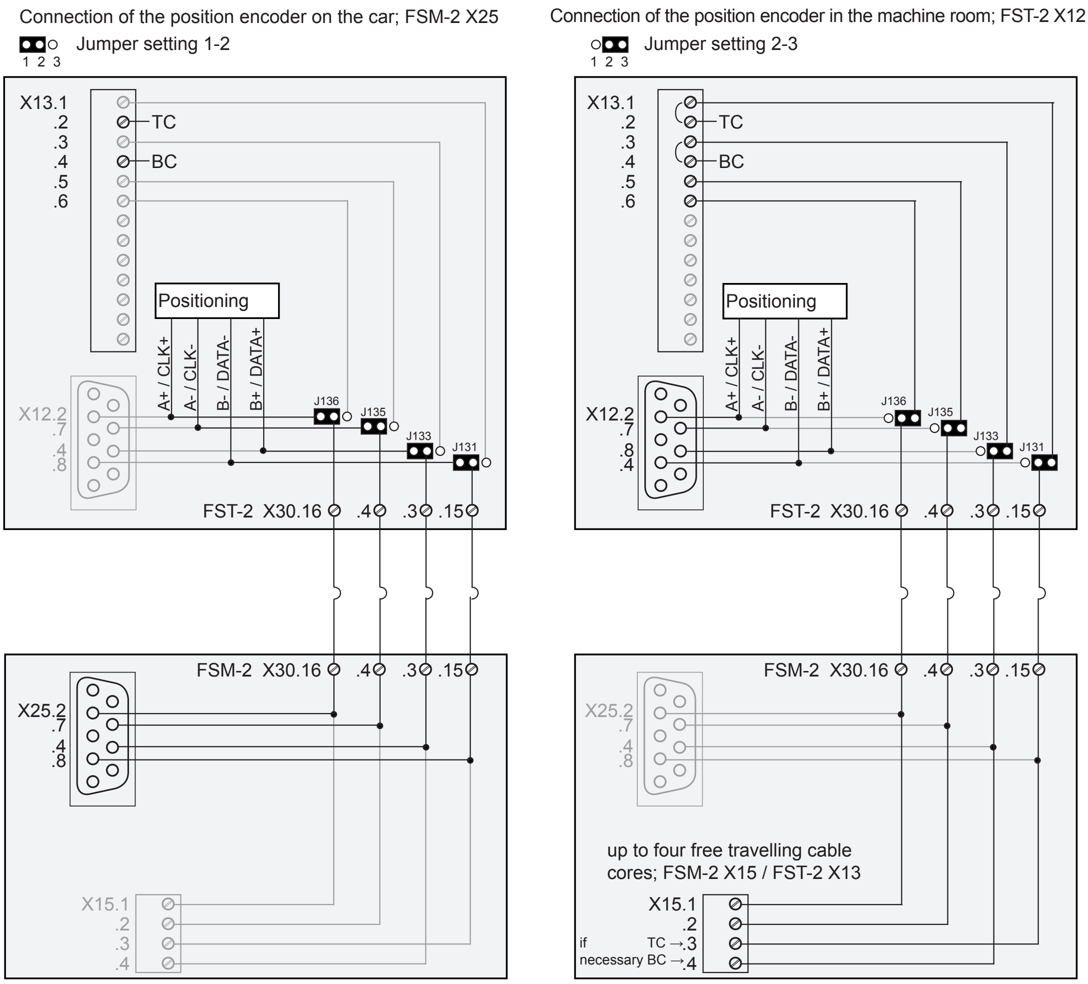


Fig. 3.1: Connection point of the position encoder and jumper setting J131, J133, J135, J136

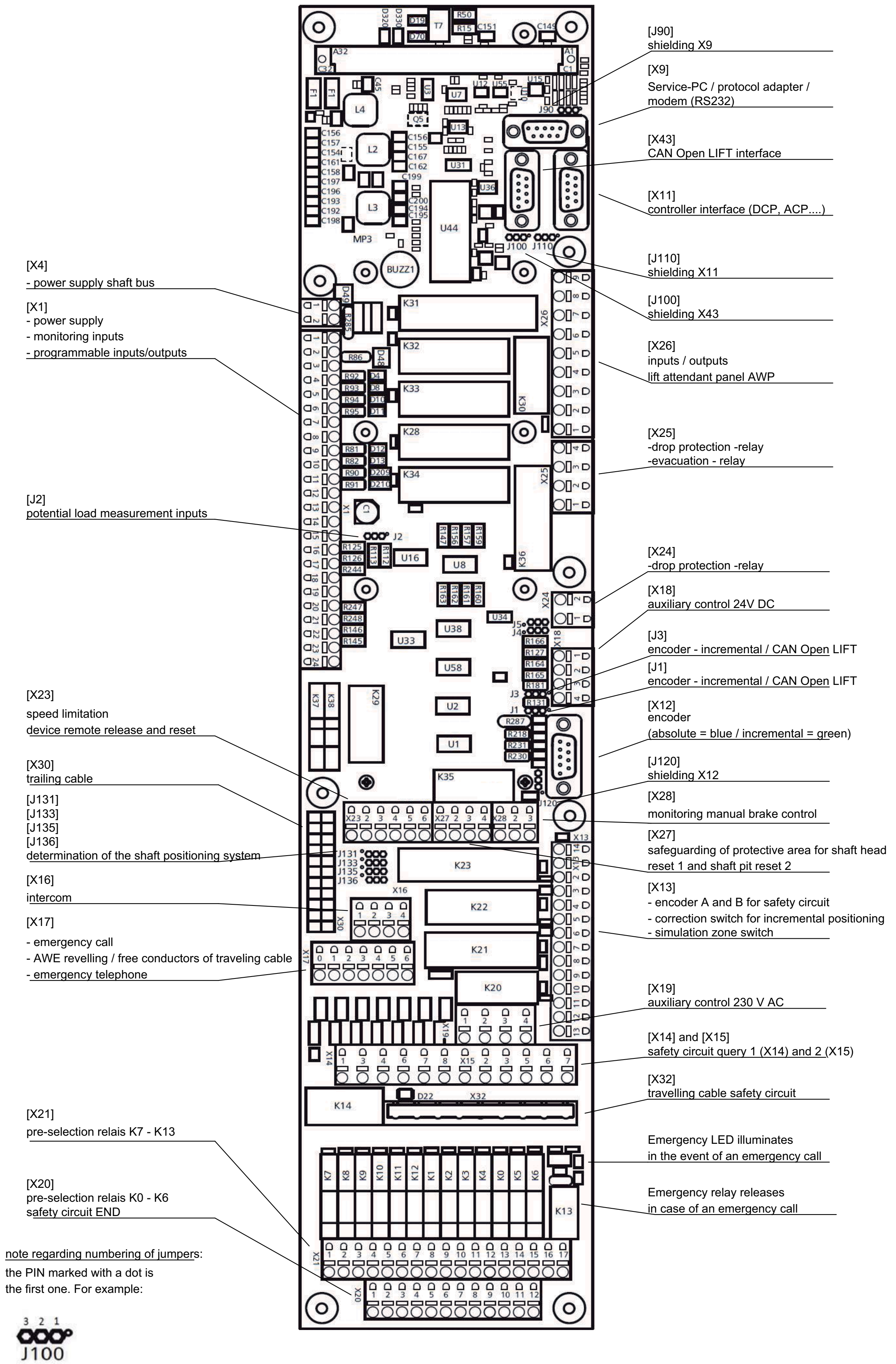


Abb. 3.2: Main board FST-2XTs

4 Terminal strips

4.1 Overview of terminal strips relevant to replacement

For terminals that are designated in this table with a capital letter after the ordinal number, the assignment has changed.

► When replacing the terminals, make certain that the assignment is correct. *See also 4.2 Adaptation table*.

FST-2s terminal strip	FST-2s terminal	Function	FST-2XTs terminal strip	FST-2XTs terminal	Function
X1	**1**	+24V/2A (FST supply voltage)	**X1**	**1**	+24V/2A (FST supply voltage)
	2	GND		**2**	GND
	3	+24V/2A (FST supply voltage)		**3**	+24V/2A (FST supply voltage)
	4	Programmable I/O port 0		**4**	Programmable I/O port 0
	5	Programmable I/O port 1		**5**	Programmable I/O port 1
	6	Programmable I/O port 2		**6**	Programmable I/O port 2
	7	Programmable I/O port 3		**7**	Programmable I/O port 3
	8	Programmable I/O port 4		**8**	Programmable I/O port 4
	9	Programmable I/O port 5		**9**	Programmable I/O port 5
	10	Programmable I/O port 6		**10**	Programmable I/O port 6
	11	Programmable I/O port 7		**11**	Programmable I/O port 7
	12	GND		**12**	GND
	13	Car lighting OFF		**13**	Car lighting OFF
	14	Landing calls OFF		**14**	Landing calls OFF
	15	GND		**15**	GND
	16	Temperature monitoring motor room		**16**	Temperature monitoring motor room
	17	Overload		**17**	Overload
	18	Full load		**18**	Full load
	19	Monitoring of brake A		**19**	Monitoring of brake A
	20	Monitoring of brake B		**20**	Monitoring of brake B
	21A	Output 24VDC brake test for contactor monitoring		**21**	Drive monitoring
	22	Motor monitoring		**22**	Motor monitoring
	23	Standstill monitoring		**23**	Standstill monitoring
	24	+24V/2A (FST supply voltage)		**24**	+24V/2A (FST supply voltage)
X4	**1**	+24 V	**X4**	**1**	+24 V
	2	GND		**2**	GND
X13	**14**	Bridge zone release for external V<0.2m/s contact to terminal 7 if applicable.	**X13**	**14**	Bridge zone release for external V<0.2m/s contact to terminal 7 if applicable.
	1	FSM-2 X15.3 (only if J131 2-3)		**1**	FSM-2 X15.3 (only if J131 2-3)
	2	Top correction switch "TC" (only for incremental positioning)		**2**	Top correction switch "TC" (only for incremental positioning)
	3	FSM-2 X15.4 (only if J133 2-3)		**3**	FSM-2 X15.4 (only if J133 2-3)
	5	FSM-2 X15.2 (only if J135 2-3)		**5**	FSM-2 X15.2 (only if J135 2-3)
	6	FSM-2 X15.1 (only if J136 2-3)		**6**	FSM-2 X15.1 (only if J136 2-3)
	7	SCBC zone release (with external SCBC)		**7**	SCBC zone release (with external SCBC)
	8	SCBC zone bypass (with external SCBC)		**8**	SCBC zone bypass (with external SCBC)
	9	SCBC zone signal (with external SCBC)		**9**	SCBC zone signal (with external SCBC)

FST-2s terminal strip	FST-2s terminal	Function	FST-2XTs terminal strip	FST-2XTs terminal	Function
	10	SCBC encoder zone switch A (always bridged with X13.11)		**10**	SCBC encoder zone switch A (always bridged with X13.11)
	11	SCBC encoder zone switch A		**11**	SCBC encoder zone switch A
	12	SCBC encoder zone switch B		**12**	SCBC encoder zone switch B
	13	Simulation zone switch B (bridge with 13.12 if applicable)		**13**	Simulation zone switch B (bridge with 13.12 if applicable)
X14	**1**	Safety circuit closed	**X14**	**1**	Safety circuit closed
	3	Door lock or bolt contact door side A closed		**3**	Door lock or bolt contact door side A closed
	4	Car door contact of door side A closed		**4**	Car door contact of door side A closed
	6	Car door contact of door side C closed		**6**	Car door contact of door side C closed
	7	Emergency stop shaft closed		**7**	Emergency stop shaft closed
	8	Car emergency stop closed		**8**	Car emergency stop closed
X15	**1**	Bypass UP	**X15**	**1**	Bypass UP
	2	Bypass DOWN		**2**	Bypass DOWN
	3	L safety circuit		**3**	L safety circuit
	5	Auxiliary mode bridging function		**5**	Auxiliary mode bridging function
	6	N safety circuit		**6**	N safety circuit
	7	Output bypass doors		**7**	Output bypass doors
X16	**1**	Intercom A or A	**X16**	**1**	Intercom A or A
	2	Intercom A or B		**2**	Intercom A or B
	3	Intercom A or C		**3**	Intercom A or C
	4	Intercom A or D		**4**	Intercom A or D
X17	**0**	+24 V or HSG +12 V (beginning of the emergency call loop)	**X17**	**0**	+24 V or HSG +12 V (beginning of the emergency call loop)
	1	Emergency call		**1**	Emergency call
	2	Emergency power supply		**2**	Emergency power supply
	3	GND		**3**	GND
	4	Level switch +		**4**	Level switch +
	5	Level switch -		**5**	Level switch -
	6	Emergency call line A		**6**	Emergency call line A
	7	Emergency call line B		**7**	Emergency call line B
X18	**1**	+24 V	**X18**	**1**	+24 V
	2	Auxiliary mode control ON		**2**	Auxiliary mode control ON
	3	Auxiliary control travel direction UP		**3**	Auxiliary control travel direction UP
	4	Auxiliary control travel direction DOWN		**4**	Auxiliary control travel direction DOWN
X19	**1**	Auxiliary mode control ON	**X19**	**1**	Auxiliary mode control ON
	2	Auxiliary control bridging function		**2**	Auxiliary control bridging function
	3	L auxiliary control		**3**	L auxiliary control
	4	Auxiliary control UP or DOWN		**4**	Auxiliary control UP or DOWN
X20	**1**	Safety circuit "CLOSED"	**X20**	**1**	Safety circuit "CLOSED"
	2	N safety circuit		**2**	N safety circuit
	3	Pre-selection contact K0,K1 COM		**3**	Pre-selection contact K0,K1 COM
	4	Pre-selection contact K0 NO		**4**	Pre-selection contact K0 NO
	5	Pre-selection contact K1 NO		**5**	Pre-selection contact K1 NO
	6	Pre-selection contact K2, K3 COM		**6**	Pre-selection contact K2, K3 COM
	7	Pre-selection contact K2 NO		**7**	Pre-selection contact K2 NO
	8	Pre-selection contact K3 NO		**8**	Pre-selection contact K3 NO
	9	Pre-selection contact K4,K6 COM		**9**	Pre-selection contact K4,K6 COM
	10	Pre-selection contact K4 NO		**10**	Pre-selection contact K4 NO

FST-2s terminal strip	FST-2s terminal	Function	FST-2XTs terminal strip	FST-2XTs terminal	Function
	11	Pre-selection contact K5 NO		**11**	Pre-selection contact K5 NO
	12	Pre-selection contact K6 NO		**12**	Pre-selection contact K6 NO
X21	**1**	Pre-selection contact K7 - K8 COM	**X21**	**1**	Pre-selection contact K7 - K8 COM
	2	Pre-selection contact K7 NO		**2**	Pre-selection contact K7 NO
	3	Pre-selection contact K7 NC		**3**	Pre-selection contact K7 NC
	4	Pre-selection contact K8 NO		**4**	Pre-selection contact K8 NO
	5	Pre-selection contact K8 NC		**5**	Pre-selection contact K8 NC
	6	Pre-selection contact K9, K11, K12 COM		**6**	Pre-selection contact K9, K11, K12 COM
	7	Pre-selection contact K9 NO		**7**	Pre-selection contact K9 NO
	8	Pre-selection contact K10 COM		**8**	Pre-selection contact K10 COM
	9	Pre-selection contact K10 NO		**9**	Pre-selection contact K10 NO
	10	Pre-selection contact K10 NC		**10**	Pre-selection contact K10 NC
	11	Pre-selection contact K11 NO		**11**	Pre-selection contact K11 NO
	12	Pre-selection contact K12 NO		**12**	Pre-selection contact K12 NO
	13	Emergency call relay contact K13 COM1		**13**	Emergency call relay contact K13 COM1
	14	Emergency call relay contact K13 NO1		**14**	Emergency call relay contact K13 NO1
	15	Emergency call relay contact K13 NC1		**15**	Emergency call relay contact K13 NC1
	16	Emergency call relay contact K13 COM2		**16**	Emergency call relay contact K13 COM2
	17	Emergency call relay contact K13 NC2		**17**	Emergency call relay contact K13 NC2
X23	**1**[B]	NC	**X23**	[B]**1**	Triggering of relay K37 NC contact
	2[B]	COM K37.A FK SET		[B]**2**	Triggering of relay K37 COM FK SET contact
	3[B]	NO		[B]**3**	Triggering of relay K37 NO contact
	4[B]	NC		[B]**4**	Resetting of relay K38 NC contact
	5[B]	COM K38.A FK RESET		[B]**5**	Resetting of relay K38 COM FK RESET contact
	6[B]	NO		[B]**6**	Resetting of relay K38 NO contact
	7	NC			Terminals no longer present
	8	COM K39.A GG SET			Terminals no longer present
	9	NO			Terminals no longer present
	10	NC			Terminals no longer present
	11	COM K40.A GG RESET			Terminals no longer present
	12	NO			Terminals no longer present
X24	**1**	Anti creep device NO 2	**X24**	**1**	Anti creep device relay K36 NC contact 230VAC
	2	Anti creep device NC 2		**2**	Anti creep device relay K36 NC contact 230VAC
	3	Anti creep device COM 2			Terminals no longer present
X25	**1**[C]	Anti creep device NO 1	**X25**	[C]**1**	Anti creep device relay K36 NO contact 230VAC
	2[C]	Anti creep device COM 1		[C]**2**	Anti creep device relay K36 NO contact 230VAC
	3	Anti creep device NC 1		[D]**3**	Evacuation relay K31 NO contact 230VAC
	4[E]	Shaft door reset NO		[D]**4**	Evacuation relay K31 NO contact 230VAC
	5[E]	Shaft door reset COM			Terminals no longer present
	6[D]	EVAC ON NO			Terminals no longer present

FST-2s terminal strip	FST-2s terminal	Function	FST-2XTs terminal strip	FST-2XTs terminal	Function
	7[D]	EVAC ON NO			Terminals no longer present
X26	**1**	Brake test relay K34 NO contact 230VAC	**X26**	**1**	Brake test relay K34 NO contact 230VAC
	2	Brake test relay K34 NO contact 230VAC		**2**	Brake test relay K34 NO contact 230VAC
	3	Monitoring contacts of relay K28(NO),33(NC),32(NC)		**3**	Monitoring contacts of relay K28(NO),33(NC),32(NC)
	4	Brake B - relay K33 NO contact 230VAC		**4**	Brake B - relay K33 NO contact 230VAC
	5	Monitoring contacts of relay K28(NO),33(NC),32(NC)		**5**	Monitoring contacts of relay K28(NO),33(NC),32(NC)
	6	Brake A - relay K32 NO contact 230VAC		**6**	Brake A - relay K32 NO contact 230VAC
	7	Evacuation relay K31 NO contact 230VAC		**7**	Evacuation relay K31 NO contact 230VAC
	8	Evacuation relay K31 NO contact 230VAC		**8**	Evacuation relay K31 NO contact 230VAC
	9	Supply for evacuation/brake test 230VAC		**9**	Supply for evacuation/brake test 230VAC
			X27	[E]**1**	Shaft pit reset K29 NO contact 230VAC
				[E]**2**	Shaft pit reset K29 NO contact 230VAC
				3	Shaft head reset K35 NO contact 230VAC
				4	Shaft head reset K35 NO contact 230VAC
			X28	**1**	+24VDC
				2	Input of the monitoring contacts of the external manual brake control
				[A]**3**	Output for contactor monitoring
X32	**1**	Car door side A	**X32**	**1**	Car door side A
	2	Car door side B		**2**	Car door side B
	3	Car door side C		**3**	Car door side C
	4	Emergency stop car		**4**	Emergency stop car
	5	Bypass UP		**5**	Bypass UP
	6	Bypass DOWN		**6**	Bypass DOWN
	7	Bypass ON		**7**	Bypass ON
	8	Bypass		**8**	Bypass
	9	N safety circuit		**9**	N safety circuit

4.2 Adaptation table

If wires are connected to the following terminals of the FST-2s:

► Reconnect wires to the terminals of the FST-2XTs according to the table.

FST-2s terminal	► Disconnect wire from the FST-2s and connect to the terminal of the FST-2XTs!	**FST-2XTs terminal**
	› Connect bridge	X28:1
	› Connect bridge	X28:2
X1:21	►	X28:3
X23:1	►	X23:1
X23:2	►	X23:2
X23:3	►	X23:3
X23:4	►	X23:4
X23:5	►	X23:5
X23:6	►	X23:6
X24:1	►	X24:1
X24:2	►	X24:2
X25:1	►	X25:1
X25:2	►	X25:2
X25:4	►	X27:1
X25:5	►	X27:2
X25:6	►	X25:3
X25:7	►	X25:4

5 Replacing FST-2s with FST-2XTs

5.1 Data transfer

If a replacement is necessary, the new FST-2XTs is created at the factory with the same order data record as at the time of the original order.

Possible loss of data!

► The following tasks must absolutely be performed in the specified order!

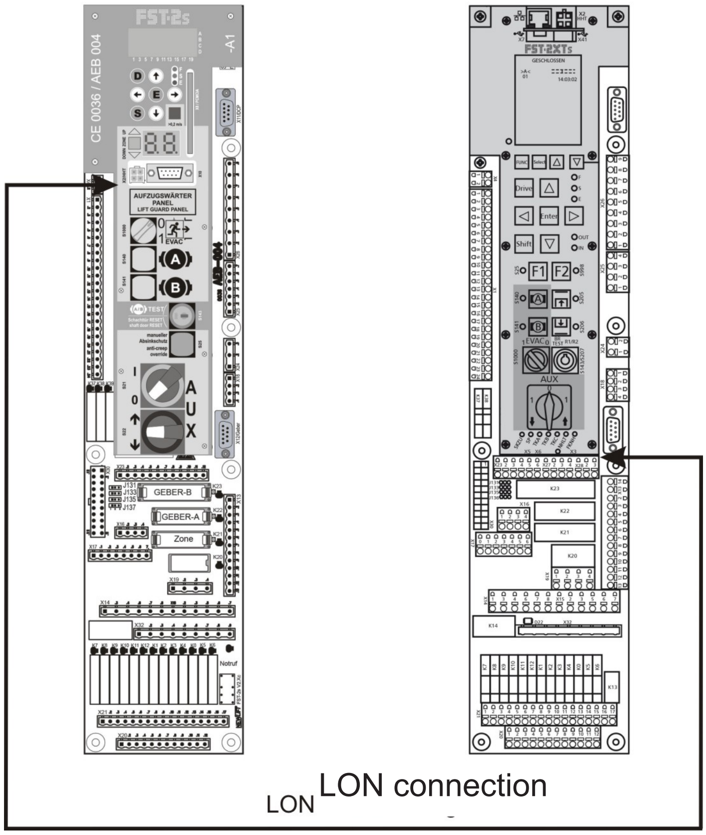
5.1.1 Data transfer via LON bus

► Switch on the MAIN SWITCH of the FST-2s.
► Switch on the AUXILIARY CONTROL (AUX).
► Make certain that all lift doors are closed.
► Unplug plugs X5 and X6, which belong to the shaft bus.
► Reset the *Lift ID number* parameter on the display:
» Press button [Enter] to change to the `main menu`.
» Use buttons [▲]/[▼] to navigate to the `Config/ID's/Lift ID-Number/FST-A` submenu and confirm each with [Enter].
► Open the original packaging of the new FST-2XTs.

Destruction of electronic components through electrostatic discharge!
When opening the original packaging of circuit boards/electronic components, an electrostatic discharge may occur.
Before opening the original packaging, touch a grounded piece of metal.

► Set down the FST-2XTs circuit board in an insulated manner so that no contact with electrically conductive parts can occur, e.g., on the original packaging.

► Connect the two circuit boards with a bus cable at the respective X3 bus connectors (options bus).



► Wait until the FST-2XTs software has completely started.

► Activate the hidden menus:

» Press button [Enter] to change to the `main menu`.

» Use buttons [▲]/[▼] to navigate to the `System/Factory Menu/Hidden Menus` submenu and confirm with [Enter].

» Press button [▲], select `YES` and confirm with [Enter].

» Select the `Clone FST-2 LON` command and confirm with [Enter].

`FTX` appears briefly on the display and data transfer starts.
After data transfer has been completed, `Config. transfer ok` appears.
The FST-2XT performs an automatic restart with the accepted parameters.

► Wait until the FST-2XTs software has completely started.

5.1.2 Data transfer via serial interface (alternative)

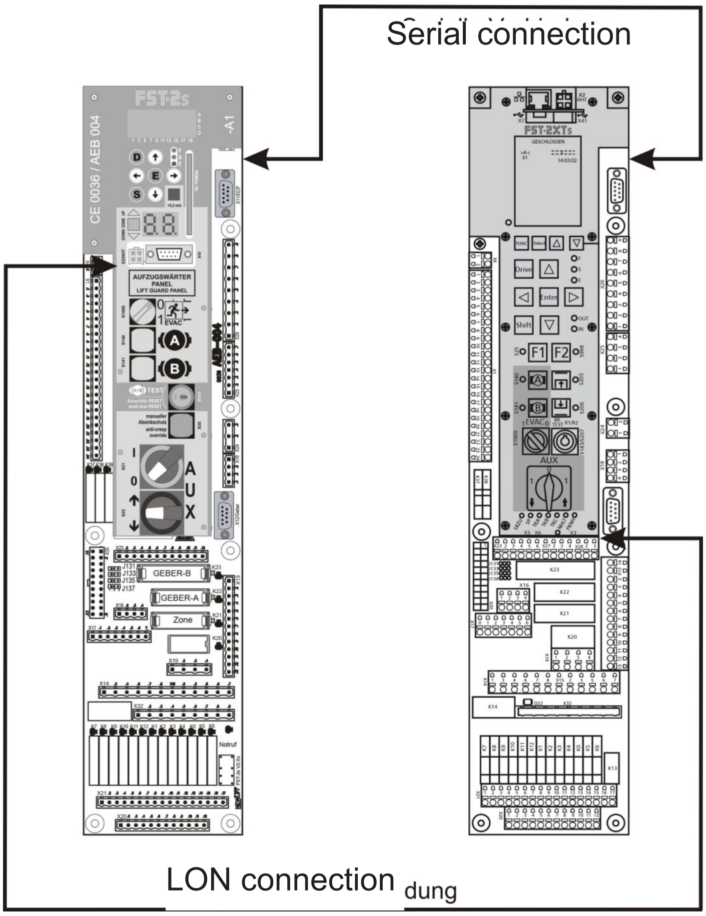
- ► Switch on the MAIN SWITCH of the FST-2s.
- ► Switch on the auxiliary control (AUX).
- ► Make certain that all lift doors are closed.
- ► Unplug plugs X5 and X6, which belong to the shaft bus.
- ► Reset the *Lift ID number* parameter on the display:
  - » Press button Enter to change to the `main menu`.
  - » Use buttons ▲/▼ to navigate to the `Config/ID's/Lift ID-Number/FST-A` submenu and confirm with Enter.
- ► Open the original packaging of the new FST-2XTs.

⚠ ***Destruction of electronic components through electrostatic discharge!***

When opening the original packaging of circuit boards/electronic components, an electrostatic discharge may occur.
Before opening the original packaging, touch a grounded piece of metal.

- ► Set down the FST-2XTs circuit board in an insulated manner so that no contact with electrically conductive parts can occur, e.g., on the original packaging.

► Connect the two circuit boards with a bus cable at the respective X3 bus connectors (options bus).
► Also connect the two circuit boards with a serial zero modem cable at the respective X9 plugs.



► Wait until the FST-2XTs software has completely started.

► Activate the hidden menus:

» Press button [Enter] to change to the `main menu`.

» Use buttons [▲]/[▼] to navigate to the `System/Factory Menu/Hidden Menus` submenu and confirm with [Enter].

» Press button [▲], select `YES` and confirm with [Enter].

» Select the `Clone FST-2 SERIAL` command and confirm with [Enter].

Upon conclusion of data transfer, `Config. transfer ok` appears.
The FST-2XT performs an automatic restart with the accepted parameters.

► Wait until the FST-2XTs software has completely started.

5.2 Removal

► Switch off the MAIN SWITCH (Q1).
► Switch off control fuse (F4).
► Switch off the circuit breaker for shaft and car light.
► Switch off the UPS.

Dangerous electrical voltage!
Touching electrically live parts directly or indirectly can result in an electrical hazard.
Switch off the MAIN SWITCH before beginning service work.
Note that even with the MAIN SWITCH turned off, the following electrical components may be electrically live:

» ***Circuit breaker for shaft and car light***
» ***The components located upstream of the MAIN SWITCH, e.g., UPS***
» ***All orange-coloured wires.***

Switch off all electrically live components before beginning service work.
Take particular care when working on the electrical system.

Disconnecting plug X30 can trigger the emergency call control system.

► Deactivate the emergency call control system or the emergency horn to prevent an accidental emergency call.
► Disconnect all plugs on the FST-2s.
► Mark bus cables X5, X6 and X3 to avoid an incorrect connection.
► Loosen all M4 nuts with a size 7 socket spanner.
► Remove the FST-2s circuit board from the mounting plate.

The following plugs remain on the FST-2XTs:

» X23, X24, X25
» X27, X28

► Disconnect all other plugs from the FST-2XTs.
► Compare the jumper configuration of the two circuit boards:

» Use existing configurations.
» Adapt new jumpers according to manual.

See the FST-2XT/XTs manual

5.3 Installation

► Place the new FST-2XTs on the mounting plate.
► Mount all nuts and tighten them.
► Connect all terminal strips according to their numbers.

Destruction of electronic components!
Incorrect pin assignments can lead to malfunctions and the destruction of electronic components.
Take care to ensure the correct sockets of plugs and terminal strips.
Make certain that plugs are securely plugged in and, if applicable, latch lugs are locked.

► Reclamp the terminal strip wires according to the *adaptation table*.

5.4 Function tests

► Switch on the MAIN SWITCH (Q1) and the fuse (F4).
► Wait until the FST-2XTs software has completely started.
► Switch on the circuit breaker for car and shaft light and, if applicable, the UPS.
► Activate the emergency call control system or the emergency horn.
► Switch on the AUXILIARY MODE CONTROL (AUX).

Check the lift ID-number

► Simultaneously press buttons Shift + Enter and check the lift ID number.

If the lift ID number is displayed correctly:

» No further steps necessary.

If the lift ID number is not displayed correctly:

» Perform data transfer again.

If the lift ID number is not displayed correctly after repeating data transfer:

» Upload the necessary ID data using the FST editor program or

» Perform complete commissioning according to the commissioning manual *See MIA FST-2XT/XTs.*

Position check

► Use buttons Shift + ▶ on the display to set position value P = XXXXX.
► Turn the AUXILIARY MODE switch to UP and observe the set value.

The position value must increase.

► In the same way, turn the AUXILIARY MODE switch to DOWN and observe the set value.

The position value must decrease.

If the position values correspond to the selected direction of movement:

» No further steps necessary.

If the position values do not correspond to the selected direction of car movement:

» Press button Enter to change to the `main menu`.

» Use buttons ▲/▼ to navigate to the `Positioning/Global/Direction` submenu and confirm each with Enter.

» By confirming selection `Left/Right`, you can change the direction of rotation.

» Repeat the position check.

Test menu

► Switch off the AUXILIARY CONTROL (AUX).

► Lock the doors:

» Press button [►] to change to the `test menu`.
» Confirm the `Doors-LOCK` function with [Enter].

► Switch off the landing control:

» Press button [◄].
`LANDING CALLS OFF` must appear on the display.

► Travel several floors as a test:

» Press button [►] to change to the `test menu`.
» Confirm the `test drive` function with [Enter].
» Use buttons [▲]/[▼] to select a destination and confirm with [Enter].

► End the `test drive` function.

» Press button [►] to change to the `test menu`.
» Confirm the `test drive off` function with [Enter].

► Perform the test instructions according to the notices in the appendix.
See appendix page 27 "FST-2XTs 51 00 - Notices"

► Save the configuration:

» Press button [Enter] to change to the main menu.
» Use buttons [▲]/[▼] to navigate to the `System/Config--> Backup` submenu and confirm each with [Enter].

► Unlock the doors:

» Press button [►] to change to the `test menu`.
» Confirm the `Doors-UNLOCK` function with [Enter].

► Test the emergency call device:
If the emergency call does not function, temporarily deactivate the emergency call filter if necessary:

» Press button [Enter] to change to the main menu.
» Use buttons [▲]/[▼] to navigate to the `Config/Anti Nuisance/Emergency-Call` submenu and confirm each with [Enter].

► Activate the landing control:

» Press button [◄].
The `LANDING CALLS OFF` display must switch off.

► Clear the error list:

» Press button [Enter] to change to the `main menu`.
» Use buttons [▲]/[▼] to navigate to the `Service/Clear Error List` submenu and confirm each with [Enter].

► Update the documents on-site and, if necessary, the documents at the designated entity.

5.5 Information on EN81-1/2:1998 + A3:2009

For commissioning, circuit board replacement and software updates of FST-2XT/2XTs control systems, the following applies:
According to EN81-1/2:1998 + A3:2009 A3, the FST-2 product family is equipped standard with the UCM-A3 software function. For safety reasons, this function is activated on delivery!

The necessity of the UCM-A3 function depends on the respective system and on the installation location of the control system.
Deactivation of the function is the responsibility of the customer / lift engineer.
NEW LIFT accepts no responsibility following improper deactivation of the UCM-A3 function.

5.5.1 Function UCM-A3

Error message "DRM UCM-A3 ERROR"

If error message "DRM UCM-A3 ERROR" appears:
► Press button ▶ and open the test menu.
► Use button ▼ to navigate to the UCM-A3 Error Reset submenu and confirm with Enter.

Deactivating function UCM-A3

► Activate the hidden menus:
» Press button Enter to change to the main menu.
» Use buttons ▲/▼ to navigate to the System/Factory Menu/Hidden Menus submenu and confirm each with Enter.
» Press button ▲, select YES and confirm with Enter.
► Use buttons ▲/▼ to navigate to the Settings/Miscel-11 submenu and confirm each with Enter.
► Use buttons ▶/◀ to move the cursor to the fourth position from the right.
► Use button ▼ to change the fourth digit from the right to 1 Miscel-11 >xxxx1xxx.
► Confirm with Enter.
► Press button ◀ repeatedly until display Save changed values? appears.
► Press button ▶, press YES and confirm with Enter.

The test functions remain visible even after deactivation. Internal comparison and scanning cycles are deactivated, however.

Error message "DRM A3 drive error"

If error message "DRM UCM-A3 ERROR" appears:
► Press button ▶ and open the test menu.
► Use button ▼ to navigate to the UCM-A3 Error Reset submenu and confirm with Enter.

Deactivate the UCM-A3 block function during auxiliary-mode or inspection control

Beginning with software version V0091, a drive with auxiliary-mode and inspection control is no longer possible with pending

`DRM UCM-A3 error` or `DRM A3 drive error`.

► Activate the hidden menus:
  » Press button [Enter].
  » Use buttons [▲]/[▼] to navigate to the `System/Factory Menu/Hidden Menus` submenu and confirm each with [Enter].
  » Press button [▲], select `YES` and confirm with [Enter].

► Use buttons [▲]/[▼] to navigate to the `Settings/Miscel-13` submenu and confirm each with [Enter].
► Use buttons [▶]/[◀] to move the cursor to the fourth position from the right.
► Use button [▼] to change the fourth digit from the right to 1 `Miscel-13 >xxxx1xxx`.
► Confirm with [Enter].
► Press button [◀] repeatedly until `display Save changed values?` appears.
► Press button [▶], press `YES` and confirm with [Enter].

5.6 Waste disposal

► Dispose of any waste material according to the national regulations that apply locally.

5.7 Appendix

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
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EU-Design Examination Certificate

According to Annex IV, Part A of Directive 2014/33/EU

Certificate No.:	EU-ESD 024
Certification body of the notified body:	TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 München - Germany Identification number 0036
Certificate holder:	NEW *LIFT* GmbH Lochhamer Schlag 8 82166 Gräfelfing - Germany
Manufacturer of the test sample: (manufacturers for series production – see attachment)	NEW *LIFT* GmbH Lochhamer Schlag 8 82166 Gräfelfing - Germany
Produkt:	Printed circuit boards " FST-2XTs" and "FSM-2" with electronic components, taps in the safety circuit and safety circuit bypass control as well as subsystem against unintended car movement
Type:	FST 51 00 (FST-2XTs) and FSM 5 20 (FSM-2)
Directive:	2014/33/EU
Test basis:	- Directive 2014/33/EU dated 2014-02-26, Annex I - EN 81-1/2:1998+A3:2009 (D) - EN 81-20:2014 (D) - EN 81-50:2014 (D)
Test report:	EU-ESD 024 dated 2016-10-04
Result:	The safety component conforms the essential health and safety requirements of the mentioned Directive as long as the requirements of the annex of this certificate are kept.
Date of issue:	2016-10-04
Date of Translation:	2017-03-28

TÜV SÜD Industrie Service GmbH
00 36
Notified Body

Achim Janocha
Certification Body "lifts and cranes"

TÜV®

Enclosure to the EU-Type Examination Certificate
No. EU-ESD 024 of 2016-10-04

Industrie Service

Authorised Manufacturer of Serial Production – Production Sites (valid from: 2016-09-28):

Company:	NEW *LIFT* GmbH
Address:	Lochhammer Schlag 8 82166 Gräfelfing Germany

- END OF DOCUMENT -

Based on: Document from NEW LIFT of 2016-08-30

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NEW LIFT
NEUE ELEKTRONISCHE WEGE

Annex of the EU Type Examination Certificate
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1 Scope of application

The test items are the FST 51 00 (FST-2XTs) printed circuit board as "lift control system" and FSM 5 20 (FSM-2) printed circuit board as "car top control module" with electronic components, taps in the safety circuit and safety circuit bypass control (FST 51 00) as well as subsystem as element for detecting unintended car movement. Also tested are the clearance and creepage distances of the FST 51 00 and the FSM 5 20 as well as the safety circuit scan control of the FST 51 00.

1.1 Function of the safety circuit

The safety circuit bypass control consists of the K21, K22 and K23 safety relays.
The SHS_ZOFR (+24V) zone release signal must be activated by the controller. A zone release is active if necessary, i.e., if the controller is to open the car door on the corresponding floor.
First, K21 must be energized; for this purpose K20, K22 and K23 must be de-energized. K21 holds itself as long as K20 is not energized and there is a zone release.
K23 can only be energized after K21 if zone switch B closes. K23 holds itself as long as zone switch B is closed.
K22 can be energized after K23 and K21 if zone switch A closes. K22 holds itself as long as zone switch A is closed.
If K23 and K22 are energized, K20 can also be energized as soon as the controller starts the bypass release (0V). This, however, only occurs as needed and if the car speed is <0.3m/s. Not until K20 energizes does K21 de-energize. The door bypass is now active and remains so until the bypass release is cancelled and K20 is de-energized again.
K22 and K23 are not de-energized until switches A and B are opened again due to a drive outside of the door zone. – Only if both relays are de-energized can another cycle begin by energizing K21 as soon as the controller switches a renewed zone release. Transistor T2 is used for resetting relay K22 after a power failure.
In the event of failure of the operating voltage, zone switch A continues to be supplied via auxiliary power supply HSG, allowing the door zone to be detected should freeing be necessary. At the same time, T2 switches K22 and K23 off so that when the operating voltage is restored, the switching sequences can be completed as described.

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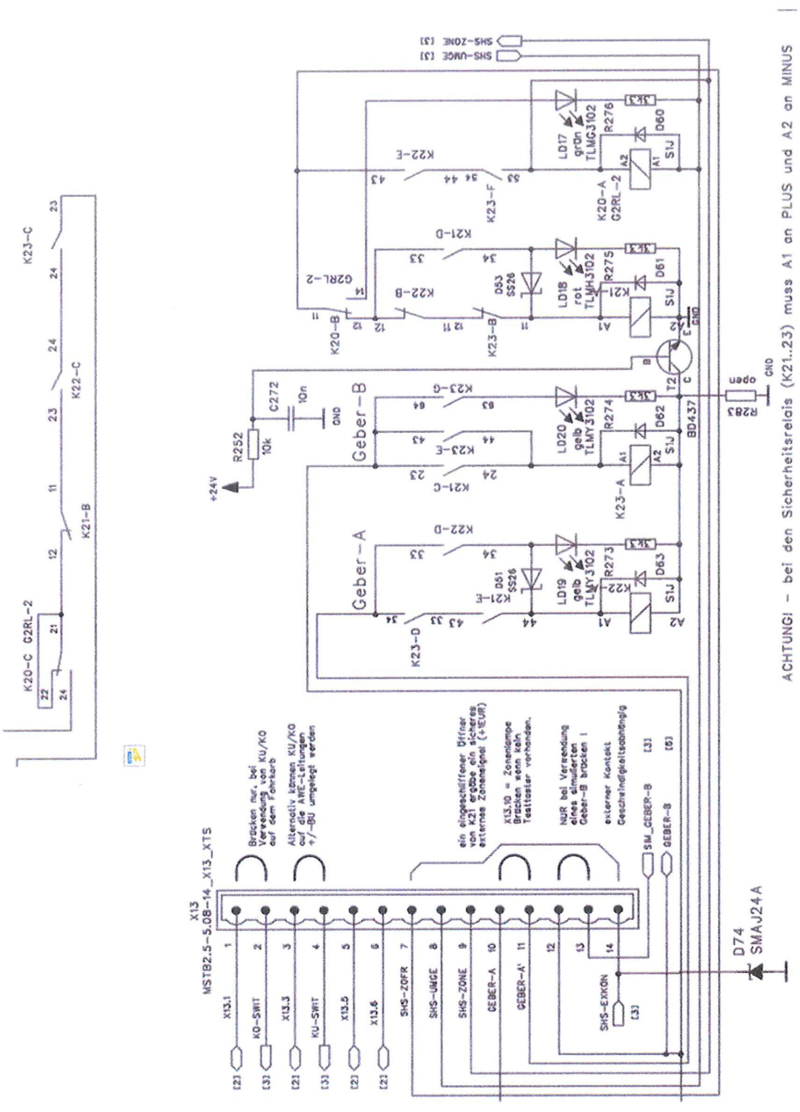

Figure 1: Portion of the wiring diagram for the control system of the door zone bypass

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Depicted on the following page is the wiring diagram of the safety circuit scan control an-safety circuit bypass control (figure 2).

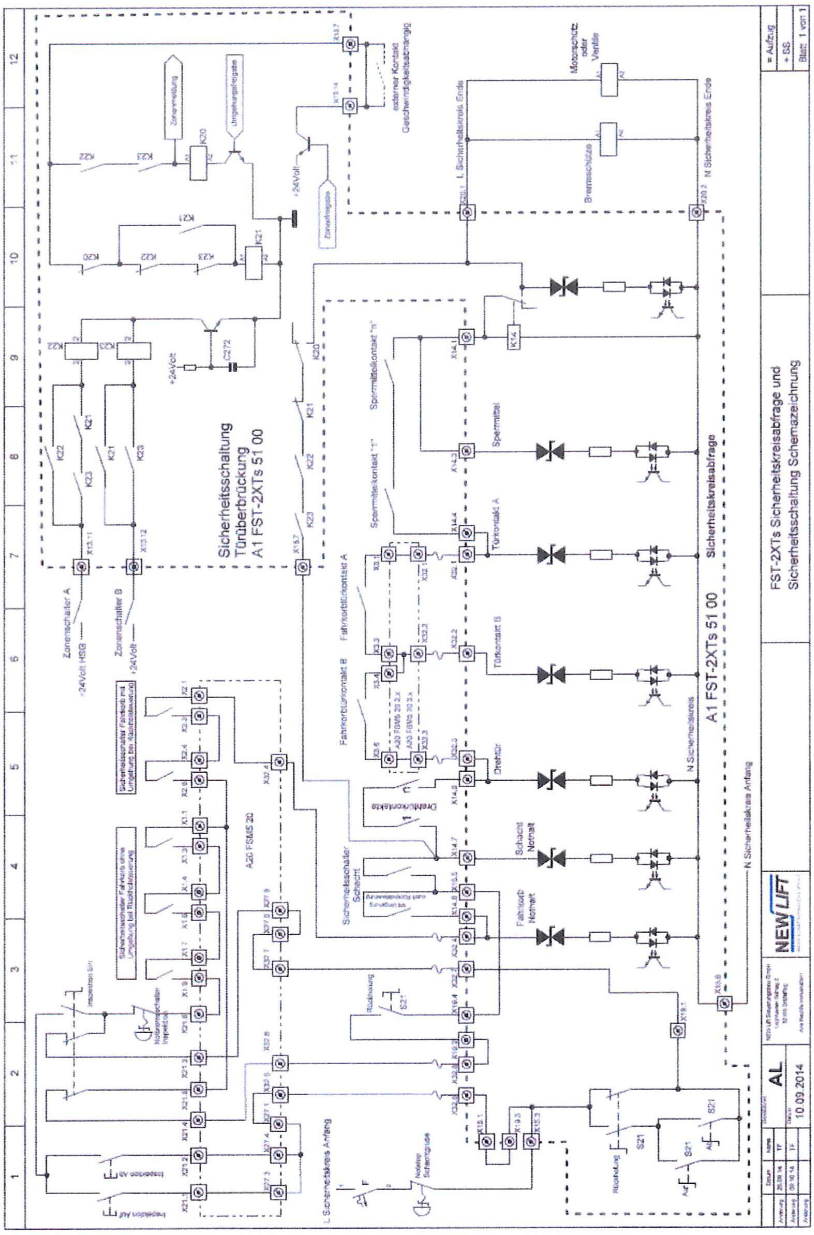

Figure 2: Wiring diagram of the safety circuit scan control and safety circuit bypass control Type FST-2XTs

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1.2 <u>Description of the function against unintended car movement</u>

For the device as a detecting and, if necessary, triggering element: if combined with a braking element tested in accordance with A3, e.g., in the form

a) of a drive brake for electrically operated rope lifts,

b) of a safety valve or similar for hydraulically driven lifts, this can represent the detecting as well as the triggering element of the entire protective device against the unintended movement of the car. If, on the other hand, the device is combined with a braking element tested in accordance with A3, e.g., in the form

c) of a double-acting safety gear/braking device triggered by a speed limiter tested in accordance with A3 as a triggering element – for both electrically operated rope lifts as well as with hydraulically driven lifts – this can only represent the detecting element of the entire protective device against the unintended movement of the car.

1.2.1 Electrically operated passenger and freight lifts

The safety circuit bypass control is only activated by the control system if firstly the target floor has been reached and secondly the measured car speed is ≤ 0.2 m/s.

The safety circuit bypass control, when triggered, i.e.,

- if the door zone (defined by two magnet switches) is exited as well as
- before the door zone is exited with a speed of ≥ 0.2 m/s with unlocked landing door and/or open car door,

ensures a safe shutdown of the downstream drive components and, subsequently,

- either the triggering of the braking element according to cases (a.) and (b.) in the comment of the previous section
- or the activation of the triggering element of the protective device against the unintended car movement in cases of the combination specified in (c). of the previous section.

The car speed is detected by the control system via the encoder of the shaft positioning system. For additional safety (redundancy), a speed-dependent contact of the frequency inverter is integrated at the terminals of the control system – A1:X13.7 and A1:X13.14. It is thereby ensured that the safety circuit bypass control is also inactive (safety circuit open) if the frequency inverter detects a car speed of more than 0.2 m/s.

1.2.2 Hydraulically operated passenger and freight lifts

In principle, the function is identical to that of electrically operated passenger and freight lifts (electrically operated rope lifts), but without monitoring of the car speed.

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1.2.3 Electrically as well as hydraulically operated passenger and freight lifts

In order to adhere to the permissible total stopping distance in the case of an unintended car movement, the length of the door zone must be limited depending on the installation and its maximum length calculated during the course of planning the lift system.

For the device in question, the reaction times of the detecting element (sensors and their control system) as well as the reaction times and reaction distances of the triggering element and those of the braking element(s) in addition to the maximum possible acceleration by the drive in the event of an error (if applicable) and the mass ratios and other factors that influence the movement of the lift system (compensation tools, rope lengths depending on the type of rope arrangement and drive arrangement,...) are known for this purpose.

The calculated, maximum door zone size must be entered in the menu of the control system during commissioning. During the automatic learn drive, the actually specified door zone lengths are automatically checked for correctness at all floors by the control system.

During tests of the lift system in the course of the conformity assessment procedure, tests "UCM-A3 test upward" and "UCM-A3 test downward" are to be performed in the test menu of the FST controller.

This ensures that the UCM case is performed with the assistance of the UCM test relay under safe conditions, i.e., with closed car door and locked landing door.

Both UCM cases, the "exiting of the door zone" as well as "excessive speed" (only for electrically operated lifts with rope drive) with open car door(s) and/or unlocked landing door(s), are detected by the control system. The lift system is brought to a standstill with the "LSU-UCM-A3 Error" error message and can only be put back into operation by resetting the error message in the control system menu by a competent person.

In the case of a power failure, the "LSU-UCM-A3 Error" is stored and prevents the installation from being operated upon restoration of power.

Designation		Detection time
FST-2XTs safety circuit bypass control	Electr./mech. switching	10 ms
Contactor for brake / valves	Siemens 3RTxxx	12 ms
Zone magnet switch	Schmersal BN32r	
	Normally open (NO) contact switching time	0.3 - 1.5 ms
	Restarting precision	+ / - 0.25 mm
Speed signal > 0.2 ms	FST-2XTs	102 ms
Speed signal > 0.2 ms	Frequency inverter	15 ms

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It is not mandatory that the specified types of "contactors for brake/valves" as well as "zone magnet switches" be used. The type can be selected based on the reaction and detection times of the "contactors for brake/valves" as well as the "zone magnet switches". If types other than those specified above are used, verification of the reaction and detection times is to be provided.

Shown on the following pages are the wiring diagram for rope-operated passenger and freight lifts (figure 3), the wiring diagram for hydraulically operated lift systems with shutoff valve as braking element (figure 4) as well as the wiring diagram for hydraulically operated lift systems with redundant lowering valves as braking elements (figure 5).

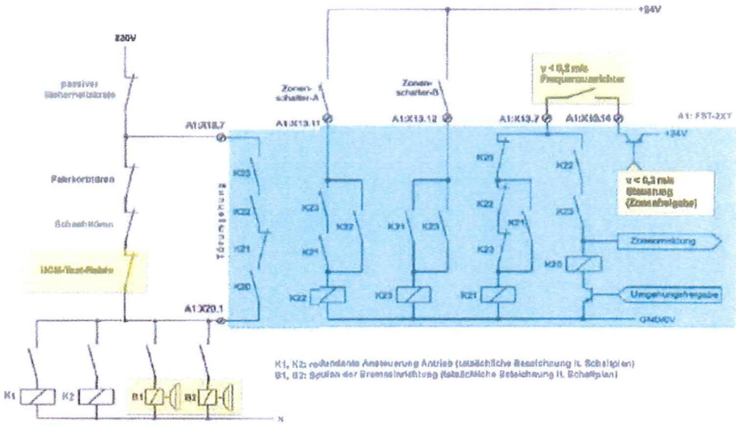

Figure 3: Wiring diagram for rope-operated passenger and freight lifts

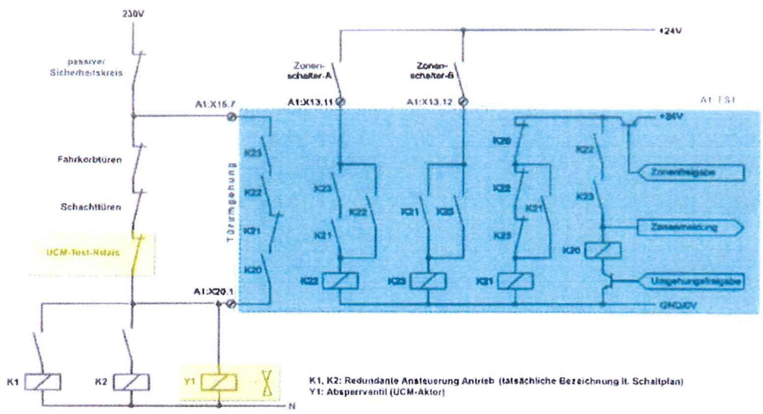

Figure 4: Wiring diagram for hydraulically operated lift systems with shutoff valve as braking element

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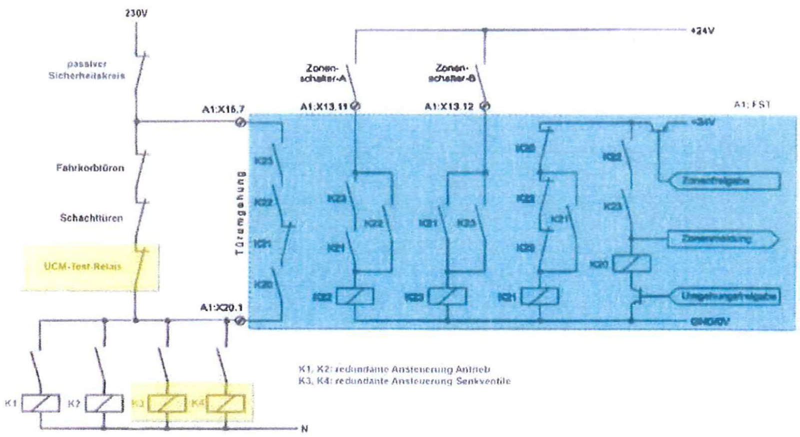

Figure 5: Wiring diagram for hydraulically operated lift systems with redundant lowering valves as braking elements

2 Conditions

2.1 The safety devices of the circuit board (tap for safety chain) are to be connected as specified in document BMP-Hinweise_FST-2XTs.

2.2 The safety circuit bypass control is integrated on the printed circuit board as a fixed component of the FST-2XTs 51 00 controller. It is designed for a temperature range from 0 to +65°C at a relative humidity of 15 to 85%.

2.3 The operating voltage is 24V DC, whereas the operating contacts and conductor paths are designed for a 230V AC (optional 48V DC, 110V AC) safety circuit, fuse-protected with max. 4A.

2.4 A closing contact from X20.1 to X14.1 is integrated in the controller for quick-start. Direct connection from X14.1 to X15.7 is not allowed.

2.5 The wiring must be implemented according to "FST-2XTs safety circuit scan control and safety circuit bypass control schematic drawing" figure 2 (e.g., N-wire at X15.6, return wire of the contactors and valves at X20.2; X14.1 not connected to X15.7).

2.6 If the braking element is supplied with power directly via the electric safety circuit, redundant activation of the braking element is not necessary. If the braking element requires a voltage other than that available directly from the electric safety circuit, redundant activation with standstill monitoring is necessary.

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2.7 If the braking element is not involved in the checking of the speed or deceleration in normal operation or does not stop the car in normal operation but is rather only responsible for braking in the UCM case, it is not necessary to monitor the proper function of the braking element.
Otherwise, the proper opening or closing of the braking element via the contacts required for this purpose is necessary via the control software.

2.8 Use only in combination with:
- Control systems manufactured by NEW *LIFT*, model FST-2XTs

2.9 For electrically operated rope lifts, a signal must be made available to the control system in the event of speeds in excess of 0.2 m/s.

2.10 The subcomponents described in this certification must be supplemented with another subcomponent for the realisation of the "UCM-A3 function".
For this purpose, assembly operation must adhere to the requirements before performing the conformity assessment procedure.

2.11 For hydraulically operated lift systems, items 3.6, 3.7, 3.7.1, 3.7.2 and 5 of the UCM-A3 manual are to be adhered to during commissioning or recurring inspections and maintenance.

2.12 For electrically operated rope lift systems, items 4.6, 4.7, 4.7.1, 4.7.2 and 5 of the UCM-A3 manual are to be adhered to during commissioning or recurring inspections and maintenance.

2.13 The "UCM-A3" manual is to be included with the product.

2.14 The EU type examination certificate may only be used together with the corresponding appendix and attachment (manufacturer list for serial production). This attachment is updated according to information from the manufacturer / representative and published with the updated information.

3 Notices

3.1 This EU type examination certificate was prepared on the basis of the following harmonised standards:

- EN 81-1:1998 + A3:2009 (D), Appendix F.8
- EN 81-2:1998 + A3:2009 (D), Appendix F.8
- EN 81-20:2014 (D), Item 5.11.2.3
- EN 81-50:2014 (D), Item 5.6

In the event of changes or additions to the aforementioned standards or in the event of further developments to the state of the art, the EU type examination certificate must be revised.

3.2 The test results refer only to the "FST-2XTs" and "FSM-2" printed circuit boards with electronic components with taps in the safety circuit and safety circuit bypass control as well as subsystem against unintended car movement and the associated EU type examination.

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3.3 At the "detection device for unintended car movement (UCM) – door zone" a sign must be present (e.g., near the control system) with details on the identification of the component with the name of the manufacturer, EU type examination designation and type plate.

3.4 In the event of changes or deviations from the version documented here, an examination and, if necessary, adaptation of the alternative measures is required by the notified body.

3.5 This certificate is based on the state of the art, which is documented by the currently valid harmonised standards. If the event of changes or additions to these standards or in the event of further advances in the state of the art, a revision may become necessary.

The English text is a translation of the German original. In case of any discrepancy, the German version is valid only.

FST-2XTs 51 00 – Remarks

1. **The scan control on the safety circuit**
   The neutral wire on the power supply side is connected to terminal A1:X15.6 (input) and is connected to all optocouplers of the safety-circuit scan control. The neutral wire is fed back out through the conductor path to terminal A1: X20.2 (output). All drive and brake contactors as well as hydraulic valve coils must be provided with the neutral wire from terminal A1:X20.2. The end of the safety circuit is at X20.1. The conductor paths of the safety-relevant circuits on the printed circuit board have a distance from each other of at least 4 mm on the outer layers. Where not technically possible, this is achieved by means of an additional air gap on the printed circuit board. According to IEC 664-1, this corresponds to pollution degree 3.

   <u>Test instruction:</u>

   - Start the lift system, release terminal A1:X15.6 and pull out the neutral wire. **CAUTION! Use insulated screwdrivers, because this terminal is now electrically live.**
   - All drive and brake contactors and valves must de-energize immediately.
   - Switch the lift system to an unpowered state. – Reconnect the neutral wire to A1:X15.6.

2. **Inspection control**
   Uncontrolled door movements are prevented, the car speed is max. 0.63m/s and the operational end floors are not overtravelled.

3. **Auxiliary mode control,** here the car speed is max. 0.63m/s.

4. **Safety circuit bypass control** (if provided)
   - The safety circuit bypass control is available with and without relay sockets.
   - If two identically constructed zone switches are used, they must comply with the requirements of EN81 part 1 and part 2 chapter F6.3.1.1 (vibration test).
   - Malfunctions lead to locking of the safety circuit, are detected by the controller and result in a system shutdown.
   - A detailed functional and test description can be found on pages 2 and 3 of this document.
   - The installation and operating instructions of the control must be observed.

5. **Runtime monitoring.** All control types are equipped standard with runtime monitoring.

   <u>Test instruction:</u>

   - After driving has started, the drive is to be brought to a standstill.
     A hydraulically driven lift can be brought to a standstill, e.g., by disconnecting the UP or DOWN valve.
     A lift with traction drive can be brought to a standstill, e.g., by disconnecting the inverter enable or similar. – A description of the procedure can be found in the operating manual of the drive.
   - If the drive is brought to a forced stop and a drive command is pending, the controller is brought to a standstill after the set time on the controller menu.
   - Rectify the simulated failure. The lift is started up again by switching the controller ON/OFF.

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- **FSM 5 20 – Remarks**

Safety circuit on the printed circuit board
The switching elements of the safety circuit on the car roof are directly connected to the so-called car top control module (abbreviated FSM). The two assemblies FST-2XTs 51 00 and FSM 5 20 are linked via the travelling cable to form a unit and are interdependent of one another. On the car top control module, the safety circuit with conductor paths is fed between the connection terminals and the travelling cable plug. The conductor paths of the safety-relevant circuits on the printed circuit board have a distance from each other of at least 4 mm on the outer layers. Where not technically possible, this is achieved by means of an additional air gap on the printed circuit board. According to IEC 664-1, this corresponds to pollution degree 3. Because these conductor paths are designed for a nominal current of 4A, use a fuse of max. 4A for the safety circuit.

- **Function and test description of the safety circuit bypass control for the door bypass in the zone**

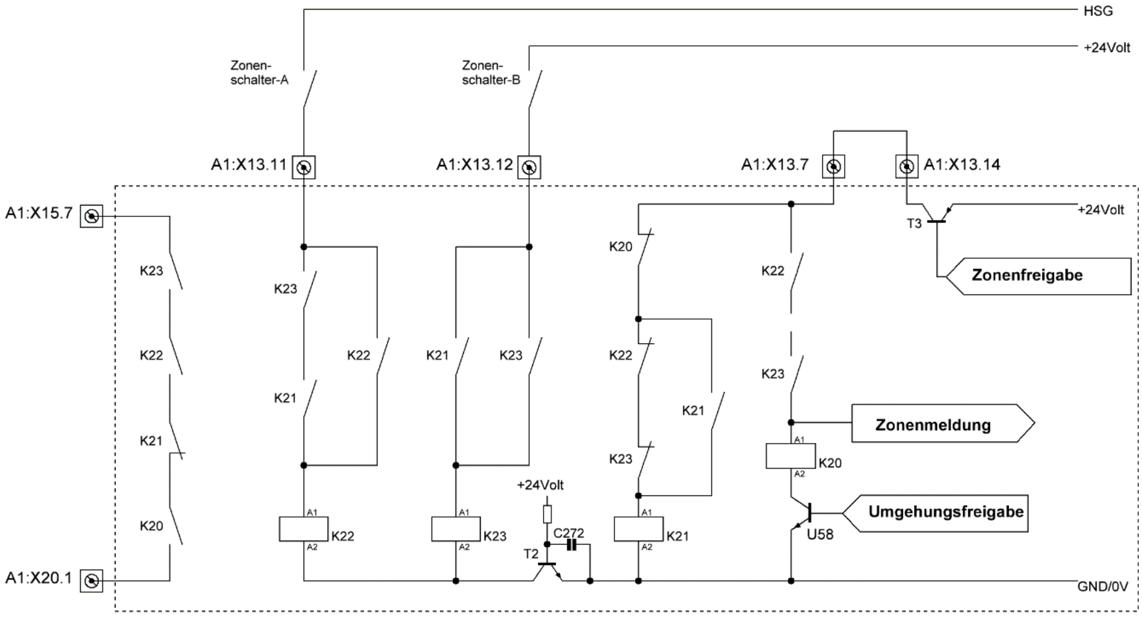

Figure 1

1. The actual safety circuit bypass control consists of the K21, K22 and K23 safety relays.
2. A zone release (+24V) must be activated by the controller. A zone release is active if necessary, i.e., if the controller is to open the car door on the corresponding floor.
3. First, K21 must be energized; for this purpose K20, K22 and K23 must be de-energized. K21 holds itself as long as K20 is not energized and there is a zone release.
4. K23 can only be energized after K21 if zone switch B closes. K23 holds itself as long as zone switch B is closed.
5. K22 can be energized after K23 and K21 if zone switch A closes. K22 holds itself as long as zone switch A is closed.

For the next test step, see page 3

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6. If K23 and K22 are energized, K20 can also be energized as soon as the controller starts the bypass release (0V). This, however, only occurs as needed and if the car speed is <0.3m/s. – Not until K20 energizes does K21 de-energize. The door bypass is now active and remains so until the bypass release is cancelled and K20 is de-energized again.
7. K22 and K23 are not de-energized until switches A and B are opened again due to a drive outside of the door zone. – Only if both relays are de-energized can another cycle begin by energizing K21 as soon as the controller switches a renewed zone release.
8. Transistor T2 is used for resetting relay K22 after a power failure. In the event of failure of the operating voltage, zone switch A continues to be supplied via auxiliary power supply HSG, allowing the door zone to be detected should freeing be necessary. At the same time, T2 switches K22 and K23 off so that when the operating voltage is restored, the switching sequences can be completed as described in 1-6.

<u>Monitoring of the safety circuit bypass control:</u>

After each drive, the active bypass is read back if flush and if car door is open by an optocoupler at the end of the safety-circuit scan control. If this signal bypass fails, a malfunction has occurred and the controller is brought to a standstill.
The cancellation of the bypass is also tested after each drive, i.e., the bypass release is deleted and K20 is de-energized if flush and if car door is open. This process is detected by the optocoupler. If the optocoupler does not detect this change, it is likewise brought to a standstill.

<u>Test instruction:</u>

- Simulate an open zone switch A; for his purpose, disconnect terminal A1:X13.11.
- The controller detects this malfunction while the car is still at the floor; a further drive is prevented.
- In addition, for hydraulically driven lifts the return device to the lowest floor is activated after the car door has been closed. There, only the pick-up for reopening the car door remains active.
- As soon as the simulated failure has been corrected, the lift can be put back into operation by switching the controller ON/OFF.

- **Operating conditions:**

The safety circuit bypass control is integrated on the printed circuit board as a fixed component of the FST-2XTs 51 00 controller.
It is designed for a temperature range from 0 to +65°C at a relative humidity of 15 to 85%. The operating voltage is 24VDC, whereas the operating contacts and conductor paths are designed for a 230VAC safety circuit fuse-protected with max. 4A. A closing contact from X20.1 to X14.1 is integrated in the controller for quick-start. Make sure there is no direct connection from X14.1 to X15.7.
The conductor paths of the safety-relevant circuits on the printed circuit board have a distance from each other of at least 4 mm. Where not technically possible, this is achieved by means of an additional air gap on the printed circuit board. According to IEC 664-1, this corresponds to pollution degree 3.
Protection against explosion, water or touching is not provided (IP00).

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EU Declaration of Conformity

According to the EU-directive

Product description:

Printed circuit boards FST-2XTs (FST 51 00) and FSM-2 (FSM 5 20) with electronic components, pick-off connections in the safety circuit and safety bypass control as well as partial system against unintended car movement for passenger and goods lifts.

Device types: **„FST-2XTs“ and „FSM-2“** in all delivered versions

The EU-type examination (Certificate-no.: EU-ESD 024) was conducted by the TÜV SÜD Industry Services GmbH, ID-Nr.: CE0036.

Manufacturing control according to QM-System ISO 9001:2015 and ARL 2014/33/EU Annex VI is carried out by the Association for Technical Inspection (TÜV Rheinland Industrie Service GmbH, ID-No.: CE0035).

The named control boards were developed, constructed and produced in accordance with the Council Directives on the approximation of the laws of the Member States.

- Low Voltage Directive 2014/35/EU
- EMC-Directive 2014/30/EU
- Lift Directive 2014/33/EU

The following standarts have been considered for the evaluation of the control board:

- EN81-20 /50:2014
- EN12015:2014
- EN12016:2013
- [EN 81-1/2: 1998 + A3:2009]

There exists a complete technical documentation. The manual for the devices is available. The safety instructions of the delivered manual must be observed! This declaration confirms the conformity of the mentioned standards and directives. It does not, however, include a guarantee of characteristics.

Graefelfing, 04.04.2019

Legally binding signature:

Peter Zeitler, Managing Director

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Notes

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