

Lift controller

MLC 8000

Operating manual

INTEC GmbH
Ingenieurservice

Ringstraße 3
04827 Gerichshain
Germany
www.intecgmbh.com

Tel.: 034292-862-30
Fax: 034292-862-33
E-Mail: info@intecgmbh.com

Lift controller MLC 8000 Operating manual V2.0

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Lift controller MLC 8000**Operating manual V2.0****Version number:**

The present description is based on the software version 1.47I of the main board HSE. Due to new requirements in the lift control field, a continuous development of the lift controller MLC 8000 is taking place. While compatibility with older software versions will always be preserved, so that the present description stays also applicable to newer or older versions of the control. There might be some features in newer versions of this specification which are not included, as well as some features of this description which might not be carried out yet in older control versions.

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Frequently used abbreviations

General terms:

LC	L anding c all	
AWG	A bsolute encoder	Position measurement system that can measure the actual position of the lift immediately after switching on; there is no reference travel required In the lift controller MLC 8000, a measuring system with magnetic tape and reading unit with integrated CAN-bus interface is typically used.
CAN	C ontroller A rea N etwork	In the lift controller MLC 8000 used bus system, with which the individual components are interconnected
COP	C ar O peration P anel	Car operating panel
VVVF	V ariable V oltage V ariable F requency	AC motor speed controller, used in modern lifts to control the main motor
ID	I dentifier	Number that clearly identifies a module on the CAN bus
CC	C ar c all	Car call
LCD	L iquid C rystal D isplay	Type of graphical display
LED	L ight E mitting D iode	
LS	L ight s creen	Light barrier
LOP	L anding O peration P anel	Outer panel
SL	S afety l ine (safety circuit)	

Control modules and other modules:

ASE	A ntriebs s teuer e inheit	drive control unit; PCB for controlling the drive (e.g. VVVF) via the CAN bus
CBC	C AN B us C oupler	see CBK; Designation is used only when using the main board MCU
CBK	C AN B us K oppler	Assembly used to divide the CAN bus for large lifts or lift groups in several physically separate segments

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CDU	C ar D istribution U nit	see FVE; Designation is used only when using the main board MCU
CPA	C AN P ositioning A dapter	see PSE; Designation is used only when using the main board MCU
DCU	D rive C ontrol U nit	see ASE; Designation is used only when using the main board MCU
DSE	D iagnose- und S ervice e inheit	Mobile handheld terminal for diagnostics and service
ESE	E tage s teuere i nh e it	<p>Name of a control assembly which is connected on shaft bus (CAN bus) for connection of landing calls, special items / outputs or serves as a car position indicator.</p> <p>As ESE different modules can be used</p> <ul style="list-style-type: none"> - UEA - LCI16 - MS3-C - PMA - LCD-047 - LCD-057
FVE	F ahrkorb- V erteilere i nh e it	Car unit (usually on the car roof or in the car operating panel)
HHT	H and- H eld T erminal	see DSE; Designation is used only when using the main board MCU
HSE	H aupt s teuere i nh e it	Main assembly of the lift controller; usually installed in the control cabinet
LCI16	L iquid C rystal I ndicator	LCD Module with CAN-Bus connection and 8 inputs / outputs (can be used in the cabin or outside the panel)
LCM	L ower C orrection M agnet	Switching point (magnet) of the lower pre-limit switch LPLS; Designation is used only when using the main board MCU
LCU	L anding C ontrol U nit	see ESE; Designation is used only when using the main board MCU
LPLS	L ower P re i mit S witch	see VU; Designation is used only when using the main board MCU

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LSI	L ower S ignaler	see SGU; Designation is used only when using the main board MCU
MCU	M ain C ontrol U nit	Main assembly of the controller; usually installed in the control cabinet
MS3-C		Car position indicator 2 digits + arrow (dot matrix 5 * 7) with CAN-Bus connection and 7 inputs / outputs (can be used in the cabin or outside the panel). Not used for new installations
MSI	M iddle S ignaler	see SGM; Designation is used only when using the main board MCU
PCU	P anel C ontrol U nit	see TSE; Designation is used only when using the main board MCU
PMA	P unkt m atrix a nzeige	Car position indicator 2 digits + arrow (dot matrix 5 * 7) with CAN-Bus connection and 8 inputs / outputs (can be used in the cabin or outside the panel)
PSE	P ositions s teuer e inheit	Positioning (adapter assembly between incremental and CAN bus)
PSU	P osition S upervising U nit	Absolute position measurement unit with safety functionality
RSI	R eference S ignaler	see SGE; Designation is used only when using the main board MCU
SDS	S low D own S witch	see SGV; Designation is used only when using the main board MCU
SGE	S ignal g eber zum E ichen	Reference or calibration switch SGE; is used as reference point for the positionin
SGM	S ignal g eber m itte	Center door zone switch (also leveling switch, usually bistable magnetic switches, inductive or capacitive switches)
SGO	S ignal g eber o ben	upper door zone switch (usually bistable magnetic switches, inductive or capacitive switches)
SGU	S ignal g eber u nten	lower door zone switch (usually bistable magnetic switches, inductive or capacitive switches)
SGV	S ignal g eber V erzögern	Slow down switch to switch to levelling speed if arriving the target floor
SRU	S afety R elais U nit	Safety assembly for advanced door opening and

re-levelling with open car doors; is used only when using the main board MCU

TSE **T**ableau**S**teuer**e**inheit

Name of a control assembly which is connected on control bus (CAN bus) inside the car panel for connection of car calls, special items / outputs or serves as a car position indicator.

As TSE different modules can be used

- UEA
- LCI16
- MS3-C
- PMA
- LCD-047
- LCD-057

UCM **U**pper **C**orrection **M**agnet

Switching point (magnet) of the upper pre-limit switch UPLS; Designation is used only when using the main board MCU

UEA **U**niverselle **E**in-/**A**usgabe-Baugruppe

Universal input / output module; control Module with CAN-Bus connection and 8 inputs / outputs; Available in 2 versions:

- UEA.1: inputs / outputs to 0V switching
- UEA.2: inputs / outputs to 24V switching

The UEA can be used depending on the configuration for various purposes:

- As ESE for connection of landing calls
- TSE to connect the car calls
- As ASE for controlling the drive unit
- As PSE for connecting an incremental encoder via CAN

UPLS **U**pper **P**re**l**imit **S**witch

see VO; Designation is used only when using the main board MCU

USI **U**pper **S**ignaler

see SGO; Designation is used only when using the main board MCU

VU **V**orendschalter **u**nten

lower prelimit switch; used as reference point for the positioning

VO **V**orendschalter **o**ben

upper prelimit switch; used as reference point for the positioning

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0. Preliminary

The main board of the lift controller MLC 8000 exists in 2 different versions:

- HSE board with integrated safety circuit and socket for modem or Ethernet interface
- MCU board without integrated safety circuit

The two boards also differ from each other in the external form; the functioning and integrated application are still largely identical.

Depending on the main board used the name of the other boards differ from each other ,as well as some specific control switches.

Mainly the board HSE is used, so that the present description relates also to this board. Basically, the present description is also applicable to control systems in which the MCU board is used.

Following is a list with the various names by the HSE or MCU:

Board	Main board HSE	Main board MCU
Car board	FVE	CDU
Boards in the car operating panel	TSE	PCU
Boards in landing operating panel	ESE	LCU
Safety circuit	Integrated safety relays KH5, KH6 and KH7	SRU
Drive control board	ASE	DCU
Positioning unit	PSE	CPA
Diagnosis unit	DSE	HHT
CAN bus coupler	CBK	CBC
Double-AWG (for moving with open door)	AWG2	SAF
AWG2 adaptor board (Double-AWG)	PSE2	POS2
Lower prelimit switch	VU	LPLS
Switching point of lower prelimit switch	VU	LCM
Upper prelimit switch	VO	UPLS
Switching point of upper prelimit switch	VO	UCM
Door zone switch (Level switch)	SGM	MSI
Lower door zone switch	SGU	LSI
Upper door zone switch	SGO	USI
Slow down switch	SGV	SDS
Correction switch (Reference switch)	SGE	RSI
Relay on the main board	KH11-16, KH41-42	KM1-8
Emergency relay on the main board	KH31	KM-CA
Inputs of the main board	E1-8 (BR, U2, MAX, U1, MIN, RHEin, Auf, Ab)	IM1-8

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1. Introduction

1.1 Operation of the Lift Controller MLC 8000 and Parameter Input

The operation of the lift controller MLC 8000 can be handled either from the keypad and LCD display located on the HSE, or with a mobile handheld terminal DSE.

HSE and handheld terminal have an LCD display with 16 * 4 characters and a keypad using the following keys:

- Number keys 0 to 9
- Cursor keys ↑ and ↓
- ENTER key ↵
- ESC key

The handling of the HSE and the handheld terminal is very simple. With the cursor keys ↑ and ↓ a menu item in the LCD display can be selected. Pressing ENTER ↵ the selected menu item starts. Either a function is activated or a submenu is called.

With the ESC key a function may be terminated or you can leave a submenu.

The entire menu structure is described in more detail in the section "Menu structure".

The handheld terminal DSE is connected via the CAN bus to the lift controller and can be inserted and withdrawn during operation. Currently located on both the HSE and on the FVE appropriate connectors. Additionally, it is possible to insert at any point corresponding adapters on both the control bus and on the shaft bus.

After connecting the hand-held terminal to the lift controller first following display appears (example):

```
** INTEC GmbH **
Lift controller
Connect to HSE
1 2 3
```

If the handheld terminal was connected to the control bus (e.g. FVE), then only the number 1 is displayed on the bottom line. Pressing ENTER ↵ the connection is made to the lift controller. Further operation of the hand-held terminal is then identical to the operation of the HSE.

If the hand-held terminal was connected into the shaft bus of an lift group, then the group numbers of all HSE modules will appear within the group. By pressing the corresponding number button it can be selected, with which lift of the group the connection has to be done (by pressing ENTER ↵ always the lift 1 is selected).

If, after you connect the handheld terminal, in the bottom line no number appears, then the CAN data transmission between handheld terminal and lift controller is disturbed.

If the CAN connection gets disturbed while working with the handheld terminal, then following display appears on the LCD screen of the handheld terminal :

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Lost connection
to HSE!
Continue with
any key!

By pressing ENTER ↵, the connection, if possible, can be reestablished.

1.2 Keyboard commands

For experienced users, there is next to the menu the so called keyboard commands used in the operation of the lift controller, where a lot of time can be saved.

Certain functions or menu items can be selected by pressing the keyboard commands directly, by passing the menu structure.

Each keyboard command consists of a sequence of digits that are acknowledged by pressing the ENTER key ↵. The time interval between 2 consecutive keys must not be greater than 3 seconds, otherwise the previously operated keys are invalid and the key command must be started from the beginning. Operated key will be shown in the LCD display on the bottom left

The keyboard commands can be used anytime, regardless of what is shown on the LCD display of the lift controller or the hand-held terminal.

Only in a few menu items or functions the keyboard commands are disabled, for example, in the menus "Travel commands" and "Door commands" or the "Hardware test".

The following table lists all the keyboard commands .

Command	Description	Notes
0 ↵	State display 1	Main screen
1 ↵	Open door 1	
2 ↵	Open door 2	
3 ↵	Open door 3	
4 ↵	Close all doors	
5 ↵	Enable /Disable door lock	
6 ↵	Enable /Disable landing calls	
7 ↵	Test drives on / off	
8 ↵	Menu "Travel movement"	
9 ↵	Save all parameters	
0 0 ↵	Menu "Basic settings"	
0 1 ↵	"Out of service" indication on/off	
0 2 ↵	Trip to inspection start position	Up to HSE version 1.45e inspection start position is defined as absolute value inside the shaft. Starting with version 1.45f the inspection start position is defined as relative position below the actual floor.
0 2 x x ↵	Trip to inspection start position related to floor xx	Only HSE version 1.45f or higher
0 3 ↵	Start Load mode	

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Command	Description	Notes
0 0 0 ↵	Menu "General parameters"	
0 0 1 ↵	Menu "Timer parameter"	
0 1 2 ↵	Menu "Error stack"	
0 1 3 ↵	Menu "Error count"	
0 1 5 ↵	Clear error stack	
0 1 6 ↵	Clear error count	
0 1 7 ↵	Clear operating time counter	
0 1 8 ↵	Clear trip counter	
1 0 0 ↵	Start Teach in trip	
1 x x ↵	Car call for floor xx (for all doors)	e.g.: 105 ↵ = Car call floor 5 115 ↵ = Car call floor 15
1 x x y ↵	Car call for floor xx, Door y	e.g.: 1051 ↵ = Car call floor 5, door 1 1152 ↵ = Car call floor 15, door 2
2 x x ↵	Landing call up direction for floor xx (for all doors)	e.g.: 205 ↵ = Landing call up floor 5 215 ↵ = Landing call up floor 15 Landing calls without door are only valid for the actual lift of a lift group.
2 x x y ↵	Landing call up direction for floor xx Door y	e.g.: 2051 ↵ = Landing call up floor 5, door 1 2153 ↵ = Landing call up floor 15, Door 3 Landing calls with door are handled by each lift of a group.
3 x x ↵	Landing call down direction for floor xx (for all doors)	e.g.: 305 ↵ = Landing call down floor 5 315 ↵ = Landing call down floor 15 Landing calls without door are only valid for the actual lift of a lift group.
3 x x y ↵	Landing call down direction for floor xx Door y	e.g.: 3052 ↵ = Landing call down floor 5, door 2 3153 ↵ = Landing call down floor 15, door 3 Landing calls with door are handled by each lift of a group.
4 0 0 ↵	Hardware test HSE	
4 0 1 ↵	Bus node test FVE, ASE and PSE	
4 0 2 ↵	Hardware test TSE boards	
4 0 3 ↵	Hardware test ESE boards	
4 0 4 ↵	Test group connection	
4 0 5 ↵	Switch to English language	
4 0 6 ↵	Switch to German language	
4 0 7 ↵	Switch to Dutch language	
4 2 0 ↵	Switch to Russian language	
4 9 0 ↵	Menu "Technical check"	
5 x x ↵	Emergency call floor xx (for all doors)	e.g.: 505 ↵ = Emergency call floor 5 515 ↵ = Emergency call floor 15
6 x x ↵	Advanced call floor xx (for all doors)	e.g.: 605 ↵ = Advanced call floor 5

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Command	Description	Notes
		615 ↵ = Advanced call floor 15
7 x x ↵	Special call floor xx (for all doors)	e.g.: 705 ↵ = Special call floor 5 715 ↵ = Special call floor 15
8 x x ↵	Set output HSE <ul style="list-style-type: none"> • 1: Relay KH11 • 2: Relay KH12 • 3: Relay KH13 • ... to Relay KH42 • 9: Output KH7 	e.g.: 805 ↵ = Output 5 (KH15) activated
9 x x ↵	Switch off output HSE (siehe above)	e.g.: 905 ↵ = Output 5 (KH15) deactivated

1.3 Password protection (Code)

The lift controller MLC 8000 has a two-stage access protection (code number). If access protection is enabled, then when you start the menu structure (pressing ENTER ↵) you will be asked to enter a numeric code.

Within the control 2 different access codes (Menu code, parameter code) can be stored. These can be activated, changed or disabled (by setting the codes to 0) in the menu item "Change password".

After entering a valid password access for 15 minutes is enabled, then the access is blocked again and the State display 1 (main screen) is displayed.

The access time of 15 minutes starts again when:

- a key is pressed on the HSE or the hand-held terminal
- the lift is in "Teach in mode"
- The menu item "Travel commands" was started
- The menu item "Door command" was launched
- The menu item "Basic settings" was started

1.3.1 Menu code

If the menu code is activated, the menu structure can only get started if the corresponding code has been entered.

1.3.2 Parameter code

If the parameter code is activated, the following actions can be performed only when the appropriate code has been entered:

- Changing parameters
- Teach-in trip
- Door movements with keyboard
- Drive movement on keyboard
- Basic settings
- Group synchronization

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1.3.3 Exceptions

Regardless of the preset or entered code following actions can always be carried out:

- Display of state images
- Input of calls over short commands
- Start menu "Technical check" with short command 490 ↵

1.4 Hardware encoding

Upon customer request all control modules can be fitted with a custom specific coding. Only modules with identical hardware encoding can work together in an lift controller. Thus, if, for example, a TSE board was connected with other hardware encoding of such the system, this module will be "ignored" completely (it appears the error message "Wrong Code TSE xxx" in the error stack HSE).

In the default state, the entire system is unprotected and control modules can be freely interchanged.

2. Menu structure

1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
Parameter				
	General paramet.			
		No.		Lift number (for information only)
		Lift type		Rope / Hydraulic
		Bottom floor		Bottom floor
		Top floor		Top floor
		Group size		Number of lifts per group (1 ... 8)
		Group number		Number of lift within a group (1 ... 8)
		Car door numb.		Car door number (1 ... 3)
		Main floor		Main floor
		Park floor		Park floor (Note: Starting with version 1.32z this parameter is in a separate submenu "Special parameter" - "Parking trip")
		Type		Collecting control / Single call control
		Safety unit		Yes: Using of separate safety unit SHM with CANopen
		Setup ready		This value is set to "Yes" if setup is completed. As long as this value is set to "No", all position values are invalid and the lift does not handle trips (only electrical recall operation and inspection possible)
		Setup trip		If set to "Yes", inputs of TSE16 will be automatically programmed for "Setup trip" (On/Up/Down/Fast) as long as "Setup ready" is set to "No".
		Push control		If set to "Yes" lift is working as a "Push control", ie, the lift only goes as long as special pushes are pressed (also called Deadman control). Note: As of version 1.36m HSE, this parameter is in the submenu "special parameters" - "Push control"
		Call config.		If set to "Yes" special "call tables" (see "Special parameter") are activated. If the lift arrives a floor by a landing call, only car calls enabled for this landing call ("Call table" will be handled). A maximum of 5 different call configurations can be set. Switching between the Call configurations occurs only when all doors are closed and (if available), the presence sensor signals "Car empty" signals that no one is inside the car anymore.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>In principle, up to 5 "logical" lifts can be created for one "real" lift, in which only floors or entrances within this "logic" lift can be approached. The function can be activated by this parameter as well as with an input ("Special function" - "Call configuration"). (Note: as of version 1.41s this parameter is displayed in a separate submenu "Special parameter" - "Call configurat.")</i>
		Doors locked		<i>By setting "Yes" never 2 car doors open at the same time. Note: Inside the menu item "Special parameters" it is possible to select, whether the "door lock" is also active in the various Special drive modus.</i>
		Ref.run speed		<i>Choice of driving speed for reference run to the SGE magnet or the prelimit switch</i>
		Ref. floor		<i>Last floor before reference switch SGE when driving in the upward direction (= floor below the reset switch)</i>
		Ref. floor ↑		<i>Last floor in upward direction before top prelimit switch VO</i>
		Ref. floor ↓		<i>Last floor in downward direction before bottom prelimit switch VU</i>
		Diving		<i>Behavior of the lift when the car is between 2 floors (eg after switching on, after a failure, etc.): VO / VU: The lift always moves to one of the prelimit switches (VO/VU). Next Floor: The lift always travels to the nearest floor</i>
		Decel.↑↓		<i>Only for positioning with Switches (see next parameter below): - SGV: Lift is slowing down to arrival speed v0 in top and bottom floor depending on state of Slow down switch SGV - VO/VU: Lift is slowing down to arrival speed v0 in top and bottom floor always in the moment VO or VU is switching on.</i>
		Pos.type		<i>Type of positioning: - CAN Encoder: (Incremental encoder with CAN interface) - Encoder (Encoder mechanical connected to car). This setting must also be selected if the motor encoder is used for the position, but the door zone is not additionally monitored by "real" door zone switch SGO / SGU - Motor encoder (using the motor encoder; always in connection with "real" door zone switches SGO / SGU) - Switch (position via a magnetic switches) - Absolute (Absolut encoder - Double-AWG (Double absolute encoder for driving with open doors without any additional magnetic switch) - Limax3CP: Special absolute encoder with integrated safety functions (e.g. replacement of final limit switchs)</i>
		Adv.door op.		<i>Advanced door opening (door opening while lift is arriving) (yes/no)</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		v Adv.door		Speed limit to open door if lift is arriving (advanced door opening)
		Pos.Adv.door		Position to open door if lift is arriving (advanced door opening)
		Releveling		Re-levelling with open doors (yes/no)
		Rel.at Call		Re-levelling if new call available (yes/no)
		LC mode		Handling of new landing call in actual floor: - reopen: re-opens the door if new landing call is pressed - ignore: if the lift already starts door closing while the new landing call was pressed the lift controller will continue closing the door and handle this call later - other lift (only for group of lifts): If a new landing call is pressed another lift of the group will go to this floor even if there is already a lift with open doors located in this floor
		Vane length		Length of the door zone (area where the door zone switch SGM is turned on) Only if this parameter is entered correctly, the control values can specify in mm or mm/s (the lift controller calculates the relation between resolution of incremental encoder and "real length in mm") If the vane length is not identical in all floors, the vane length on the 2nd floor length must be entered here.
		Cl.calls[mm]		Distance in mm from the target floor, in which the calls for this floor will be cleared (lamp off). When set to "0", the calls are cleared in the moment the lift starts slowing down (Note: Clearing a call before the lift slows down is not possible.)
		Level zone ↑		Position in mm above floor level where the lift starts re-levelling (only if parameter "Relevelling" is set to "yes") Note: When positioning via the motor encoder and magnetic switches the leveling zone is formed by the switch SGO / SGU. This parameter is of no significance in this case.
		Level zone ↓		See above; position below floor level
		Incr./m		Resolution of position encoder related to travel distance in mm. This parameter is automatic calculated during set-up trip (setting of parameter "Vane length" - see above - must be correct!) If the lift has only 2 floors this parameter must be calculated and set manually.
		v nominal		Rated speed (for speed monitoring)
		v relevel		Relevelling speed (for speed monitoring)
		v brake		For manual evacuation through brake opening via UPS in case of power failure (machine room-less lifts): Upon reaching this speed the control

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				allows the mechanical brake to come up again ("interval braking" for speed limit)
		Top limit		Distance of the upper final limit switch above top floor. This parameter is used exclusively for the detection of errors if the lift is on the top floor and the primary safety circuit (SL1) fails. If the lift is above this position, it detects error "SL final limit"; otherwise at fault "SK missing". This parameter is used for hydraulic lift, which has to stop operation if the lift was at top final limit.
		Bot.limit		See above; position of bottom limit switch
		SL door test		If set to "Yes", according to EN81-20 the shaft door safety circuit is checked after each trip (if the doors are completely openend). For this the safety unit for door zone bypass is activated for a short time and so power is switched to safety circuit input SL4. At the same time safety circuit input SL3 must not have power, otherwise the safety circuit shaft door is defective or bypassed. In this case the lift controller goes out of operation and sets the error message " SL shaftdoor on".
		SC3/SC4 test		Test of shaft door safety circuit: If SL3 is open longer than 3 seconds, but SL4 is closed at the same time, than lift controller sets error message „SL shaftdoor on“ (maybe safety circuit is overbridged). Note: This test only works well with a special wiring developed for russian market.
		Descr.		For these parameters, values or text may be entered for informative purposes. Thus, for example, better assignment can be done when the parameter set is stored on the PC.
		Manuf.		
		Year		
		Set.date		
		Traction		
		Nom.Ld. [kg]		
	Timer parameter			
		Parktime[s]		If the lift is not used for this time the lift will go to the specified parking level. (Note: as of version 1.32z these parameters are displayed in a separate submenu "Special parameter" - "Parking trip")
		Triptime[s]		Monitoring of travel movement according to EN81
		Carlight[s]		Time to turn off the car light, when the lift parks with closed doors at a floor
		Waitt.CC[s]		Time until door closing when the lift has approached a floor due to a car call (not for main floor; see below)

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Waitt.LC[s]		Time until door closing when the lift has approached a floor due to a landing call (whether simultaneously a car call existed). (not for main floor; see below)
		Waitt.nC[s]		If the lift is on a floor and there is no further call, then the lift closes after this time the doors after that time (unless "Parking with open door" is set; see Door parameters) (not for main floor; see below)
		Wt.CC Main[s]		Time until door closing when the lift has approached a floor due to a car call (just for main floor; see above)
		Wt.LC Main[s]		Time until door closing when the lift has approached a floor due to a landing call (whether simultaneously a car call existed). (just for main floor; see above)
		Wt.nC Main[s]		If the lift is on a floor and there is no further call, then the lift closes after this time the doors after that time (unless "Parking with open door" is set; see Door parameters) (just for main floor; see above)
		Doorstop[s]		Time Door Stop push stays active until pressed
		Wt.Start[ms]		Start delay after closing of the safety circuit of the shaft doors ("Debouncing")
		Wt.door[s]		Max. waiting time for safety circuit doors when starting
		Errdelay[s]		Waiting time between the occurrence of an error and further reactions of the lift controller (call canceling, setting the fault relay, sending an error message via the remote data transmission, etc.)
		Doort.Err.[s]		Time until door closing in error state. If set to '0' the doors will always stay open in error state.
	Drive parameter			
		General		
			Drive	Selection of interface between lift controller and drive unit: - Standard: control of the drive only via relays of the main board - CAN-Lust: Inverter "Lust" connected by CAN bus - CAN-ASE: Using an ASE board (UEA) as interface to lift controller - CAN-Open: Inverter interface according to CANopen Lift (DSP 417) - Em.RS485: Emerson inverter connected by RS485
			Star/D. [ms]	Changeover time star / delta (hydraulic lifts)
			Startdel [ms]	Delay between switching on running contactors and setting control signals (only if parameter "Sign.delayed" (see below) is set to "Yes" at the same time)
			Brakedel [ms]	Delay between setting control signals and switching on brake contactor

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Brakeoff [ms]	Delay between switching off the control signals and brake contactor
			Offdel. [ms]	Delay between switching off brake contactor and main / direction contactor
			Stopdel. [ms]	Delay between switching off all contactors and direction + enable signals
			Stop [ms]	Waiting time after shutdown of all control signals and contactors until the next action (e.g. opening the doors or starting a new journey)
			Sl.start [ms]	Delay when switching on the slow-start contactor if switching from fast to slow. If, for example, used for pole-changing motors where in the supply line of the slow winding-up resistors are connected. If the lift starts directly at slow speed, then the starting contactor is activated immediately.
			Contact. [ms]	Max. waiting for contactor supervising input (while switching on and switching off contactors)
			Braket. [ms]	Max. waiting for brake supervising inputs (while switching on and switching off the brake)
			Ready=1 [ms]	Only if "Ready" signal from drive exist: Max. waiting time for "Ready" signal
			Brake=1 [ms]	Only if "Brake" signal from drive exist: Max. waiting time for "Brake" signal
			Mov. =1 [ms]	Only if "Moving" (Speed > 0) signal from drive exist: Max. waiting time for "Moving" signal
			Brake=0 [ms]	Only if "Brake" signal from drive exist: Max. waiting time for "Brake" signal of at trip end
			Ready=0 [ms]	Only if "Ready" signal from drive exist: Max. waiting time for "Ready" signal of at trip end
			Error [ms]	Delay between activation of an error signal from the drive and response of the lift controller
			Sign.delayed	No: main contactors and speed signals are activated at the same time Yes: speed signals are activated delayed (see above parameter "Startdel [s].")
			Pos.mode	Special mode for lifts with CANopen drive, where the inverter selects the optimum driving speed itself. Notably, the arrival behavior and travel time are optimized, especially for short floors. Other Requirements: Positioning with CAN open interface
			Quickstart	By Quick Start the motor is already energized and the brake is released while the doors close. So the delay time is minimized during starting. For the function Quick Start a safety circuit for moving with open doors is necessary. Note: While starting the movement the door lock bypass (safety circuit) is switched off. So it is necessary to adjust the parameter "Wt.start[ms]" (see "Timer parameter" above) in a way, that the safety circuit of the doors is really closed in the moment the door lock bypass is switched off; otherwise

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>the error "SL off trip" occurs.</i>
			Qu.delay[ms]	Waiting time between starting of door closing and starting the quick start procedure (drive on). If the lift is equipped with a CANopen Lift door this parameter may be set to 0 (see also next parameter below).
			Qui.door[mm]	Only if the lift is equipped with CANopen lift doors: Door position where Quick start is activated
			Vent.time[s]	Switch off delay of car ventilator after trip end
			Relev.[ms]	Delay time for relevelling [ms]. Relevelling is only started if cabin is outside level zone for this time. So, a possible oscillation of the cabin is avoided at the flush position.
		Speeds		Only for CANopen lift drives: With this parameters the actual lift speed in mm/s is assigned to the different functional speeds:
		Speed signals		For all other drives: With this parameters it is defined which speed signal outputs will be set for the different functional speeds:
			vRL	Re-levelling speed
			V0	Arrival speed
			V1	Intermediate speed 1 (for short floor distances)
			V2	Intermediate speed 2 (for short floor distances)
			V3	Nominal speed
			vI	Normal Inspection speed
			vIS	Slow Inspection speed
			vR	Fast Electrical recall operation speed
			vRS	Slow (normal) Electrical recall operation speed
			vEE (UPS)	Evacuation speed (UPS-Evacuation)
			vHu	Lift with holding bolts: Up speed from holding bolts
			vHd	Lift with holding bolts: Down speed to holding bolts
			vZ1	Additional intermediate speed 1
			vZ2	Additional intermediate speed 2
		Drive specific		Menu item only for CANopen Lift drives: Here you can directly set parameters of the drive (usually VVVF). The meaning of each parameter is in the operating manual of the drive.
		Read from drive		The drive-specific parameters (see above) are each stored in both the drive

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				and in the lift controller. For the operation of the lift, the parameters in the drive and control need to be the same (synchronous) . If the parameters are changed in the lift controller, then they are automatically sent also to the drive (synchronized). However, if you change parameters directly on the CANopen lift drive, then the changes need to be transferred manually with this menu item from the drive to the lift controller.
		Write to drive		If a CAN open drive has been replaced, then the drive parameters can be sent with this menu item to the new drive, ie, the drive must not be customized manually before. In addition, this menu option is required if within the lift controller drive-specific parameters (see above) were changed while the drive (VVVF) was not switched on (not "available") .
	Positions/Imp.			All red marked parameters are automatically measured during the setup trip and do not need to be changed.
		Dec./stop dist.		Brake and stopping distances measured during teach-in trip
			Dec. v3 ↑	Braking distance for speed v3 in the upward direction
			Dec. v3 ↓	Braking distance for speed v3 in the downward direction
			Dec. v2 ↑	Braking distance for speed v2 in the upward direction
			Dec. v2 ↓	Braking distance for speed v2 in the downward direction
			Dec. v1 ↑	Braking distance for speed v1 in the upward direction
			Dec. v1 ↓	Braking distance for speed v1 in the downward direction
			Stop ↑	Stopping distance in the upward direction
			Stop ↓	Stopping distance in the downward direction
			Dec.vZ2 ↑	Braking distance for speed vZ2 in the upward direction
			Dec.vZ2 ↓	Braking distance for speed vZ2 in the downward direction
			Dec.vZ1 ↑	Braking distance for speed vZ1 in the upward direction
			Dec.vZ1 ↓	Braking distance for speed vZ1 in the downward direction
			Min.Dist.v3	Minimum distance between start and target floor to start with nominal speed v3
			Min.Dist.v2	Minimum distance between start and target floor to start with reduced speed v2
			Min.Dist.v1	Minimum distance between start and target floor to start with reduced speed v1

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Min.Dist.vZ2	Minimum distance between start and target floor to start with reduced speed vZ2
			Min.Dist.vZ1	Minimum distance between start and target floor to start with reduced speed vZ1
			Dec. vI ↑	Braking distance for inspection speed vI in the upward direction
			Dec. vI ↓	Braking distance for inspection speed vI in the downward direction
			Stop vI ↑	Stopping distance for inspection speed in the upward direction
			Stop vI ↓	Stopping distance for inspection speed in the downward direction
			Stop vN ↑	Stopping distance for relevelling speed in the upward direction
			Stop vN ↓	Stopping distance for relevelling speed in the downward direction
			Stop vHu	Stopping distance if moving with vHu in upward direction (lift with holding bolts)
			Stop vHd	Stopping distance if moving with vHd in downward direction (lift with holding bolts)
			Insp.start	Position for easy going on top of car, where the lift stops if the button "Special func"- "Insp.start" is pressed (see also chapter "Input functions"). This value defines the distance below selected floor. Note: Up to HSE version 1.45e this value defines the absolute inspection start position inside the shaft, not in relation to the floor position.
		Floor positions		
		Floor distances		Distance between 2 floors
			Fl. 1- 2	
			Fl. 2- 3	
			...	
		Floor height		Absolute floor position
			1.Floor	B ottom floor = 0
			2.Floor	
			...	
		SGM Positionen		Measured switching points of the door zone switch SGM
			1.Floor ↑	switching point above 1st floor
			1.Floor ↓	switching point below 1st floor
			2.Floor ↑	...

1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			2.Floor ↓	...
		
		SGO/SGU Position		Measured switching points of the door zone switches SGO/SGU
			1.Floor ↑	switching point SGO above 1st floor
			1.Floor ↓	switching point SGU below 1st floor
			2.Floor ↑	...
			2.Floor ↓	...
		
	Shaft doors			Landing door positions in each floor
		1.Floor		Shaft doors in 1st floor
		2.Floor		Shaft doors in 2nd floor
	
	Door releases			Enabling / disabling of individual shaft doors and/or complete levels depending on the actual operation mode
		Normal run, CC		Released doors for car calls during normal operation
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Normal run, LC		Released doors for landing calls during normal operation
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Auto call funct.		Released doors in operation mode „Automatic calls“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Clock run 1, CC		Released doors in operation mode „Clock run 1“
			1.Floor	Released doors in 1st floor
			2.Floor	"

1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			...	"
		Clock run 1, LC		Released doors in operation mode „Clock run 1“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Clock run 2, CC		Released doors in operation mode „Clock run 2“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Clock run 2, LC		Released doors in operation mode „Clock run 2“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Clock run 3, CC		See above, up to clock run 5
			...	
		Special run		Released doors in operation mode „Special run“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		VIP run		Released doors in operation mode „VIP run“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Emergency run		Released doors in operation mode „Emergency run“
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Fire evac. run		Released doors in case of fire detection
			1.Floor	Released doors in 1st floor

1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			2.Floor	"
			...	"
		Firemen run		Released doors for fireman trip
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
		Hazard transport		Released doors for hazard transportation mode
			1.Floor	Released doors in 1st floor
			2.Floor	"
			...	"
	Door park mode			If parking with open doors is enabled (see Door parameters), then here it can be set individually for each floor, which doors should remain open when the lift is on the equivalent floor.
			1.Floor	Opened doors if lift is on 1st floor
			2.Floor	Opened doors if lift is on 2nd floor
		
	Door parameter			Parameters for up to 3 car doors
		Gener.door para.		
			Cl.push	Operation of the door-close button No delay: the door-close button is immediately active at the beginning of the door opening, ie, the opening of the door can be interrupted by pressing the door-close button and the door closes immediately delayed.: button is not active until the door was fully open
			Op.push D1	Operation of the door-open button for car door 1 all: open all the doors of the relevant floor. last: The last opened doors will open again enabled: All released doors according to the operation mode will be opened (see parameter "Door releases" above)
			Op.push D2	Operation of the door-open button for car door 2 (see above)
			Op.push D3	Operation of the door-open button for car door 3 (see above)
			Dr.closeD1	Operation of the door closing in normal mode: auto: The door closes automatically to start a trip pulse: The door is not closed until the close-door-button was pressed shortly.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<p><i>stop: The door is closed only when the door-close-button is pressed and held down. Releasing the button stops the door.</i></p> <p><i>reverse: Door is closed only when the door-close-button is pressed and held. When releasing the button, the door opens again as long as she was not completely closed</i></p>
			Dr.closeD2	Door close mode for door 2; see above
			Dr.closeD3	Door close mode for door 3; see above
			Forced Cl.	With setting "no" the lift will never do a forced door closing (ignoring light screen)
			Re.sign.[s]	Time to switch on a signal "Release door" ("Spec.out"- "Release door"), in case the door is blocked
			Closeatt.SC4	Number of door close attempts, if shaft door contact (SC4) is not closing, before the lift controller sets a error message and clears all calls,
		Door 1 parameter		Parameter for 1st car door
			Door type	<p>Standard: Door is controlled by digital signals</p> <p>CANopen: Door drive with CANopen lift interface</p> <p>3-wire: interface with 3 wires ST1 / ST2 / ST3 (e.g. AT-120)</p>
			Park mode	<p>allow: Lift is parked with open doors</p> <p>forbid: Lift is parked with closed doors</p>
			Revolv.door	yes: shaft doors on the door side 1 are revolving doors
			Lightscr.[s]	time indication how long the door remains open after the reopening by light screen interruption
			Revers. [s]	time indication how long the door remains open after the reopening by force limitation (reversing switch)
			Nudging[*2s]	<p>If the light screen is interrupted continuously, then the door is closed after this time anyway (forced door closing). Here, the closing occurs with reduced force or speed; in addition, it will sound (if available), an acoustic signal.</p> <p>Note: The nudging time is entered in 2s increments. If for example the numerical value 20 is entered, the forced closing starts after 40s. Entering the value 0 disables this feature.</p>
			Opentime [s]	<p>Door opening time</p> <p>This parameter has, depending on the type of door, 2 different meanings:</p> <ul style="list-style-type: none"> - For doors with door-open-limit-switch the lift controller monitors if the door is fully opened at the latest after this time. The time must be chosen in this case so long, that the door has opened securely within that time. - For doors without door-open-limit-switch the lift controller assumes that the door is fully opened after that time. Here, then, the time should be entered which actually the door requires to open.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Closetime[s]	Door closing time The lift controller monitors whether the doors are closed at the latest after this time.
			Op. attempts	Number of door open attempts If the door can't properly open in a floor, the lift can be operated with a new call to another floor. This process can only be repeated according to the number set here. If the door cannot be opened after that number of attempts, the lift goes out of service. If the value 0 is set, there is an unlimited number of opening attempts.
			Cls.attempts	Number of door close attempts Here it is set how often the lift controller tries to close the door before the lift goes out of service. If the value 0 is set, there is an unlimited number of closing attempts.
			Rev.del.[ms]	Waiting time between changing the direction of the movement of the door
			Cls.delay[s]	Waiting time between a door closing command of the lift controller and the actual closing of the door. Within this waiting time, for example, a warning (acoustic / optical signal) can take place
			Relays	Switching status of the door close relay after the door is completely closed or of the door open relay after the door is fully opened. - both on: The door close relay remains on after the door is completely closed; the door open relay remains energized after the door is fully opened - both off: Once the door is fully opened or closed, the door close relay and door open relay are switched off - Open on: The door open relay remains energized after the door is fully opened; but the door close relay is switched off after the door is completely closed. - Close on: The door close relay remains energized after the door is fully closed; but the door open relay is switched off after the door is completely opened.
			MaxCl.Rel[s]	Only relevant if the "relay" parameter (see above) is set to "both on", or "Close on": Here a maximum time can be set for the door close relay to remain switched on. At standstill, the relay switches off after this time (e.g. to prevent overheating the door motor) If this value is set to 0, then the door close relay is always turned on when the door is closed.
			MaxOp.Rel[s]	Only relevant if the "relay" parameter (see above) is set to "both on", or "Open on": Here a maximum time can be set for the door open relay to remain switched on. At standstill, the relay switches off after this time (e.g. to prevent

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				overheating the door motor) If this value is set to 0, then the door open relay is always turned on when the door is opened.
			CloseRel [ms]	Only relevant if the "relay" parameter (see above) is set to "both off", or "Open on" and the door has a door close limit switch: After the door has been closed completely (door limit switch actuated), the door close relay is delayed switched off by this time.
			Max.LS [s]	If the light screen is constantly interrupted, then an error message will be set after this time. Entering the value of 0 this feature is disabled.
			Max.Reverse	Max. number of door closing with reverse signal (mechanical obstacle) If this value is set to '0' the number is unlimited.
			Pres.sen.	Door behavior if presence sensor is activated (see „Input function“): Hold: Extended door open stay time Open: Closing doors will be re-opened (additional to extended door open stay time)
			Fingerprot.	Deactivation of the finger protection function. In case of door drives with CANopen function it may be necessary to deactivate the anti-trap monitoring when opening ("finger protection")
			Ramp off	never: The door ramp magnet remains constantly energized while the door is closed. always: The door ramp magnet is always switch off at standstill after a time delay (see parameter"Max. ramp" below). betw.fl.: If the lift stands between 2 floors (outside the door zone), then the door ramp magnet is turned off after a time delay (see parameter"Max. ramp" below)
			Ramp	with door: The door ramp magnet is switched off when the door-opening gets started after door: The door ramp magnet is switched off when the car door is fully opened..
			Rampdel. [ms]	Delay time between closing the revolving door and switching off of door ramp magnet (debouncing)
			Ramp off [ms]	Delay time between turning off the door ramp magnet and opening the car door. This ensures that the car door is unlocked safely before opening.
			Add.R.on [ms]	The additional door ramp magnet is activated while the door is opening or closing (mechanical unlocking of the door). With this parameter, a waiting time can be adjusted between the activation of the additional door ramp magnet and the beginning of the door opening or door closing.
			Add.R.off [ms]	With this parameter a waiting period can be adjusted between end of door opening or door closing and the switching off the additional door ramp magnet.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Max.Ramp [s]	Max. time the door ramp magnet is switched on while the lift is standstill (only if parameter „Ramp off“ = Always" or. "Between floors" - see above)
		Door 2 parameter		Parameter for 2nd car door
			...	See car door 1 parameter above
		Door 3 parameter		Parameter for 3rd car door
			...	See car door 1 parameter above
	Floor name			Names of the floors (for floor level indicator). This setting is only relevant if the indicator is controlled directly via the CAN bus.
		1.Floor		1st floor designation (eg. 'GF' or '0')
		2.Floor		2nd floor designation
		...		
	ESE disp.alloc.			Assignment of a floor level indicator to one of the lifts inside a lift group.
		ESE 1.1 Lift		Specifies, from which Lift the actual floor position is displayed at the floor level indicator with node ID 1, branch number 1 (ESE1.1)
	
		ESE64.8 Lift		Specifies, from which Lift the actual floor position is displayed at the floor level indicator with node ID 64, branch number 8 (ESE64.8)
	Mandatory PCBs			Setting, which TSE or ESE modules are necessary for the operation of the lift
		Mandatory TSE		
			TSE 1	If set to "Yes" the lift goes to error state ("PCB fault") if the TSE1 does not work or does not exist, but Inspection and Recall operation are still possible. If set to "Safe" even Inspection and Recall operation are not possible anymore. If set to "No," the lift continues operation even without TSE1 and only a warning ("Maintenance") flashes in the display.
			TSE 2	
			...	
		Mandatory -ESE		See TSE above
			ESE 1.1	
			ESE 1.2	
			...	
			ESE 64.8	

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
	HSE in-/outputs			Function of the inputs and outputs of the mainboard HSE
		HSE Inputs		
			1 :	Function of input 1 of HSE
		
			15 :	Function of input 15 of HSE
		HSE Outputs		
			1 :	Function of output 1 of HSE
		
			8 :	Function of output 8 of HSE
	FVE in-/outputs			Function of the inputs and outputs of the car unit FVE
		FVE Inputs		
			1 :	Function of input 1 of FVE
		
			28 :	Function of input 28 of FVE
		FVE Outputs		
			1 :	Function of output 1 of FVE
		
			16 :	Function of output 16 of FVE
	ASE in-/outputs			Function of the inputs and outputs of the drive control unit ASE
		ASE Inputs		
			1 :	Function of input 1 of ASE
		
			8 :	Function of input 8 of ASE
		ASE Outputs		
			1 :	Function of output 1 of ASE
		
			8 :	Function of output 8 of ASE
	TSE in-/outputs			Function of the inputs and outputs of the car panel unit TSE
		TSE 1		

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		TSE 1 Inputs		
			1 :	Function of input 1 of TSE1
		
			8 :	Function of input 8 of TSE1
		TSE 1 Outputs		
			1 :	Function of output 1 of TSE1
		
			8 :	Function of output 8 of TSE1
	TSE 2			
		TSE 2 Inputs		
			1 :	Function of input 1 of TSE2
		
			8 :	Function of input 8 of TSE2
		TSE 2 Outputs		
			1 :	Function of output 1 of TSE2
		
			8 :	Function of output 8 of TSE2
		...		
		Add PCB		With this menu item another car panel unit TSE can be added (max. 16). Finally the new TSE is only added if at least 1 input or output function is defined for this TSE.
			Node ID	Set node ID of new TSE board
			Add TSE	Add TSE board with the defined node ID (see above)
		Remove PCB		With this menu item an unused car panel unit TSE will be deleted (it will delete all input-output functions of the TSE)
			Node ID	Node ID of the TSE which will be deleted
			Remove TSE	TSE to be deleted with the above entered number
		Copy PCB		Copy all parameters of one TSE to another
			Source ID	Number of TSE, of which the parameters are to be copied
			Target ID	Number of TSE, to which the parameters are to be copied
			Copy parameter	Copy parameters from source to destination TSE

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
	ESE in-/outputs			Function of the inputs and outputs of the landing panel unit ESE
	ESE 1.1			
		ESE 1.1 Inputs		...
			1:	Function of input 1 of ESE1, branch 1
		
			8:	Function of input 8 of ESE1, branch 1
		ESE 1.1 Outputs		
			1:	Function of output 1 of ESE1, branch 1
		
			8:	Function of output 8 of ESE1, branch 1
		...		
	ESE 64.8			
		ESE64.8 Inputs		
			1:	Function of input 1 of ESE64, branch 8
		
			8:	Function of input 8 of ESE64, branch 8
		ESE64.8 Outputs		
			1:	Function of output 1 of ESE64, branch 8
		
			8:	Function of output 8 of ESE64, branch 8
		Add PCB		With this menu item another landing panel unit ESE can be added (max. 512). Finally the new ESE is only added if at least 1 input or output function is defined for this TSE.
			Node ID	Set node ID of new ESE board
			Branch No.	Set branch number of new ESE board
			Add ESE	Add ESE board with the defined node ID and branch number (see above)
		Remove PCB		With this menu item an unused landing panel unit ESE will be deleted (it will delete all input-output functions of the ESE)
			Node ID	Node ID of the ESE which will be deleted
			Branch No.	Branch number of the ESE which will be deleted

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Remove ESE	Remove ESE with the above entered node ID and branch number
		Copy PCB		Copy all parameters of one ESE to another
			Source ID	Node ID of ESE, of which the parameters are to be copied
			Target ID	Node ID of ESE, to which the parameters are to be copied
			Source Branch	Branch number of ESE, of which the parameters are to be copied
			Target Branch	Branch number of ESE, to which the parameters are to be copied
			Copy parameter	<i>Start copying parameter</i>
	Special param.			<i>Parameters for special control functions</i>
		Special run adj.		<i>Parameters for special trips</i>
			Finish trip	<i>yes: The actual trip is first finished before the special drive mode is started. no: The lift stops at the next possible floor and goes as fast as possible in special drive mode.</i>
			CC Prior.[s]	<i>After the lift has approached a floor by a special landing call, the lift waits the time which is set. Then he goes, if no special trips in the car operating panel were activated back to normal operation.</i>
			CC if active	<i>yes: Special car calls can only be entered if the special drive mode is activated via a switch inside the car. no: Special car calls can be entered within the time "CC enable" (see below); there is no additional activation switch required</i>
			CC enable[s]	<i>After the lift has approached a floor by a special landing call or a special trip input has been activated inside the car, special trips can be started within this time by pressing any car calls. After this time, all calls are locked again until the special trip input is activated again inside the car. f this value is set to 0, then special trips can be started via the car calls without time limitation.</i>
			->normal [s]	<i>After the lift has finished the special trip, the lift returns back to normal operation after this time, except a new special car call has been entered inside this time.</i>
			Land.CC canc.	<i>yes: All car calls are deleted after the lift has approached a floor by a special landing call. no: The lift will keep all already entered car calls and will handle them once the lift returned back to normal operation.</i>
			LC disable	<i>yes: All landing calls are deleted and blocked when the lift is in special run mode. no: Existing landing calls are already stored and new landing calls are taken, but only approached once the lift has returned to normal operation.</i>
			CarC.canc.	<i>on: All car calls are deleted when the special trip switch inside the car is</i>

1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<p>turned on.</p> <p>off: All car calls are deleted when the special trip switch inside the car is turned off.</p> <p>on+off: All car calls are deleted when the special trip switch inside the car is turned on or turned off.</p> <p>no: Car calls will not be deleted when the special trip switch inside the car is turned on or turned off.</p>
			Max. CC no.	<p>Max. Number of special car calls that can be entered in the special trip mode at the same time.</p> <p>If this value is set to 0, then the number of special car calls is not limited.</p>
			All.norm.CC	<p>yes: If the lift is in special trip mode, but special car calls currently disabled (see above), then new pressed car calls will be stored as standard car call and will be handled once the lift went back to normal operation.</p> <p>no: If the lift is in special trip mode, but special car calls currently disabled (see above), then all car calls completely disabled.</p>
			Call no door	<p>yes: Lift will go to a floor by a special car call, even if non of the called doors in this floor are enabled.</p> <p>no: Lift will ignore special car calls, if non of the called doors in this floor are enabled.</p>
			Park doors	<p>Enabled: If starting park state (no new call is pressed; see Timer parameter above) all enabled door will stay open</p> <p>Called: If starting park state (no new call is pressed; see Timer parameter above) all doors opened by last call will stay open.</p>
			Doors locked	<p>If setting to "yes" never 2 or more car doors will stay open at the very same time in special trip mode.</p>
			Dr.closeD1	<p>Operation of the door closing in special trip mode:</p> <p>auto: The door closes automatically to start a trip</p> <p>pulse: The door is not closed until the close-door-button was pressed shortly.</p> <p>stop: The door is closed only when the door-close-button is pressed and held down. Releasing the button stops the door.</p> <p>reverse: Door is closed only when the door-close-button is pressed and held. When releasing the button, the door opens again as long as she was not completely closed</p>
			Dr.closeD2	Door close mode for door 2; see above
			Dr.closeD3	Door close mode for door 3; see above
		VIP run adj.		Parameters for VIP run

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			...	See parameter for special run above
		Emerg. run adj.		Parameters for Emergency run
			...	See parameter for special run above
			Forc.door cl.	yes: light screen is ignored when the door is closed; Door closes with reduced force or speed; additionally, an accustic audible signal sounds (if present). no: „normal“ door closing
			By fire	Specifies whether emergency trips can be started in case of fire (yes / no). If set to "yes" emergency trips have higher priority than fire alarm control (see below)
			Run to fire	Indicates whether the floors can be reached in which a fire alarm is active (yes / no)
		Parking trip		Parameters for park ride
			Park mode	Fixed: The lift goes to a fixed Park Floor Zones: The lift is parked in the pre-defined zones (mainly for lift groups)
			Park floor	Park floor if park mode is "Fixed" (Note: Up to version 1.32y this parameters is displayed in the menu "General parameter")
			Parktime[s]	If the lift is not used for this time the lift will go to the specified parking level. (Note: Up to version 1.32y this parameters is displayed in the menu "Timer parameter")
			Zone 1 Start	Bottom floor of the parking zone 1
			Zone 1 Stop	Top floor of the parking zone 1 Note: If the top floor value is less than the bottom floor value, then the parking zone is disabled
			Zone 2 Start	See above
			Zone 2 Stop	See above
			
			Zone 8 Start	See above
			Zone 8 Stop	See above
			Mand.zones	Specifies how many parking zones (starting with zone 1) must be filled. Example: In a group lift 1 is parked within zone 1 and lift 2 is parked in zone 2. If lift 1 is called to another floor and the value of "Mandatory zones" is > 0, then lift 2 goes to zone 1 and parks there. If the value "Mandatory Zone = 0 he would remain in Zone 2.
		Visitor calls		Parameters for visitors calls and visitor control

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			CC enabl. [s]	Time period car calls are enabled after the lift was sent to a floor by a visitor call (type 1 and type 2)
			LC enabl. [s]	Time period landing calls are enabled after a visitor call (type 1 and type 3) was set.
			Vis.requ. [s]	Duration of signalling a visitor request (see "Visitor floors" below)
			Door cl.	Operation of the door closing after automatic setting of a car call (Visitor call3 or target call) auto: The doors close automatically to start a trip pulse: The doors are not closed until the close-door-button was pressed shortly. stop: The doors close only when the door-close-button is pressed and held down. Releasing the button stops the doors. reverse: Doors are closing only when the door-close-button is pressed and held. When releasing the button, the doors open again as long as they were not completely closed
			Lift empty	Yes: For visitor call type 2 and 4 (landing call is set automatic) the lift controle disables all car calls, but already stored car call are still handled. If all car calls are served and the lift is empty (if sensor "Car empty" exists), the lift serves the visitor call. Landing calls are disabled during this time, but will not be served before the visitor call is handled completely.
			Max.wt.empty	If all doors are closed and the car sensor "Car empty" is not active, the visitor call will be cancelled after this waiting time. By setting this parameter to 0 this function is deactivated.
		Visitor floors		Floors (or doors), which can only be approached through a special visitor control (so called attica or penthouse control). Short description of the visitor control: If in the car panel a car call button is pressed to a visitor floor, a signal ("Vis.request") is set for an adjustable time. If the home owner presses an enable button ("Vis.request"), the pressed car call will be acknowledged by a flashing lamp. To set the car call the visitor has to press the car call again (while the lamp is flashing). Once this is done, the acknowledgement lamp lights up continuously and the lift will go nonstop to the called floor.
			Floor 1	Doors in floor 1 which only may be called by a visitor call (see above)
			Floor 2	See above
			
		Destinat.control		Parameter for destination selection control. By a destination selection control the target floor has to be entered at a special input panel in floor level. The lift controller assigns a lift of the group

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>to each call. No car panel necessary.</i>
			Call wait.[s]	<i>Door open stay time, if a call is set while the lift is already located on this floor with doors open. This is how much time a passenger has to reach the assigned lift.</i>
			LC dir. Dep.	<i>Indicates whether assigned lifts are directional. In the case of a direction dependency (setting "Yes"), a passenger should only use the assigned lift if it indicates his chosen call direction. In this case, it is quite possible that the elevator stops on this floor, but initially travels in the opposite direction first. If the setting is "No", no further calls in the opposite direction are assigned to a lift if it already has to process calls in one direction.</i>
			Handicapt	<i>With setting „Yes“ handicap destination calls will be handled like calls for handicap people (see description below).</i>
			Handicapt prio.	<i>If priority is set to a value between 1 and 8, handicap calls will be handled by the lift with highest priority. If the lift with highest priority is not available, the call will be handled by the lift with second highest priority. If priority is set to '0', the handicap call will be handled by the "fastest" lift. Behindertenrufe werden vorrangig durch den Aufzug mit der höchsten Priorität bedient</i>
			Handic.places	<i>Indicates, how many places in a cabin should be reserved for a person with handicap (e.g. wheelchair user). If a lift in a group is not suitable for people with disabilities, then this parameter can simply be set to a value greater than parameter "Max. persons" (menu "General param."</i>
			Init DSCTerm.	<i>When initializing the ESE, if the setting is "Yes", door positions and floor names are also sent to the ESE. This makes sense for lifts with destination selection controls, since the input terminals require these parameters. However, the parameter transmission requires approx. 2s additional per ESE, so that it makes sense to set this parameter back to "No" after commissioning. There are also problems when the elevators in a group have different numbers of floors.</i>
		Handicapt people		
			Call type	<i>Call type, which is processed as handicap call (landing call Type 1 Type or landing call Type 2) If the relevant landing call (type 1 or type 2, according to this parameter) is activated in a floor, the lift drives to this floor according to the landing call processing. While arriving the floor where the handicap call was activated the voice output is activated. Upon activation of any car call, the destination floor is announced, also speech signals for "door is opening", "door is closing" and the current direction of travel ("lift going up-/downwards"). The</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				waiting time until door closing starts is extended accordingly (see parameter below). If more car calls were given when leaving the station, they are also announced by the voice output. Car calls that were given after the floor status changes are no longer announced. The voice output and increased door open time remain active until all car calls that were pressed after the handicapt call are handled. After that, the handicapt function is off until a new handicapt call is activated.
			Call wait.[s]	Extended door open time for handicapt call function (see above)
		Transp.of goods		Function for transportation of goods: Door stays open as long as no car call is pressed; landing call will be stored, but not handled
			Input	Defines the input, which can start and stop this function: „Door op.“: Activation by long pressing of door open push „Clear CC“: Activating by long pressing of „Clear car call“ button „Both“: Activation by either door open push or Clear car call button
			Activation[s]	Time, how long the input must be pressed (see above)
			Deactivat.[s]	Time delay to return from this function to normal operation. Additional the following conditions must be happens: - Lift is located in a floor with open doors - No car call is active - Load measuring unit signals zero load (if exist) - „Car empty“ sensor is activated (if exist)
		UPS Evacuation		Parameter for emergency power evacuation
			Min.delay[s]	Minimum waiting time period following activation of the "evacuation" signal, until the lift starts the evacuation trip, even if the signal "Evac. enable" is already set before this time expires.
			Max.delay[s]	At the latest after this time, after the signal "evacuation" has been activated, the lift starts the evacuation trip, even if the signal "Evac.enable" is not activated. If this parameter is set to 0, then the lift waits in any case for the signal "Evac.enable" before starting the evacuation trip.
			Close dr.[s]	Specifies the time after which the door should be closed after reaching the evacuation floor. If 0 is set, the door remains open
			Max. speed	Max. Travel speed during evacuation (v3/v2/v1)
			Auto return	yes: When switching off the signal "evacuation", the lift returns to normal operation no: The lift does not go back to normal operation (only by a Reset)
			Dec.UPS[mm]	Slowing distance during evacuation via UPS. At this position the lift controller switches from evacuation speed vEE(UPS) to arrival speed v0. If the lift should stop directly from vEE(UPS) this parameter must be set to 0.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>This value can not be measured during the setup trip and therefore must be set manually here.</i>
			Triptime[s]	<i>Monitoring of travel movement according to EN81 while evacuating</i>
			Direct.	<i>Up+Down: UPS evacuation will be done in up or down direction depending on the input "half load", but change direction if evacuation is not possible in this direction by a drive error Downwards: UPS evacuation only in downwards direction (e.g. hydraulic lifts) By drive: Evacuation direction is decided by drive (VVVF), depending on the easiest way (load)</i>
			Evac.type	<i>By drive: Drive (e.g. VVVF) will work during evacuation By brake: UPS evacuation is done by automatic brake opening</i>
			Brakedel.[s]	<i>Time delay for emergency evacuation by opening the brake. When the brake evacuation is activated - either automatically with "Evak.typ = Brake" (see above) or manually via the input "Emergency power ev." - "Brake release", the output "Emergency power ev." - "Brake release" is activated and prevents for opening the brake during this time delay. The current brake delay time is displayed in the evacuation status display on the HSE. Background: Some frequency inverters (e.g. Zetadyn 4C) require a discharge time (approx. 20s) in contactorless operation with synchronous drive until the integrated motor short-circuit takes effect. This function can be used to prevent the brakes from being opened before the inverter is discharged and the elevator from rolling away in an uncontrolled manner.</i>
		Evacuat.control		<i>Parameters for evacuation operation according to EN81-76</i>
			Door cl.	<i>Operation of the door closing in evacuation mode: auto: The door closes automatically to start a trip by the lift controller pulse: The door is not closed until the close-door-button was pressed shortly. stop: The door is closed only when the door-close-button is pressed and held down. Releasing the button stops the door. reverse: Door is closed only when the door-close-button is pressed and held. When releasing the button, the door opens again as long as she was not completely closed</i>
			Door op.	<i>See above; handling of door opening</i>
			Fire alarm	<i>yes: Floors where a fire alarm has been triggered, can not be approached in evacuation mode</i>
			Run thr.fire	<i>yes: The lift can pass through floors, where the fire alarm was triggered.</i>
		FireEvacRun adj.		<i>Parameter for fire control</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Forc.door cl.	yes: Light screen is ignored when the door is closed; Door closes with reduced force and speed; additionally, an audible signal sounds (if present) no: „Normal“ door closing
			Door op.push	Setting if door open push is still active or disabled in fire evacuation mode
			Door state	opened: door remains open after reaching the relevant floor reclose: Upon reaching the set floor the door opens and then closes again See also parameter “Fire safe doors” below
			Dynamic mode	yes: If the lift has already moved to a “safe” level in case of fire, but the fire alarm is activated than in this floor, then the lift drives to another “safe” level. no: after moving to a “safe” level in case of fire the lift will stay in this floor, even if the fire alarm triggers in this floor.
			Fire det.act.	no: The fire alarm of the individual floors are ignored unless the input “fire” is enabled. yes: the fire alarm of the individual floors are evaluated regardless of the state of the input “fire”.
			Auto return	yes: After disabling the input “fire” (and, if parameter “Fire det .act ” is set to yes, all fire detectors on each floor; see above) the lift returns back to normal operation. no: The lift does not return to normal operation even after deactivation of all fire signals.A Power off or Reset is necessary. No++: Fire mode is stored in nonvolatile memory, so even in case of Reset or power off the lift will not go back to normal operation. This is only possible by setting an input “Fire control” - “Fire return” or by selecting the menu “Fire mode off”
			Run thr.fire	yes: The lift goes when needed, through the floor, where the fire alarm is activated, to reach the nearest “safe” level. no: The lift never goes through a floor where the fire alarm has been activated.
			Last trip	yes: Even if it is not possible, according to the settings “Fire evac. floors” (see below), to approach one of the safe floors, (f.ex. because all fire alarms had been triggered) the lift approaches the last fire floor, according to this setting.
			Last floor	Lift goes to this floor, if ther is no other safe floor avavailable (see above).
			Land.calls	Setting, if landing calls are enabled. If so, landings calls are handled one by one.
			Carlight off	Switch off car light if fire evacuation floor reached
		Fire evac.floors		Setting of safe floors in case of fire
			1. F.Evac.fl.	In case of fire the lift will go to this floor if possible

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			2. F.Evac.fl.	If it is not possible to go to the 1st fire evacuation floor in case of fire (see above), the lift will go to this 2nd fire evacuation floor.
		
		Fire safe doors		Setting, which doors can stay open in fire alarm mode
			1.Floor	Doors that can remain open during fire alarm mode in floor 1
			2.Floor	Doors that can remain open during fire alarm mode in floor 2
		
		Firemen run adj.		Parameter for fireman trip
			Door cl.	Operation of the door closing in fireman mode: auto: The door closes automatically to start a trip pulse: The door is not closed until the close-door-button was pressed shortly. stop: The door is closed only when the door-close-button is pressed and held down. Releasing the button stops the door. reverse: Door is closed only when the door-close-button is pressed and held. When releasing the button, the door opens again as long as she was not completely closed
			Door op.	See above; handling of door opening
			Calls	Always: Car calls are always accepted in firemen mode Dr.closed: Calls are only accepted if doors are closed
			2.Car call	Yes: A new car call will be accepted; the old car call will be cancelled No: A new car call will not be accepted; the old car call must be cleared before by using the "Cancel" button ("Spec.funct."-"Clear calls" or "Clear CarCall")
			Door op.[mm]	Only for CANopen doors and setting "Door op. = reverse": Door opening position where the doors will not re-close if the door open push is released
			Door cl.[mm]	Only for CANopen doors and setting "Door cl. = reverse": Door closing position where the doors will not re-open if the door close push is released
			Doors locked	By setting "Yes" never 2 car doors open at the same time in fireman mode.
			Door firefl.	Operation of the door (opening and closing) in fireman floor (main floor): auto: In the fireman floor the door opens and closes during firefighting operation always automatically, regardless of the settings described above. fire: In the fireman floor the door opens and closes like defined in the above setting for all other floors (auto/pulse/stop/reverse).
			Retrieve car	yes: if the lift is already in fire service operation, but the firemen run input is switched off, the lift can be called back into the fireman floor by re-activating

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<p>the fire call.</p> <p>no: The lift can not be called back into the fireman floor once fire operation has been started.</p> <p>auto: If the firemen run input is switched off and all doors are closed, the lift will return automatic to the firemen floor, if the input fire call is still set.</p>
			Retrieve[s]	Only if parameter "Retrieve car = yes" (see above): Time, fire call input must be switched off before it is possible to call lift back to fire floor (according to EN81-72 at least 5 seconds)
			Autofiremode	<p>yes: After reaching the fireman floor the lift will go to fireman operation automatically.</p> <p>no: To start fireman operation a separate key switch is necessary inside car panel.</p>
			Auto-normal	<p>Indicates whether the lift (if fire brigade call is available after returning to the fire floor) returns to normal operation after turning off the fireman key switch. If "No", power off or reset is required.</p> <p>If set to "No++" the fireman operation mode is stored in nonvolatile memory, so even in case of Reset or power off the lift will not go back to normal operation. This is only possible by setting an input "Fire control" - "Firemen off" or by selecting the menu "Firemen mode off"</p>
		Earthquake mode		
			Wait time[s]	Waiting time after deactivation of seismic wave sensor until going back to normal operation.
			Max. speed	Max. speed for trip ton ext floor if earthquake or seismic wave sensor is activated.
		Hazardous goods		
			Car calls	<p>yes: Targeted selection is done via car calls</p> <p>No: Separate hazardous calls are necessary.</p>
			Car fan	<p>normal: cabin fan works even when transporting dangerous goods as in the default mode.</p> <p>always: During a hazardous transport, the cabin fan is running constantly</p> <p>Never: During a hazardous transport, the cabin fan is always off.</p>
			Fireman mode	yes: Fireman service has higher priority than hazardous transportation
			Hazard car	<p>Switch: The Dangerous mode is switched on and off by a switch inside the car</p> <p>Push: Pressing the button inside the car the hazard mode is activated; by pressing the push again it is deactivated.</p> <p>autom.: After reaching the target floor by a hazard call, the hazard mode starts automatically . If the hazard call for the current floor with the door</p>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				open is pressed again, the hazard mode is terminated (Note: Function can be used only if it is accompanied with a separate button for open door / close door (see below))
			Dr.op.call	Indicates whether the car door opens automatically after entering the destination floor by a hazardous call.
			Dr.input	yes: Lift has separate push for opening / closing the door no: Opening / Closing is started by hazardous call button
			Clear calls	yes: If a hazardous call was set all calls are cleared and disabled immediately. no: All saved car calls are handled, but new calls are not accepted. If all old car calls are handled, the lift will go to the hazardous call floor. Landing calls are always deleted immediately.
			->normal[s]	Specifies the time after which the lift goes back to normal operation if the lift was called by a hazardous call to a floor, but the hazardous mode was not started via the switch or button inside the car (see above).
		Start blocking		Parameter for function „Start blocking“: This function is used if never more than 1 lift should move at the same time (e.g. emergency power supply). Blocking is done by digital inputs/outputs.
			Mode	always: start blocking active in both directions upwards: start blocking active only in upwards direction (for hydraulic lifts) Pump start: start blocking only active while pump motor of hydraulic lifts is starting Start: start blocking in both directions while lift is starting
			Number	Continuous number for lifts, which are connected together for function „Start blocking“. Each lift must have a unique number.
			Start [s]	Only if Mode setting is "Start": Time delay between opening the brake (start moving) and deactivating start block.
		Deadman control		Parameter for Push control (also called "Deadman control")
			Deadman cont.	If set to "yes" the lift is working as a "dead-man control", ie, the lift is only moving as long special "dead man buttons" are pressed.
			Lock input	Yes: Dead man function remains activated until reaching the target floor, even if the "Dead man On" input has been turned off.
			Clear/En.off	Yes: All calls are cleared if the input "Deadman" - "
			Park trip	Yes: Parking trip will be started even in deadman mode
			Stop	Controlled: Lift will stop controlled, if deadman pushes are released Emergency: Lift makes an emergency stop if deadman pushes are released
			Deadman-door	Doors defined by this parameter will only open/close in deadman operation as long as the deadman input is pressed.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Ramp drive		Parameter for ramp drive according to EN81 (for example for loading and unloading trucks by moving the car by open doors up to the height of the cargo area of the truck.
			Ramp size	Max. travel height with open doors in ramp drive mode
		Remote off		Parameter for Remote shutdown (Remote off) The remote shutdown takes place in two stages. At the beginning the lift moves to the floor attached to the "Remote off" input. Then the floor which has been set here can also be approached Starting with HSE software version 1.44s up to 5 different remote off functions are possible
			Floor	Final destination floor for Remote off function (only up to version 1.44r)
			Doors	Setting the car doors which should remain open after the lift is remote switched off (only up to version 1.44r).
			Carlight off	yes: In Remote shutdown the car light is switched off, even if not all car doors are closed. no: Car light will stay on in Remote shutdown mode
			Clear calls	yes: If the remote shutdown input is activated all calls are cleared and disabled immediately. no: If the Remote off function is activated, all saved calls are still handled, but new calls are not accepted. If all old calls are handled, the lift will be switched off.
			1.Floor	Final destination floor for 1.Remote off function (starting from version 1.44s)
			1.Doors	Setting the car doors which should remain open after the lift is switched off with 1.remote off function (starting from version 1.44s).
		
			5.Floor	Final destination floor for 5.Remote off function (starting from version 1.44s)
			5.Doors	Setting the car doors which should remain open after the lift is switched off with 5.remote off function (starting from version 1.44s).
			Fl.Liftcontr.	Final destination floor for Remote off function from Liftcontrol software (starting from HSE version 1.44x)
			Dr.Liftcontr.	Setting the car doors which should remain open after the lift is switched off from Liftcontrol software (starting from HSE version 1.44x)
			Floor Profibus	Final destination floor for Remote off function from Remote system, e.g. Profibus (starting from HSE version 1.44x)
			Door Profibus	Setting the car doors which should remain open after the lift is switched off from Remote system, e.g. Profibus (starting from HSE version 1.44x)
		Lift off-doors		Specifies the doors which shall remain open in each floor when the lift has been turned off by the special function "Lift off" (see section Input Functions)

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			Floor 1	Doors which will remain open after the lift was turned off on the 1st floor
			Floor 2	Doors which will remain open after the lift was turned off on the 2nd floor
		
		Safety Beam		Parameter for Safety beam
			Safety beam	Safety beam available (yes/no)
			Clear CC	Clear all car calls if safety beam is interrupted while lift is moving (yes/no)
			Saf.Reset LC	Resetting of safety beam with landing call possible call (yes / no)
			Saf.beam SL	Safety beam connected in the safety line (during safety circuit interruption error "light beam" is indicated).
		Safety Shelter		Parameter for safety shelter monitoring
			Bearer ↑	Bearer type for safety shelter in shaft top: No: No bearer necessary / available manual: hand operated bearer always: The bearer is always switched on in normal operation and only switched off when the top shelter space is opened (e.g. by opening shaft door in top floor) or the inspection control is switched on. moving: The bearer is switched on while the lift is moving (but not if top shelter space was opened or inspection is switched on). In standstill the bearer is switched off. End off.: The bearer is switched on while the lift is moving (but not if top shelter space was opened or inspection is switched on). In standstill the bearer is switched off, but in top floor it stays on even in standstill.
			Bearer ↓	Bearer type for safety shelter in shaft bottom: No: No bearer necessary / available manual: hand operated bearer always: The bearer is always switched on in normal operation and only switched off when the bottom shelter space is opened (e.g. by opening shaft door in top floor) or the inspection control in pit is switched on. moving: The bearer is switched on while the lift is moving (but not if top shelter space was opened or inspection in pit is switched on). In standstill the bearer is switched off. End off.: The bearer is switched on while the lift is moving (but not if top shelter space was opened or inspection in pit is switched on). In standstill the bearer is switched off, but in bottom floor it stays on even in standstill.
			Waitt. ↑ [s]	Max. Waiting time for feedback contacts of the top bearer after switching an automatic bearer. If the bearer contacts did not switch after this time, an error message follows.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Waitt. ↓ [s]	See above (for bearer in bottom)
			Debounc. [ms]	Debouncing time for bearer contacts
			Insp. ↑ [mm]	Extended slowing and stopping distance at inspection trip (with bearer in upwards direction)
			Insp. ↓ [mm]	Extended slowing and stopping distance at inspection trip (with bearer in downwards direction)
			Apron	no: No folding car apron available manual: Manually operated car apron; which means, Apron needs to be folded in manually in order to return to normal operation Auto: Automatically operated car apron; which means, when folding apron is extended, then automatically the lift moves when returning to normal operation somewhere below the lowest floor to automatically retract folding apron (apron is then held electric) mechan.: Mechanically operated car apron; which is, Folding apron pushes together when reaching the bottom floor, and ramps up when leaving the lowest floor out again
			Slow ↑ [mm]	Position from which a lift with folding apron can switch back to fast speed when leaving the lowest floor. Note: Until the folding apron is fully folded out, the lift starts with speed v0 from the lowest floor.
			Slow ↓ [mm]	Position at which an lift with folding apron starts slowing down to speed v0 if going to the lowest floor.
			Check ↑ [mm]	Position below the level position of top floor, where a folding apron must be fully unfolded again
			Check ↓ [mm]	See above; setting for bottom floor
			Get apr. [mm]	Position below bottom floor for getting an automatic folding apron. If this setting is not equal 0, than the lift will always go down up to this position to get the folding apron, even if the feedback contact from apron is already switched on.
			Governor	When using the overspeed governor with additional magnetic coil for protection against uncontrolled movement: always: The coil on the over speed governor is only switched off in case the shelter monitoring has been triggered. moving: The coil on the over speed governor is switched on while the lift is moving. mov. +DZ: The coil on the over speed governor is switched on while the lift is moving and while the lift stops inside the door zone
			Govern. [ms]	If a feedback contact exists on the over speed governor: Maximum waiting time for feedback contact while switching on and off.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				If no feedback contact exists: delay time after switching the output "Governor" on or off.
			Shelter SL4	If SC4 is opened while lift is outside door zone lift sets safety shelter as opened. For this function an input "Safety space" – "Reset shelt." must exist. With this parameter it can be defined if shelter top, shelter bottom or both shelters are supervised. With setting "No" this function is deactivated.
		Holding bolts		Parameters for lifts with holding bolts
			Hold.bolts	Specifies whether the lift is equipped with holding bolts (yes / no)
			Stop pos.[mm]	Specifies how many mm lift should stop when entering a floor above this floor, so that the holding bolts can be pulled out or how many mm the lift has to move up to bring in the holding bolts before starting a new trip.
			Stop min[mm]	Minimum distance above a floor to pull in / pull out the holding bolts.
			Stop max [mm]	Maximum distance above a floor to pull in / pull out the holding bolts.
			Hold.zone[mm]	Area in mm where the lift could reached the holding position.
			Repeat hold.	Indicates, if the lift should move down again if the lift is still in holding zone (see above), but the signal "Holding reached" did switch off.
			Pump.del[ms]	Delay time by hydraulic lifts to start hydraulic pump again, if low pressure is detected whilem the lift is in holding position.
			Pump.off[mm]	Position above the level position where the hydraulic re-pumping is switched off again at the latest (see also parameter above). In the normal case, the pump is, however, turned off when the pressure loss is compensated.
			Relays	Switching status of the holding bolts relays after the holding bolts are completely pulled in /pulled out. - both on: The door close relay remains on after the door is completely closed; the door open relay remains energized after the door is fully opened - both off: Once the holding bolts are completely in / out, the relays are switched off immediately. - Out on: The relay to pull out the holding bolts remains energized even if the holding bolts are completely pulled out and is switched off not until the holding bolts should be pulled in. - In on: The relay to pull in the holding bolts remains energized even if the holding bolts are completely pulled in and is switched off not until the holding bolts should be pulled out. - Both on: Both relays remain switched on even if the assigned state is reached.
			In-out[ms]	Delay time between changing the moving direction of holding bolts (pull in /

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>pull out).</i>
			Max.time[s]	Supervision time for pulling in / out the holding bolts. If the bolt don't reached attached position the lift controller sets an error message.
			Max.Bolt in	Max. Number of attempts to pull in the holding bolt before going out of operation.
			Max.Bolt out	Max. Number of attempts to pull out the holding bolt before going out of operation.
			Errordel[ms]	Debouncing time for the holding bolt contacts to prevent error messages.
			Startdel[ms]	Start delay to move upwards / downwards for handling the holding bolts.
			Bolt if fire	Indicates if the holding bolts must be used in case of fireman operation.
			Outs.Doorz.	Position to pull in/out holding bolts is located outside doorzone (SGM off)
		Floors with Hold		Indicates which floors are equipped with holding bolts.
			1. Floor	1st floor is equipped with holding bolts (yes / no)
			2. Floor	2nd floor is equipped with holding bolts (yes / no)
			...	
		Deceler.check		Parameter for Slow down supervision when driving into the end floor
			v-lim.[mm/s]	speed threshold at which the special exit "v-limit" is turned on or off.
			Slow speed	Reduced speed to which delays should be applied when entering the top or bottom floor (v1 or v2)
			Slow ↑[mm]	Distance from the top floor at which the reduced speed should be switched
			Slow ↓[mm]	See above.; for lowest floor
			Check ↑[mm]	Distance from the top floor at which the monitor input "Decel.check" (usually switched by the special output "Shelter" - "v-limit" - see above) must have switched.
			Check ↓[mm]	See above.; for lowest floor
		Low speed zone		
			Start↑[mm]	Low speed zone in upward direction. Inside this zone the lift decelerates to the reduced speed like defined with the parameter below.
			Stop ↑[mm]	If both values are set to 0 this function is deactivated.
			Start↓[mm]	Low speed zone in downward direction. Inside this zone the lift decelerates to the reduced speed like defined with the parameter below.
			Stop ↓[mm]	If both values are set to 0 this function is deactivated.
			Start2↑[mm]	Additional second low speed zone; description see above

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Stop 2↑[mm]	
			Start2↓[mm]	
			Stop 2↓[mm]	
			Max.speed↑	Inside the defined low speed zone (see parameter above) the lift decelerates to this speed while upwards moving.
			Max.speed↓	Inside the defined low speed zone (see parameter above) the lift decelerates to this speed while downwards moving.
		Brake check		For checking the brake the lift controller opens the brakes step by step and checks if every single brake can hold the lift. The test is carried out automatically. The brakes must be controlled separately by different relays of the HSE.
			Interv.[s]	Time between 2 automatic brake tests. With setting 0 the test is disabled.
			On time [ms]	Time every single brake is opened for brake check
			Off time [ms]	Time between switching off 1 brake and switching on the next brake
			No car call[s]	To start the automatic brake check the lift controller closes all doors and ignores landing calls (but saves landing calls in memory). If inside this time no new car call is entered and the door is not opened (for example by door open push) the lift controller will start the test.
			Max.diff[mm]	If the lift moves more than this value while brake check is carried out the lift will go out of operation (brake defect)
		Valve check		For valve check the lift controller first opens the down valve and checks if the A3 valve is able to hold the lift in level position. In second step the A3 valve is opened to check if the down valve keeps the lift in level. The test is carried out automatically.
			Interv.[s]	Time between 2 automatic valve tests. With setting 0 the test is disabled.
			On time [ms]	Time the A3 or down valve is opened for valve check
			Off time [ms]	Time between switching off down valve and switching on A3 valve
			No car call[s]	To start the automatic valve check the lift controller closes all doors and ignores landing calls (but saves landing calls in memory). If inside this time no new car call is entered and the door is not opened (for example by door open push) the lift controller will start the test.
			Max.diff[mm]	If the lift moves more than this value while valve check is carried out the lift will go out of operation (valve defect)
			Relay A3	Setting, which HSE relays must be switched on for A3 valve test
			Rel.down	Setting, which HSE relays must be switched on for down valve test

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Clock run		Parameters for clock run
			ClearCall	on: all calls are cleared when the clock run starts off: all calls are cleared when the clock run stops on+off: all calls are cleared when the clock run starts and stops no: calls are not cleared in the moment clock runs are activated or deactivated.
			CR1 Start[Std]	start time for clock run 1 (only full hours adjustable)
			CR1 Stop [Std]	end time for clock run 1 (only full hours adjustable)
			CR1 Parkfloor	Park floor while clock run 1 is active
			CR1 Parkt.[s]	If the lift is not used for this time and clock run 1 is activated the lift will go to the specified parking level.
			CR2 Parkfloor	Park floor while clock run 2 is active
			CR2 Parkt.[s]	If the lift is not used for this time and clock run 2 is activated the lift will go to the specified parking level.
		Call configurat.		
			Call config.	If set to "Yes" special "call tables" (see "Special parameter") are activated. If the lift arrives a floor by a landing call, only car calls enabled for this landing call ("Call table" will be handled). A maximum of 5 different call configurations can be set. Switching between the Call configurations occurs only when all doors are closed and (if available), the presence sensor signals "Car empty" signals that no one is inside the car anymore. In principle, up to 5 "logical" lifts can be created for one "real" lift, in which only floors or entrances within this "logic" lift can be approached. The function can be activated by this parameter as well as with an input ("Special function" - "Call configuration"). (Note: Up to version 1.41r this parameters is displayed in the menu "General parameter")
			Change[s]	Delay time (waiting time with closed doors) if changing call configuration number.
		Call tables		Table with enabled doors and floors in operation mode „Call config.“ (see „General paramet.“)
			LC config.1	Enabled doors and floors for landing calls if call configuration 1 is active
			1. Floor	Enabled doors in floor 1
			2. Floor	Enabled doors in floor 2
			...	
			CC config.1	Enabled doors and floors for car calls if call configuration 1 is active

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			1. Floor	Enabled doors in floor 1
			2. Floor	Enabled doors in floor 2
			...	
		LC config.2		Enabled doors and floors for landing calls if call configuration 2 is active
			1. Floor	Enabled doors in floor 1
			2. Floor	Enabled doors in floor 2
			...	
		CC config.2		Enabled doors and floors for car calls if call configuration 2 is active
			1. Floor	Enabled doors in floor 1
			2. Floor	Enabled doors in floor 2
			...	
		LC-config.3		Enabled doors and floors for landing calls if call configuration 3 is active
			...	
		...		
		En/Disable calls		Parameters for enabling / disabling doors and floors
			Disable	normal: When an input is activated for disabling of calls or doors, then only "normal" calls are affected +special: Through an active input for disabling of doors or calls both "normal" calls and special calls are affected
			Enable	normal: When an input is activated for enabling of calls or doors, then only "normal" calls are affected +special: Through an active input for enabling of doors or calls both "normal" calls and special calls are affected
			Autom.CC	yes: If an input is activated to enable a car call for a floor or door, then a car call for the appropriate floor and door is automatically set in this moment.
			Autom.LC	yes: If an input is activated to enable a landing call for a floor or door, then this landing call is automatically set in this moment.
			Clear Call	yes: When setting an input for disabling a car call, an already existing car call for this floor is cleared.
			Priority	Disable: If for one call, at the same time, an input was given to enable this call and an input to disable this call, then the disable input has priority. Enable: If for one call, at the same time, an input was given to enable this call and an input to disable this call, then the enable input has priority.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Car attendance		Parameters for operating the lift with an attendant
			Autom. CC	yes: If activating a landing call, the car call acknowledge is switched on. However, car call must be pressed manually. Note: Starting with HSE Version 1.36j this setting also works in normal operation. Note: Starting with HSE version 1.42u the car call will blink as long as the car call is not pressed manually
			Door reopen	Specifies whether the doors open again when the direction push is released while the door is closing.
			Lightscreen	Specifies whether the light screen is in function (= yes) or disabled (= no) in attendance mode.
			Att.off[s]	If the attendance mode (input "Attend.funct.") has been activated by a button, the lift returns to the normal operation by pressing this button again, or after the expiration of the time set here (If the time is set to 0, then there is no automatic return to normal operation)
		OP lift		Parameters for special lifts in hospitals (OP rooms) with a special device for loading / unloading non-clean things.
			OP lift	OP lift (yes/no)
		Car lift		Parameter for car lifts
			Car lift	If set to "yes" special features for car lifts are activated.
			Autom.call	yes: when a vehicle is entering the lift (car sensors in the car are required), the lift controller automatically sets a car call. If lift is located in bottom floor an automatic call to top floor will be set; in all other cases a call to bottom floor
			Min.Load[kg]	Minimum load for car lifts to set an automatic car call (see above)
			Door clos.	Here it is defined whether the traffic signals at the entrance doors display red or green when the lift is in the park position (all doors closed, empty cabin, there is no call).
		Land.call count		Parameter for lifts, where landing call in certain floor will be counted. The lift will operate this floor than multiple times.
			Max.time[s]	Maximum time the lift is waiting after serving a lift by a „counted“ landing call. After this time the call will be cancelled.
		Floor LC count		
			1.Floor	Max. number of landing calls for this floor. With setting „0“ the landing calls will be operated in normal way (no counting).
			2.Floor	See above
			...	

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Pallet lift		Parameters for special lifts with pallets, which must be operated (pull in/push out) by lift controller. Used for car parking garages for example
			Hook Time[s]	Max. time to pull in/push out pallet hook. After this time the lift controller sets an error message "Pallet hook error".
		Forced stop		Parameters for forced stop at a floor
			Forced stop	yes: Forced stop function activated no: Forced stop function deactivated
			Floor	Floor, in which the forced stop is to be performed
			Doors	Doors to be opened during this enforced stop
			Direct.	upwards: If the lift moves in upward direction, then the lift definitely stops at the floor, where a forced stop (see above) has been defined. downwards: If the lift moves in downward direction, then the lift definitely stops at the floor, where a forced stop (see above) has been defined. up+down: Lift always stops in the defined floor independent of the travel direction.
			Locked	After a forced stop the lift only continues travellings in the specified direction once a special input is activated (Function: Special fct., Subfunction: Forc.stop off).
			Enable time[s]	If, after a forced stop, a release is required for further travel (see above), then it is set here how long the release button remains active after you press.
			Waitt.up[s]	If enable (input "forced stop off") is required (see above): After a forced stop all calls are cleared after this waiting period, if no enable signal is given. If no enable signal is required (see above): Here, an additional waiting time can be set for a forced stop. Upon pressing the enable button ("forced stop off"), the waiting time is disabled.
			Waitt.dn[s]	
			If clock run	This parameter defines whether during clock run a forced stop is performed (yes / no)
			If Special	This parameter defines whether during a special trip a forced stop is performed (yes / no)
		Auto-call func.		Parameters for the auto-call function
			Call dir.	upwards: The lift stops in the upward direction on each floor one after the other and then moves from the top floor directly to the bottom floor downwards: The lift stops in the downward direction on each floor one after the other and then moves from the bottom floor directly to the top floor. up+down: The lift goes first in upward direction and then in downward direction each floor one after another.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Car calls	Setting if car calls enabled in auto-call function
			Land.calls	Setting if landing calls enabled in auto-call function
		Piston balance		By hydraulic lifts with 2 or more hydraulic pistons, it can be happened that there is an excessive pressure difference between the individual pistons. To eliminate the pressure difference, it is necessary to lower the lift completely (below the lowest floor). This piston balance trip can be activated either time-controlled or via an input signal (differential pressure sensor).
			Interv. [min]	Time interval in minutes to next piston balance trip
			No carcall[s]	To start the piston balance trip the lift controller closes all doors and ignores landing calls (but saves landing calls in memory). If inside this time no new car call is entered and the door is not opened (for example by door open push) the lift controller will start the trip.
			Stop ↓[mm]	Position below lowest floor to stop, where piston balance trip is stopped.
			Max.time[s]	As an alternative to stopping at a certain position, the piston balance trip can also be stopped time-controlled via this parameter.
		Oil warming		
			Time [min]	Time in minutes after which an oil heating trip is started
			Floor	Target floor for oil warming trip
			Start day	Time period, in which independent oil heating trips get performed. If both, start and stop date, are identical, then the oil heating trips are disabled.
			Start month	
			Stop day	
			Stop month	
			Dec.extens. ↑	Increased slow down distance for oil warming trip in upwards direction.
			Dec.extens. ↓	See above; for downwards direction
		Relevel.aggreat		Hydraulic lift with separate re-levelling aggregate
			Ign.V1	Setting, if feedback signal of emergency valve (iValve) should be ignored while re-levelling, because re-levelling is done with a separate re-levelling aggregate. Possible settings: - upwards - downwards - up+down - --- (Signal is not ignored)
				See above; setting for second emergency valve feedback

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Car fan		
			Fan mode	<p><i>autom.:</i> The cabin fan is switched on automatically at the trip start and switched off at trip end with a time delay (see next parameter).</p> <p><i>manual:</i> The cabin fan is turned on and off with a fan switch. By this setting, a max. duration (see the next parameter) can be programmed.</p>
			Time [s]	<p>At automatic fan mode (see above): Time delay before switching off the fan after every trip.</p> <p>At manual fan mode: maximum switched on time. If the time is set to 0, then the fan is not switched off automatically.</p>
		Interm.door		
			While moving	<p><i>yes:</i> intermediate door is monitored while moving. If this intermediate door opens while moving, the lift will clear all calls and stops in the next floor. At the same time, an error message is set in the error stack.</p> <p><i>no:</i> intermediate door is monitored only during standstill.</p>
		Car display		Settings for the car level display
			Overload	Indicates, if overload should be displayed at the landing. At a level indicator inside the car overload is always displayed.
			Non-smoke CC	Specifies, whether the "Non smoking sign" is displayed on the level display inside car (currently only available on LCD display LCI16)
			Non-smoke LC	Specifies, whether the "Non smoking sign" is displayed on the level display at the landings (currently only available on LCD display LCI16)
			Inspection	Indicates whether the inspection state and emergency recall operation state to be displayed on the indicator.
			Out of order	Specifies whether to display "Out of order" on the indicator
			Fault	Specifies whether to display a fault state on the indicator
			Buzzer	<p>Function of the integrated buzzer on some level indicators:</p> <ul style="list-style-type: none"> - Load: Buzzer sounds in case of overload - Door: buzzer sounds during forced door closing (light screen ignored) - Car call: buzzer sounds briefly as an acoustic car call indication <p>Any combination of these 3 functions are possible</p>
			Targ.dist.	<p>Specifies at what distance before floor level (in mm), the level display is switched to the next floor.</p> <p>If this parameter is set to 0, level display switches to next floor at 2/3 of the distance between this floors.</p>
		Gong		
			Targ.dist.	<p>Specifies at what distance before target floor level (in mm), the acoustic signal (gong) is switched on.</p> <p>If this parameter is set to 0, the gong sounds if the lift starts door opening.</p>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Type	Arrival: The gong sounds only when entering a floor Door open: The gong sounds while opening the door; even if the lift is already located in that floor while the call was placed.
			LC no dr.	Indicates whether the gong should also sound when the lift handles a landing call in a floor for which doors were not set (lift only goes to the floor, but do not open any doors)
			LC change	Specifies whether the gong should sound again if the lift handled an up or down landing call, but no car call is placed in the selected direction and accordingly the other landing call (to opposite direction) is being handled.
			Time [s]	Pulse duration of the Gong signal. If the value is set to '0', then the gong signal remains active as long as the lift stands in a floor.
		Speech unit		Parameters for controlling a speech unit
			Speech [ms]	Pulse duration of signals for controlling a voice unit
			Delay [ms]	Time delay between setting of floor signals for voice output and setting the "Enable" signal.
			Targ.dist.	Distance before entering the target floors, in which the speech unit will indicate the floor.
		Anti nuisance		Parameters for avoiding call misuse
			CC undo	no: a car call can not be cleared by the lift user single: By pressing an acknowledged car call again this car call is cleared. double: By quick double pressing an acknowledged car call this car call is cleared. Prior.: By quick double pressing of a car call button an advanced car call is set or an already acknowledged car call is changed to an advanced car call.
			LC dir. dep.	No: Even if the lift has 2 landing calls in each floor (for upwards and downwards direction) the lift controller will clear both calls if the lift arrives this floor Yes: The lift controller always handles just the landing call in the actual direction
			Max. CC no.	This parameter may limit the maximum number of car calls that the lift controller stores simultaneously. If the maximum number is reached, new car calls are ignored. The setting of this parameter should correspond approximately to the maximum number of persons of the car. If a value of 0 is set, the number of internal calls is not limited.
			Canc.CC Max=1	If the number of car calls is set to 1 (see above), then here can be set what will happen when a new car call is pressed: yes: An existing car call is cleared and the new car call is set no: A new car call is ignored if a car call is already stored

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Max.CC empty	Max. Number of car calls in an empty car. This feature requires a corresponding load measuring contact. If the value of 0 is set, the number of car calls is not limited in an empty car.
			Check LS	After this number of trips, where the light screen was not interrupted in a floor (that means., no persons entered or got off), all other car calls are cleared.
			Counter call	Only relevant for direction pending landing calls (up / down): yes: if a lift arrives a floor, at which also a landing call was pressed opposite to the current direction of travel, then this landing call is also cleared if a new car call is operated in this direction (the person who had given these landing call, entered as well). no: Only the landing call in the actual travel direction is cleared; the lift will come back to this floor later to handle the landing call in opposite direction.
			Clr.last fl.	yes: As soon as the lift reaches the bottom or top floor and changes direction, all calls are cleared.
			Clr.opp.dir.	yes: All car calls opposite to the current direction of travel will be cleared or ignored.
			CC no door	Specifies whether car calls are also handled if no door for this car call is specified (lift then moves to the floor, but do not open any doors).
			LC no door	Specifies whether landing calls are also handled if no door for this landing call is specified (lift then moves to the floor, but do not open any doors).
			Delay 2.LC[s]	Misuse detection in a two-button control: If one of the two landing calls (up / down) is operated, the landing call in the opposite direction is disabled until the expiry of this time period.
	Safety module			Depending on the safety module used, parameters, configurations, CRC checksum, etc. of the module are displayed here. The settings are read and displayed directly from the module. They cannot be changed; this usually requires special configuration software of the safety module. Currently, only the LIMAX3CP (Elgo) is implemented here. For meaning of each configuration parameter, see description of the device.
	Telecommunicat.			Parameters for Telecommunication
	Onboard module			Parameters for the onboard module (Modem, Ethernet, ...)
		Settings		
			Module	Used module on HSE: Analog modem or Ethernet module
			Dial delay[s]	Waiting time between 2 dial attempts
			Dial attempts	Number of dial attempts
			Taking calls	Number of rings till connection
			Timeout[s]	Time after which the controller terminates the connection if no messages

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>are received.</i>
			Block size	<i>Max. length of a message</i>
		Modem module		<i>Parameter for onboard analog modem module</i>
			Dialtone det.	<i>Dial tone detection active (see ATX command)</i>
			Busy detect.	<i>Busy detection active yes / no (see ATX command)</i>
			Line dialing	<i>Number for line dialing (if using on a PBX)</i>
			Add.Init	<i>Here additional ATX commands for initializing the onboard module may be defined (if necessary).</i>
		Ethernet module		
			IP	<i>IP address of Ethernet module (or domain name; see below)</i>
			Local Port	<i>Local port of Ethernet module</i>
			DNS	<i>Definition of a Domain Name Server (IP address). Necessary if a domain name is used instead of an IP address.</i>
			Gateway	<i>Definition of a gateway address (IP address). Necessary if the target address (PC) is located behind a router.</i>
			Subnet	<i>Definition of a subnet mask (address area inside local network)</i>
			Blocktime[ms]	<i>Waiting time until start transmission of a message over network.</i>
			Blocksize	<i>Max. block size. If max. block size is reached the message will be transmitted without delay (see above).</i>
			Add.Init	<i>Here additional ATX commands for initializing the onboard module may be defined (if necessary).</i>
		SMS Alarm		<i>in case of failure , an SMS can be sent to up to 3 different phone numbers</i>
			SMS Number 1	<i>Parameters for 1st SMS number</i>
			Send SMS	<i>Activate 1st SMS number</i>
			Prov.	<i>Telephone number of SMS provider</i>
			No.	<i>Telephone number of receiver</i>
			Text	<i>Additional SMS text (next to lift number and error text)</i>
			SMS Number 2	<i>Parameters for 2nd SMS number</i>
			...	<i>See above</i>
			SMS Number 3	<i>Parameters for 3rd SMS number</i>
			...	<i>See above</i>
		Fax Alarm		<i>in case of failure , a telefax can be sent to up to 2 different phone numbers</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Fax Number 1		Parameters for 1st telefax number
			Send Fax	Activate 1st telefax number
			No.	Telephone number of receiver
			Text	Additional telefax text (next to lift number and error text)
		Fax Number 2		Parameters for 2nd telefax number
			...	See above
		PC Alarm		In case of failure , a message can be sent to up to 2 different PCs (on the PC the INTEC monitoring software IMS must be running)
		PC Nummer 1		Parameters for 1st PC
			Send Message	Activate 1st PC message
			No.	Telephone number of 1st PC
			Text	Additional alarm text (next to lift number and error text)
		PC Number 2		Parameters for 2nd PC
			...	See above
	D-Sub connector			Parameters for D-Sub connector (RS232)
			...	See above (onboard modules)
	Energy savings			Parameters for energy saving
		Drive off[s]		If the lift is in floor level without call for this time period, then the drive can be set via the special output "Drive off" in standby mode (the drive - mainly VVVF - of course, must have a corresponding standby input feature). In standby mode, the lift controller ignores the drive fault signal. If the parameter is set to 0, then the function is disabled.
		Drivedelay[s]		Waiting time after returning the drive from the standby mode. At latest after the end of that time the fault signal of the drive must report the operational state.
		Door off[s]		If the lift stands with closed doors for this time in a floor, then the doors can be shut down by the special output "Door Standby".
		Door delay[s]		Waiting time for returning back from standby mode until door drive is ready.
		Car disp[s]		Time delay before switching off the level indicator inside the car when the lift is not in use (for displays with CAN bus only)
		Land.disp[s]		Time delay before switching off the level indicator at the landings when the lift is not in use (for displays with CAN bus only)
		Traff.off[s]		If the lift is in a floor level for this time period without any call then all traffic lights for a car lift will be switched off.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
	Maintenance			Settings for monitoring maintenance intervals
		Interval		If maintenance interval monitoring is enabled here the number of trips until next necessary maintenance is set. Setting this parameter to 0 this function is deactivated. If monitoring is enabled the maintenance counter must be re-started after each maintenance (see menu "Statistics" - "Maint.count")
		Day Month Year		See above, but monitoring is done by date instead of number of trips. For deactivation set "Day" to 0. 30 days before the maintenance interval is over the lift controller will display "Main.nec." (Maintenance necessary)
		Action		Reaction at the end of the maintenance interval: „Calls off“: all calls disabled „CC off“ Landing calls enabled, but car calls off „Display“: the "Out of service" indicators are turned on, otherwise the lift goes on as normal.
		Warning		Number of trips before the maintenance counter is reached the lift sets a warning.
		Belt mon.		For belt monitoring: Max. number of trips with direction change before the lift stops operation. The message „Belt int.“ (Belt intervall reached) is displayed on HSE. After changing the belt this counter can be resetted in menu „Statistics“.
		Belt warn.		Number of trips with changed direction before the belt monitoring limit (see above) is reached to set a warning message „Belt int.“ In HSE display
	Group control			Parameters for lift groups
		Doorclose[s]		If door closing is not possible inside this time the lift will inform the other lifts in a group. Depending on some other facts another lift may handle the landing calls of this lift after that time.
		Door-reopen		Number of door reopenings (by light screen or door open push) after that another lift will handle landing calls of this lift. This will prevent from blocking thegroup function by this lift. By setting this parameter to 0 this function is deactivated.
		Door-block.		See above, but here is not the max. number of re-opening of the door monitored, but the time duration in which the door can not be closed (e.g. door-open-button permanently activated or light screen constantly interrupted). By setting this parameter to '0', this monitoring is disabled.
		Up peak on [h]		Start time for upwards peak traffic (It can be set only for full hours). Note: If start and end time have the same value, the up-peak function is disabled.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Up peakoff [h]		End-time for upwards peak traffic
		Dn peak on [h]		Start time for downwards peak traffic (It can be set only for full hours). Note: If start and end time have the same value, the down-peak function is disabled.
		Dn peakoff [h]		End-time for downwards peak traffic
		Up Park floor		Park floor for upwards peak traffic
		Dn Park floor		Park floor for downwards peak traffic
		Park mode		Door park mode during upward or downward peak traffic
		Doubl.LC		By quick double pressing a landing call button this landing call will be assigned just to a specific lift (or to some lifts) of the group according to this setting. Note: This parameter should be set to the same value for all lifts in a group.
		Gr.Lift1		Setting which lift working together as a group. With this parameter it is possible to divide a group of lift into some sub-groups temporarily without changing wiring.
		Gr.Lift2		See above, for lift 2
		...		
		Gr.CBK1		Assignment of ESE boards on branch 1 (behind bus couple unit CBK1) to some lifts inside a group. Together with the parameters above a larger group of lifts can be divides in smaller sub-groups.
		Gr.CBK2		
		...		
	Load limits			Parameters for load measurement
		Type		Type of load measurement unit: Digit.input.: There are freely programmable controller inputs for load measurement used (load measuring system with digital outputs required) Analog inp.: An analog load sensor is used, which is connected to the FVE on the load measuring input CANopen: Load measuring system with CANopen Lift interface
		Meas.		Door open: Overload is only evaluated in normal operation with the doors open Standstill: Overload is also evaluated with the door closed and with special controls such as inspection and recall operation Always: Overload is also evaluated while moving; emergency stop
		Zero [kg]		Load below this value is detected as zero load (empty cabin) By setting this value to 0, the no-load detection is disabled.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Half [kg]		<i>This value is recognized as half load (Car weight equal counterweight). By setting this value to 0, the half-load detection is disabled</i>
		Full [kg]		<i>This value is recognized as full load (cabin occupied). By setting this value to 0, the full load detection is disabled.</i>
		Overl [kg]		<i>This value is recognized as overload limit (cabin overloaded) Setting this value to 0, the overload detection is disabled.</i>
		Slack [kg]		<i>Load below this value is detected as slack rope. By setting this value to 0, the slack rope detection is disabled.</i>
		Rope diff.		<i>If several sensors (e.g. rope sensors) are used for load measurement, then the difference between the individual sensors must not exceed this value – otherwise "rope difference" is detected for error. Setting this value to 0 disables rope difference monitoring.</i>
		Max. [kg]		<i>This value is recognized as max.load limit (cabin max. load reached) Setting this value to 0, the max.load detection is disabled. Note: Currently this parameter is not implemented in CANopen Lift CiA-417</i>
		2.OL [kg]		<i>If Special input „2.Overload“ is activated, this parameter is used as limit for overload monitoring (instead of "Overl.[kg], see above). This allows a temporarily switching to an alternate overload limit by a controller input.</i>
		Em.homing		<i>Homing if max. load, rope difference or slack rope was detected (even for rope lifts)</i>
		Hold-Fct.		<i>Function for rope weight balance: While moving load measurement value is holded in order to compensate the rope weight. Only possible for load measurement device with CANopen interface.</i>
		Load factor		<i>Multiplier for all load measurements. According to CANopen-Lift CiA-417, measurements are only possible up to a maximum load of 50,000 kg. By this multiplier (setting 10) load measurements up to 500,000 kg are possible.</i>
	Temp.sensor			<i>Settings for temperature sensor on HSE board (only HSE version 1.05 and newer)</i>
		Min.temp		<i>Use temperature sensor for checking minimum machine room temperature</i>
		Min.Limit[°C]		<i>Minimum temperature in °C</i>
		Max.temp		<i>Use temperature sensor for checking maximum machine room temperature</i>
		Max.Limit[°C]		<i>Maximum temperature in °C</i>
		Cooling [°C]		<i>Temperature level to switch on cooling (Special output-cooling; e.g. for control cabinet fan)</i>
	Internal Param.			<i>All red values are system parameters and should be changed only in exceptional cases by specialists.</i>
		Empty load		<i>Analog value of the load sensor in an empty car.</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		100% load		Analog value of the load sensor with a full car (rated load).
		Startpos.		Internal starting value for position count
		Count dir.		Counting direction of the position sensor (Encoder)
		Doorzone> >SGM		Simulation of the door zone switch by controlling (distance between the simulated signal SGO and SGU and switching point SGM)
		Min. Doorzone>		Settings for lifts with very short floor distances (<300mm approx): If the floor distance is less than the this value, then the two floors have a common door zone; which means, the door zone between the two floors is not switched off (both "real" door zone switch as well as simulated by the lift controller or "Double-AWG" door zone switch)
		Inc.by accu		Setting if the incremental position encoder is buffered by battery voltage or not. If set to "No", a new calibration trip (reset trip) takes place (to the reference switch SGE) if the mains supply was switched off. If set to "Yes", it is assumed that the incremental encoder counts up even during a power failure and thus a new calibration run is not required.
		AWG1-2 [mm]		In case of usage a "Double AWG" for positioning: distance between the two position units and thus the difference in the measured position.
		Pos.mode [mm]		Only for operation of a CANopen Lift frequency inverter in "Position mode": distance from the required braking point when entering a level in which the targeted floors can still be changed.
		TSE I/O		In normal operation TSE boards with 8 inputs/outputs will be used with this lift controller. By setting this parameter to „16“ it is possible to use TSE boards with 16 inputs/outputs each. With this setting it is only possible to use TSE with odd ID number, so all together maximum of 8 TSE (with standard setting 16 TSE).
		ESE-CBK		To extend the number of possible ESE modules (CANopen allows a maximum of 127 node numbers), small adaptations were made to the CANopen protocol in order to expand the ESE number to 512 (8 branches with 64 ESE each). Bus nodes from external providers are not always compatible with this adaptation. Therefore, to use bus nodes of external providers (e.g., Schäfer) as ESE, this parameter may need to be set to "No". The INTEC bus nodes also work with this setting; however, it is not possible to use bus couplers CBK for splitting into several branches.
		Ign.VVVF-Par.		Only for lifts with CANopen Lift frequency inverters: Normally the inverter (drive) parameters are also stored in the lift controller and compared with the inverter after switching on the drive. This parameter disables cheking the parameter between lift controller and inverter.
		Init load		Sets whether a load measurement is to be initialized via CANopen by the lift controller.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>Background: The load measuring unit "Weight watcher" by Henning company has a problem in older devices, that it crashed during initialization (SDO transfer) . Therefore, the initialization can hereby be switched off.</i>
		Diff. ↑		<i>hysteresis of the door zone switch SGM while switching off.</i>
		Diff. ↓		<i>hysteresis of the door zone switch SGM while switching on.</i>
		Max.Slip		<i>For installations where a slip monitoring through a second, independent position measuring system is required (e.g. for lifts with belt drive between the motor and the drive pulley): max. allowable deviation between the two independent position measuring systems during a trip.</i>
		Slip/m		<i>Resolution of second independent position measurement system (pulses per m).</i>
		Max.Diff SGM		<i>For lifts with incremental encoder for position measurement: Max. deviation on the door zone switch SGM between the currently measured position and the measured during the teach-in position. If the maximum deviation is not exceeded, then the currently measured position is corrected (possible mechanical slip in measurement system). When exceeding the deviation the lift goes out of operation (position measuring system probably defect)</i>
		SL4-door op.		<i>Special setting for lifts with electrically operated landing doors: By mechanical unlocking of the shaft door (SL4 interrupted) the shaft door opens in the corresponding floor by the lift controller.</i>
		SL relev[ms]		<i>Waiting time for the safety circuit (safety relays KH5, KH6 and KH7 and relay KH13) during re-levelling with open door.</i>
		Brake test[ms]		<i>Delay during "Brake test" (Technical check) between turning off one of the brakes (the other brakes remains open) and switching off the drive (e.g. inverter). For synchronous motors, it is possible that, if drive and brake are switched off at the same time the safety gear triggers because the lift speed increases very fast.</i>
		Locktest [mm]		<i>Duringshaft door lock test from inside the car,(required especially in Austria), the lift stops above level position according to this value and opens the doors so that the shaft door lock can be inspected from inside the cabin. Note: The lock test is activated by a special input "Door lock test".</i>
		Recall stop		<i>If set to !Yes": If using emergency recall operation, inspection or setup trip the lift stops in down direction if door zone switch SGM and lower prelimit switch VU are switched on or lift is in lowest level . If usinf inspection or setup trip the lift stops in up direction if upper prelimit VO switch is switched on, while the lift stops in up direction by emergency recall operation if door zone switch SGM and upper prelimit switch VO is switched on or lift is in highest level. The function also works if the setup procedure is not finished ("Setup</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				ready"=No).
		Batt. [s]		Time duration between 2 battery tests (default setting is 86400s = 24 hours)
		Batt. [mV]		If the measured battery voltage is below this threshold, then the battery is determined to be defect.
		Summer time		yes: Automatic switching of real-time clock between summer and winter time.
		VI-Lim. [mm/s]		Inspection speed limit at final floors (see also parameter below) According to EN81-20: max. 300 mm/s
		VI<Lim.↑[mm]		Distance before top floor, where the inspection speed must be below limit (see above)
		VI<Lim.↓[mm]		See above; for bottom floor
		Check		Internal test parameter to verify validity of parameter set.
		Sum		Internal checksum for verifying the whole parameter set (EEPROM check)
		CAN-Error		Value = 0: CAN-bus faults which do not lead to malfunctions (e.g. short EMC pulses = "CAN passive error") are not stored in the error stack or error counter of the lift controller. Value = 1: CAN bus faults like described above are stored in the error counter, but not in the error stack. Value = 2: CAN bus faults like described above are stored in the error counter and in the error stack.
		Fault ESE		yes: All ESE faults (CAN bus fault, Restart, ...) are stored separately in the error stack. During switching operations of controllers with many ESE modules it can therefore happen that a large number of errors in the error stack are stored and the actual causes can be overwritten. no: If more than 1 ESE error occurs at the same branch just one "general" error is reported in the error stack. ESEs with node ID > 32 are reported as "local" ESE (because this ESEs are mainly plugged in control cabinet directly on HSE).
		Can1 [kBaud]		Current baud rate CAN bus 1 (control bus). Default 125 kBaud
		Can2 [kBaud]		Current baud rate CAN bus 2 (shaft bus). Default 125 kBaud
	Group sync.			In a group of lifts all parameters for the landing boards ESE must be stored identically in all control boards HSE of this group. So in case of failure / shutdown of a lift another HSE can handle the initialization of the floor nodes ESE. Through "group synchronization" the parameters for the floor nodes ESE will be transfer from the current HSE to all other HSE boards within the group.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>The group synchronization has to be carried out by the HSE board that has the actual parameters for the floor nodes ESE.</i>
	Parameter backup			
		Reload backup		<i>A parameter backup which was created earlier is loaded from the backup EEPROM into the actual EEPROM. Reloading a backup copy is primarily intended for the case that on the current parameter set (accidentally) important changes have been made that can be undone through this again. Attention! Reloading the back up copy only execute if a prior back up copy was made.</i>
		Create backup		<i>Create a copy of the actual parameter set in the Backup EEPROM. Making a backup copy should be done after setup is finished!</i>
	Receive Paramet.			<i>If parameters should be written from a PC (Lifcontrol software) to the lift controller by remote data transmission (Telephone line, Ethernet / Internet), then it is necessary for safety reasons that this menu item will be started. Only then the HSE is ready to receive parameters. Note: This item can not be started with the hand-held terminal function of the PC software "Liftcontrol". It is therefore necessary to provide a local person.</i>
	Basic setting			<i>User interface for easy creating a basic set of parameters for a particular lift. To start the default setting, the input of the password is required (protection against misuse).</i>
Errors				
	Error stack			<i>Display all entries in the error stack (last 100 errors with time stamp) Note: By pressing ENTER the error on which the cursor is currently located, will display detailed information (see section "Error stack")</i>
	Error count			<i>Display all entries of the error counter (frequency of each error)</i>
	Clear stack			<i>Clear the entire error stack</i>
	Clear count			<i>Clear the entire error counter</i>
Hardware test				<i>Hardware test of each control module. Capital letters at the inputs / outputs indicate that the input / output is set, by lowercase letters ,the input / output is not set. The letters represent a short code for the function of the input / output. By positioning the cursor on an output, and pressing the '0' key, the state of the output for test can be changed for test purposes (switch on / off the output). Attention: Even while the lift is running this function is possible! Therefore, think about the possible consequences before carrying out! For the first 8 outputs of a circuit board, the outputs can be directly set /</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				reset by pressing the corresponding number key. By positioning the cursor on an input or output and pressing ENTER detailed informations about the input / output function are displayed and may also be changed here.
	HSE In-/Outputs			Indication of the state of the inputs and outputs of the HSE; setting outputs of HSE
		<i>Example:</i> HW:1.01 SW:1.13 Eee--rudSSSS-nVZ SGM: 1 Sdlube--		1st line: Display of the hardware and software version 2nd line: state of the inputs of the HSE 3rd line: state of the door zone switch SGM 4th line: state of the outputs of the HSE
	Bus node test			Here it is displayed whether the communication link (CAN bus, RS485 ...) to the main control modules (FVE, ASE, PSE) works well or not.
		<i>Example:</i> Bus nodes: FVE : 01.10 PSE : ---		Here are all control main modules displayed, which, depending on the parameter settings, must be present. If the communication to a module functions, then the software version number after the module is displayed, otherwise '-' appears.
			<i>Example:</i> HW:01.01SW:01.01 ---1-----ozs--- yIuDft---ppl cc--lj1-k---k---	The status of the inputs and outputs of the selected control module is displayed (in the example, the FVE): 1st line: Display of the hardware and software version 2nd line: state of the inputs 1-16 FVE 3rd line: status of the inputs 17-28 FVE 4th line: state of the outputs 1-16 FVE The display may vary depending on the selected module.
	TSE test			Module test of the car panel unit TSE
		<i>Example:</i> TSE 1...16 Act.: TSE 2 **-*+		Here the status of the communication is displayed of each TSE module (starting from the left with TSE1): *: TSE module present -: TSE module missing +: TSE available; but should not be present according to parameter setting In the 2nd line is displayed, which TSE module is currently selected by the cursor. Pressing ENTER more details will be shown for the selected TSE (see

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			<i>Example:</i> TSE2: PMA.1 HW:01.00SW:01.02 I1-I8: iiiiios O1-O8: iiiiii--	<i>below).</i> The status of the inputs and outputs of the selected TSE module is displayed here (in the example TSE2): 1st line: Display of the module used as TSE2 (in the example car position indicator PMA.1) Line 2: Display of the hardware and software version 3rd line: status of the inputs 1-8 of TSE 4th line: status of the outputs 1-8 of TSE
	ESE test			Module test of the landing panel unit ESE
		<i>Example:</i> ESE 1.1 ... 32.1 Act.: ESE 2.1 **-+***** ***+-**		Here the status of the communication is displayed of each ESE module (starting from the left with ESE1.1; if more than 32 ESE modules are available they will be displayed in next picture by scrolling with the cursor keys): *: ESE module present -: ESE module missing +: ESE available; but should not be present according to parameter setting In the 2nd line is displayed, which ESE module is currently selected by the cursor. Pressing ENTER more details will be shown for the selected ESE (see below).
			<i>Example:</i> ESE2.1: UEA.1 HW:01.00SW:01.02 I1-I8: aas----- O1-O8: aa-kkk--	The status of the inputs and outputs of the selected ESE module is displayed here (in the example ESE2.1): 1st line: Display of the module used as TSE1 (in the example general input / output board UEA.1) Line 2: Display of the hardware and software version 3rd line: status of the inputs 1-8 of ESE 4th line: status of the outputs 1-8 of ESE
	Group conn. test			Here all present HSE modules within a group are displayed (starting from the left, lift 1 of the group).
		<i>Example:</i> Group lifts 1.....8 *-S#		The example shows a group of 3 lifts: - Lift 1: Communication to this HSE is available (**) - Lift 2: Communication to this HSE doesn't work (-) - Lift 3: The sign 'S' means that the function is carried out at lift number 3 - The sign '#' on position 4 means that, even if the parameter "group size" is set to 3, a fourth HSE is connected to the bus (maybe the parameter is set wrong or the group number of lift 2 is set erroneous to lift number 4)
	CBK test			Module test CAN bus coupler CBK

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		<i>Example :</i> CBK 1.....8 Act.: CBK2 *_*		*: CBK module available -: CBK module missing In line 2 it is shown which CBK module is currently selected by the cursor. Pressing ENTER the currently selected module hardware and software version will be displayed.
			<i>Example:</i> CBK2: G242C HW:01.00SW:01.05	1st line: Displays the board used as CBK 2nd line: hardware and software version of the CBK
	AWG test			Module test of the modules required for the double-AWG AWG2 and POS2 (UEA.1 module for switching of the 2nd channel of the safety circuit for moving with open doors) Since AWG2 and POS2 are on a separate CAN -Bu , the module test can only be performed when the CAN bus is connected to the control bus (on which also the HSE is connected) or can be connected via relay (the relay is switched through special output "CAN-AWG").
		<i>Example:</i> POS2: 1.02 AWG2: ---		In the example the CAN bus connection works well to POS2, the software version of POS2 is 1.02. The CAN bus connection to AWG2 is interrupted or AWG2 is defective.
	Doors			Doors module test (CANopen doors)
		<i>Example:</i> Door1: ok Door2: (FVE)		The example indicates that door 1 is controlled via CAN open (see more details by pressing ENTER). Door 2 is controlled by inputs and outputs directly through the FVE (no further action by pressing ENTER).
			<i>Example:</i> Door1: AT40 HW:Rev.01 SW:V01.25	Display of the door type as well as the hardware and software version of door controller.
	Load measurement			Menu is only available if a load measurement device with CAN bus connection is used

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			<i>Example:</i> MCAN HW: V1.0 SW: V1.0 163 kg	1st line: Name of the load measurement unit 2nd Line: Current Software Version of the load measurement unit 3rd Line: Current Hardware version of the load measurement unit 4th line: Actual load value
			<i>Example: (6 Sensors)</i> 1. 63kg 5. 71kg 2. 68kg 6. 68kg 3. 72kg 4. 59kg	By using the cursor keys it is possible to switch between the display show above and a display which shows the load values of each sing load sensor.
	Modem/Ethernet			Hardware test Onboard module (Ethernet/Modem)
		<i>Example:</i> Ethernet WAIT OK 0 1 0 1 0 1 0 1		1st line: module type 2nd line: Last command to the module 3rd line left: Modem state 3rd line right: Monitoring time 4th line: module signals (from left): Incoming call RI CTS input Input DCD DSR input Reset output RTS output DTR output
	RS232			Hardware test D-Sub interface (RS232)
		<i>Example:</i> RS232 CONNECTED NOTHING 3 1 0 1 0 1 0 1		1st line: Parameterized connection type (RS232 / modem) 2nd line: Last command to the module 3rd line left: Modem state 3rd line right: Monitoring time 4th line: module signals (from left): Incoming call RI CTS input Input DCD DSR input Reset output RTS output DTR output
Save parameters				Saving all controller parameters If modified parameters are not saved, then during a reset / turn on / off power supply, all previous changes will be lost.
Node ID				
	Node ID TSE			Setting the node ID of a car panel unit TSE

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Node ID		Input of node ID of TSE
		Initialization		Start of Initialization
	Node ID ESE			Setting the node ID of a landing panel unit ESE
		Node ID		Input of node ID of ESE
		Branch No.		New branch number of ESE
		Initialization		Start of Initialization
	Node ID ASE			Initialization of a PCB (UEA) as drive control unit ASE
	Node ID PSE			Initialization of a PCB (UEA) as positioning unit PSE
	Node ID Simul.			Initialization of a PCB (UEA) as simulation unit for test purposes
Load weighing				
	Analog inp.			Settings for analog sensor
		Adjust sensor		Mechanical adjustment of the load sensor (only when connected directly to the analog load sensor input of FVE)
			Meas.value: 24% Ready: ENT	The load sensor should be adjusted in a way that the measured value is about 20 by empty car (if the sensor value increases by higher load) or about 80% (in case the sensor value decreases by higher load). The bar graph is calibrated for use with analog sensor from Winston XM18-3010PMU - here the sensor should be adjusted by empty car in a way that the bar graph is 0.
		Calibration		Calibration of load sensor should be done (if possible) with nominal load. The sensor value by nominal load should be not greater than 80% (if sensor value increases with higher load) or 20% (if sensor value decreases with higher load). Note: Before starting calibration make sure the parameter "General paramet. - Nom.Ld.[kg]" is set right.
			Nom.Ld. [kg]	Nominal lift load This value is also displayed in "General param."
			Load[kg]	Loading of the car with a defined load. By inputting this load value, the characteristic curve of the load sensor is calibrated.
			Start calibr.	Start of the calibration
	CANopen			Settings for load sensor with CANopen interface
		Zero calibr.		Zero load adjustment (car must be empty)
Safety module				
	State			

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Select new state Normal Set state <ET> -- ESC --		Menu item for state change Limax3CP: In the 2nd line, the desired new state can be selected. The state can be activated via the 3rd line by pressing ENTER. Note: A state change is only possible if the appropriate requirements are met. See operating instructions Limax3CP. If switching to state "Setup", all position parameter will be cleared inside Limax3CP. To prevent unauthorized handling it is necessary to enter the safety code (159).
	Error			Current error state of Limax3CP (see operating instructions Limax3CP). If "Reset" is displayed here as an error, then an error has previously occurred, which can be reset here manually by pressing ENTER.
		Reset Limax3CP Are you sure? Continue: ENT Cancel: ESC		Pressing ENTER again resets Limax3CP and deletes the error state
	No event			This line currently shows events detected by the Limax3CP (e.g. overspeed, UCM, final limit switch, no deceleration)
Set clock				Set real time clock of HSE
	Day			Set day
	Month			Set month
	Year			Set year
	Hour			Set hour
	Minute			Set minute
	Second			Set seconds
	Weekday			Set week day
	Start clock			Start real time clock with the settings above.
Travel commands				Travel movements by keypad.
	Up<1>-Dn<3> VR Up<4>-Dn<6> VRS Exit with <ENT> Safety line off			By pressing and holding the relevant button the lift will go upwards or downwards with the selected speed. In line 4 a possible error will be displayed.
Door commands				Door movement controlled by keypad
	Here the actual			The doors may be controlled with the following keys: 1: Open door 1

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
	<i>door state is displayed (see also description of "State display 3" in annex)</i>			2: Close door 1 3: Forced closing of door 1 (light screen is ignored) 4: Open door 2 5: Close door 2 6: Forced closing of door 2 (light screen is ignored) 7: Open door 3 8: Close door 3 9: Forced closing of door 3 (light screen is ignored) 0: Stop all door movements immediately ↑ or ↓: Toggle between display of door 1/2 and door 3
Set car calls				Set car calls by keypad
	Actual floor 3 Call floor 5 Call entered Calls disabled			1st line: Display of the current floor 2nd line: Entering the floor for the new call 3rd line: After pressing ENTER, for a few seconds a message is shown, that the call was placed. 4th line: This display appears if calls are disabled.
Technical check				Menu for technical inspection of the lift, according to EN-81 See also chapter "Technical check"
	Limitswitch top			Checking of the upper final limit switch
	Limitswitch bot.			Checking of the lower final limit switch
	Car buffer			Fahrt auf den Fahrkorbpufer mit wählbarer Geschwindigkeit. Für diesen Test muss der untere Endschalter manuell überbrückt werden.
		v [mm/s] Bypass final limit switch! Start: ENT		Lifts without CANopen drive: Speed selection for buffer test (v0 / v1 / v2 / vZ1 / vZ2) with cursor keys. Test starts by pressing ENTER.
		v [mm/s] Bypass final limit switch! Start: ENT		Only lifts with CANopen drive: Set speed for buffer test by number keys in mm/s. Test starts by pressing ENTER. Note: Selected speed must not be larger than nominal speed!
	Counterw.buffer			Fahrt auf den Gegengewichtspuffer mit wählbarer Geschwindigkeit. Für diesen Test muss der obere Endschalter manuell überbrückt werden. Eingabe der Geschwindigkeit s.o.
	Trip time			Trip time test
	Speed limit			Overspeed test

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		Overspeed trip		Test, if lift controller switches off on overspeed by starting the lift with 1,5 times of nominal speed (only possible by CANopen-lift drives)
		Speed check		Test, if lift controller switches off on overspeed by internal lowering the nominal speed setting
	Safety gear			Test of the safety gear (only possible if the lift controller is equipped with an output for remote tripping of overspeed governor)
	Mechanical brake			Test of mechanical motor brake
		Brake not open		Start without opening the brake
			Start upwards	Start in upward direction
			Start downwards	Start in downward direction
		Brake off trip		Switching off the brake while driving
			Brake 1	Switch off brake 1 while moving
			Brake 2	Switch off brake 2 while moving
			...	Switch off brake n while moving
		Brake standstill		Test of every single brake while lift is standstill (see also "Special param.* - "Brake check"
	A3/Down valve			Test, if A3 valve and Down valve are able to keep the lift in level position
	Brake monitoring			Testing the brake supervision contacts
		On in standstill		Testing the supervision contact while lift is standstill
			Brake 1	Selecting a contact for testing
			Brake 2	
			...	
		Off on trip		Testing the supervision contact while lift is moving
			...	
		On by stop		Testing the supervision contact at trip end
			...	
	Valve monitoring			Testing the valve supervision contacts
		On in standstill		Testing the supervision contact while lift is standstill
			Up valve	Selecting a contact for testing
			Down valve 1	
			Down valve 2	

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
			Emerg.valve	
		Off on trip		Testing the supervision contact while lift is moving
			...	Selecting a contact for testing
		On by stop		Testing the supervision contact at trip end
			...	Selecting a contact for testing
	Runn. contactor			Test of mains contactors supervising. It can be defined, which relay of the HSE should remain on after trip end.
	Open door safety			Test of safety circuit for moving with open doors
	Deceler.check			Test of deceleration control circuit. Lift moves up to top / bottom floor without reducing running speed.
		Top floor		
		Bottom floor		
	Uncontr.movement			Test UCM (uncontrolled movement)
		Upward dir.		Test in upward direction
		Downward dir.		Test in downward direction
	Battery check		Example: Voltage 12850 mV	Manual start of a battery test. Note: The battery test is also performed automatically at the set time interval (default is 24 hours). Up to software version 1.38a this menu item is located directly in the main menu.
	Reset HSE			Perform a software reset of the HSE.
Teach in trip				Calibration of the lift during commissioning. Depending on the type of the positioning system (incremental or absolute encoder) different sub menu items appear here. Note: If conventional positioning with switches only is used a teach-in trip is not required.
Sub menus if Positioning system with incremental encoder				
	Complete			Start of the entire calibration process. The lift must be located at the beginning of the calibration process on the lowest floor (SGM on). After starting teach-in trip the lift goes to the top floor and then back down a floor to measure and store the switch points of the leveling switch SGM. Then, the lift carries out trips with several speeds in up and down direction to determine the necessary braking and stopping distances. Note: In general, the complete calibration should be done only once (unless it was a new positioning system installed with a different resolution or there

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				have been changes made at the switching points of the leveling switch SGM). If you change the settings on the drive (frequency inverters, valves, ...) it is only necessary to re-calibrate the braking distances (see next menu item).
	Shaft sensors			Measurement of the switch points of levelling switch SGM (see above).
	Brake distances			Measurement of the necessary braking and stopping distances for the different speeds (see above). Note: When changing the settings on the drive (frequency inverters, valves, ...), it is generally necessary to re-calibrate the braking distances.
	Flush correction			Correction of the flush on each floor Note: For flush correction it has to take into consideration, that it is not always possible to stop exactly in floor level, especially for unregulated drives (e.g. two-speed motors). So it is only possible to teach the lift controller the exact floor position. If, for example, during flush correction, the display of the handheld terminal shows a difference of -5mm and the cabin is really located at -5mm, then no additional flush correction is necessary - the lift controller already knows the exact level position. An improvement of level position is in this case only possible by an improvement of the drive (VVVF, valves, ...) and after that a new measurement of brake distances.
		via COP		Flush correction via car operation panel COP After starting the menu item the lift controller switches on the emergency light. Through the car operating panel the individual floors can be selected. If the lift stands too high in a floor, then the position can be corrected by repeatedly pressing the door open button ; if the lift stands too low, then the correction takes place by using the car call button of the current floor. Example: If the lift stands 12 mm too high, then the door open button has to be operated 12 times with a time delay of at least 1 sec. As an acknowledge , the lift controller switches off the emergency light each time for 1 sec. Note: The correction is only effective when the lift enters this floor the next time. The correction can be repeated as often as desired for each floor.
		via terminal		Flush correction via HSE keypad or handheld terminal. When starting the menu item, a dialog box for entering a car call appears (selection with cursor keys, confirm with ENTER) . After reaching the floor the lift controller displays the difference between the actual position and the momentary stored flush position (if the lift drive, e.g. VVVF, works very accurat, this difference is always about 0). Using the cursor keys the difference between car position and level position can be entered now. If the car is too high, a negative value must be entered ;if the car is too low a positive value must be set. The setting must be

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				confirmed by pressing ENTER. Note: The correction is only effective when the lift enters this floor the next time. The correction can be repeated as often as desired for each floor.
	Motor tuning			Menu to support automatic motor tuning, e.g. for VVVF. Motor tuning itself must be activated directly on VVVF.
		Brake contrl.		On: Normal mode Off: Brake will stay closed even if travel command is entered. Monitoring of feedback signals from VVVF and brake are deactivated. Only travel commands in inspection mode, recall operation mode or from menu „Travel commands“ are accepted.
	Slip calibrat.			For installations where a slip monitoring through a second, independent position measuring system is required (e.g. for lifts with belt drive between the motor and the drive pulley): Automatic measurement of resolution of additional position measurement system. For measurement the lift moves from bottom to top floor. If lift is not already located in bottom floor while starting calibration, lift moves automatically to bottom floor.
Sub menus if Positioning system with absolute encoder				
	Floor positions			Input of the floor positions. There are 3 different ways:
		Floor distances		If the distances between floors are known, the values can be entered here.
			Floor 1-2	Distance between floor 1 and 2
			Floor 2-3	Distance between floor 2 and 3
			...	
		Floor height		If the absolute position (height) of the floors are known, the values can be entered here (reference point is lowest floor = 0)
			Floor 2	Position (height) of floor 2
			Floor 3	Position (height) of floor 3
			...	
		Measurement		If the level positions are not known, then each floor can be reached here and the position is automatically measured. The sequence of calibration does not matter; the measurement can be repeated several times for individual floors. It only must be ensured that each floor is measured at least once.
			Travel commands	Here, the menu "Travel commands" can be called, with which the individual floors can be reached (see also description of "Travel commands" above). As an alternative to this menu item the individual floors can also be reached

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				<i>by inspection or emergency control.</i>
			Act.floor Measure floor	<i>After a floor has been reached (deviation should not be more than 50mm; The more precisely, the easier the flush correction is done later), the number of the current floor is entered in first line. Subsequently, with the item "Measure position", the current position is stored.</i>
	Set reference			<i>Setting of the reference point for the absolute encoder. Note: If the absolute encoder or the magnetic tape of the ELGO position system must be changed (by a defect), it is only necessary to set the reference point again (as long as the resolution of the absolute encoder did not change).</i>
		Act.floor Set reference		<i>To input the reference point, the lift is moved as accurately as possible to any floor. Then the current floor is entered from the keyboard in the 1st line, the cursor is then placed in the 2nd row and by pressing ENTER, the reference point is set.</i>
	Brake distances			<i>See above "Brake distances" by incremental encoder</i>
	Flush correction			<i>See above "Flush correction" by incremental encoder</i>
		via COP		<i>See above</i>
		Via terminal		<i>See above</i>
	Motor tuning			<i>See above "Motor tuning" by incremental encoder</i>
		...		<i>See above</i>
Sub menus if Positioning system with Limax3CP				
	Highest position			<i>To measure the upper or lower end position, the lift must be moved to the car or counterweight buffer by using the emergency electrical operation (or menu item "Travel commands").</i>
	Lowest position			<i>After reaching the end position, the current position value is stored as the top or bottom end position in the Limax3CP by pressing ENTER</i>
	Floor positions			<i>See above setting "Floor positions" by absolute encoder</i>
		...		
	Save positions			<i>Calculate, check, and store the measured values. If a problem occurs, all position values can be checked in menu "Parameter" – "Safety module" – "Floor height" and "Limit positions".</i>
	Brake distances			<i>See above "Brake distances" by incremental encoder</i>
	Flush correction			<i>See above "Flush correction" by incremental encoder</i>
		...		
	Motor tuning			<i>See above "Motor tuning" by incremental encoder</i>

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
		...		See above
Teach in door				
	Teach in door 1			Start automatic teach-in run for door controller (only possible by door controllers according to CANopen lift DSP417)
	Teach in door 2			Check also operating manual of door controller (for example for start position for teach-in run)
	Teach in door 3			
Statistics				Various statistical values
	Floor count			Displays how often each individual floor has been approached.
	Maint.count			Maintenance counter
		Trips:		Number of remaining trips until the expiry of the maintenance interval
		Reset counter		Here, the maintenance interval can be restarted. When monitoring the maintenance interval (see parameter "Maintenance Interval") this menu item must be started on time before the expiry of the maintenance interval.
	Clear trip count			Clearing the trip counter Note: The trip counter is shown in State display 1.
	Clear op.hours			Clearing the operating time counter Note: The operating time counter is shown in State display 1.
	Clear floorcount			Clearing the floor counter
Test				Activation of various test modes.
	Test runs			Activation of test runs by the random principle. The lift can be used normally. If there is no new call after reaching a floor, the control itself gives a car call randomly.
	Run no.			Number of test runs until the test drive mode is automatically disabled. By setting '0' the test drive mode must in all cases be terminated manually.
	Lock doors			The lift drives "normal", but does not open the doors (exception: pressing the door open button in the cabin).
	Disable LC			Disable all landing calls
	Out of order			Switch on "Out of order" display, but lift stays in normal mode
	Load mode			Start / stop load mode (door stop)
	Simulation			Activate lift simulation (e.g. for testing the controller cabinet or for demonstration)
Emerg.rescue				Menu item to deactivate several supervision functions of the lift controller in case of error for emergency rescue. In rescue mode the lift can be moved by Emergency recall operation or by Inspection mode.

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				In main state display "Rescue" is shown, if any of the supervision functions is deactivated. A supervision is deactivated by setting its value to "Off". All settings are only stored in RAM, so all supervisions are activated after reset or power on.
	Governor			Deactivate governor supervision
	Contactator			Deactivate contactor supervision
	Brake/valve			Deactivate brake supervision (rope lift) or valve supervision (hydraulic lift)
	Bearer			Deactivate supervision of bearer for safety space
	Parameter set			In some inverters it is possible to switch to a separate 2nd parameter set for emergency rescue, in which, for example, a stronger motor torque is set to pull the lift out of the safety gear. The parameter set can be switched with this parameter. After changing the setting, the current parameter set is read out again from the inverter. If switching is not possible, the original value is displayed again. Note: The 2nd parameter set must be configured and released on the inverter. See the inverter's instruction manual.
Battery check			Example: Voltage 12850 mV	Manual start of a battery test. Note: The battery test is also performed automatically at the set time interval (default is 24 hours). Beginning with software version 1.38b this menu item is located in the technical check menu.
Reset HSE				Perform a software reset of the HSE.
Change password				Password protection of the lift controller
	User password			Password protection for the entire menu structure; however, through short commands it is still possible to set car calls and start the menu "Technical check".
		Code		Change the password (code number; max 10 numbers)
	Superv.password			Password protection for changing parameters
		Code		Change the password (code number; max 10 numbers)
	Remote password			Password protection for access by remote data transmission (modem, Internet)
		Code		Change the password (code number; max 10 numbers)
Virtual Terminal				Access to the operating panel of devices according to CANopen lift DSP417 Some additional keypad inputs, depending of the used CANopen lift component, are possible:

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
				ENTER for at least 1 second: Info button (e.g. Zetadyn) ESC for at least 1 second: stops the virtual terminal (Quit) Key '1' for at least 1 second: F1 key Key '2' for at least 1 second: F2 key Key '3' for at least 1 second: F3 key Key '4' for at least 1 second: F4 key Key '5' for at least 1 second: Plus key Key '6' for at least 1 second: Minus key Key '7' for at least 1 second: Cursor left Key '9' for at least 1 second: Cursor right Key '0' for at least 1 second: Shift display for 4 digits to the right or to the left (as the control display of HSE has only 16 characters per line, but most CANopen lifts devices have 20 characters per line).
	Drive			Virtual terminal for a drive according to DSP417.
	Position system			Virtual terminal for a position encoder according to DSP417.
	Load measurement			Virtual terminal for a load measurement system according to DSP417.
	Door 1			Virtual terminal for a door controller according to DSP417 (door 1).
	Door 2			Virtual terminal for a door controller according to DSP417 (door 2).
	Door 3			Virtual terminal for a door controller according to DSP417 (door 3).
	COP display			Virtual terminal for TSE board in COP on control bus (CAN bus 1) according to DSP417
		Node ID		Select node ID of TSE
		Start terminal		Start virtual terminal with ENTER
	LOP display			Virtual terminal for display in LOP on shaft bus (CAN bus 2) according to DSP417
		Node ID		Select node ID of ESE
		Branch No.		Select branch number of ESE
		Start terminal		Start virtual terminal with ENTER
Set language				Setting of the menu languages (depending on the HSE version maybe not all languages are available)
	English			Menu Language English
	Deutsch			Menu Language German
	Nederlands			Menu Language Dutch
	Türk			Menu Language Turkish
	France			French Menu Language

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1. Menu level	2. Menu level	3. Menu level	4. Menu level	Description
	Russia			<i>Russian menu language (only available if Cyrillic display is used).</i>

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3. Commissioning

3.1 Setup Mode

During assembly, the controller is in setup mode. This is done by setting the parameter "Setup ready" to the value "No" (menu group "General paramet.").

In setup mode, various monitoring functions of the lift controller are disabled. This makes it possible, for example, to proceed the lift without connecting the trailing cable by the emergency recall operation pushes (assuming that all components which are absolutely necessary for moving the lift are connected and the safety circuit is closed) .



In setup mode, a very careful work is required due to the deactivation of some security functions within the controller.

In particular, note that the lift in the setup mode at inspection control passes over the end floors .

3.2 Testing of individual input and output functions

After assembly and wiring ,individual control functions can be tested via the hardware test. In the hardware test menu (see detailed description in the chapter "Troubles shooting"), individual control outputs can be set and thus the correct connection of the control components are checked. At the same control inputs can be set manually and thus checked within the hardware test, whether the lift controller detects these inputs correctly.

The handheld terminal DSE is especially helpful when testing and commissioning, because the handheld terminal can be connected right on the inspection box (plug on the FVE) .

3.3 Setup of car doors

Before teach-in of the lift controller the function of the car doors must be checked.

A first inspection may also be carried out here through the hardware test menu (see above). By manually setting of the outputs to close or open the door it can be tested here whether the door is moving in the right direction; by manually pressing (if available) the mechanical limit switch, it can be determined whether these are configured correctly.

A complete door test can then be performed using the Control Menu "Door commands".

3.4 Teach-in

3.4.1 Starting normal operation for lifts with magnetic switch positioning

For lifts with magnetic switch positioning no further calibration of the lift is required. Here, only the parameter "Setup ready" is set to the value "Yes" and so the normal operation starts.

Braking and stopping distances as well as flush positions are then adjusted by shifting the corresponding magnets in these lifts.

3.4.2 Teach-in procedure by lifts with incremental encoder

3.4.2.1 Lifts with more than 2 floors

Before starting the calibration process, it is essential to measure accurately switching-on-zone of the leveling switch SGM on the 2nd floor and to enter this value in parameter "Vane length" in the menu "General param.". By this setting the lift controller is able to determine automatically the resolution of the encoder (parameter "Incr./m").

The lift must be leveled in the lowest floor when starting the teach-in procedure (level switch SGM must be switched on). The teach-in starts through the menu item "Teach in trip" - "Complete". The lift then moves upwards through the shaft to save the floor positions (center between the two switching points of SGM). After that several trips with different speeds are automatically carried out to determine the braking and stopping distances.

After the complete teach-in trip, the parameters can be saved by pressing ENTER; the lift is then ready for operation. If the switching points of the leveling switch SGM were not set exactly symmetrical to the level position, a flush correction is still to be done.

3.4.2.1 Lifts with 2 floors

For lifts with just 2 floors, the encoder resolution (parameter "Incr. /m") must be determined manually before starting the teach-in trip.

The easiest way is to set the parameter "Incr./m" first to a value of 1000. Then the state display 4 may be selected (home display, then selected with cursor keys) to notice the current position (displayed at this time in brackets) . As next the lift has to be moved 1m as accurately as possible (e.g. by inspection control; best done by markings the positions on the guide rail). Then read the new position in the state display 4 and enter the position difference as parameter "Incr./m".

After that, the learning journey can be carried out as described above.

3.4.3 Teach-in procedure by lifts with absolute encoder

3.4.3.1 Setting the floor positions

If the floor positions are known (e.g. from the shaft drawing), then these values can be entered; either in the "Floor height" menu as an absolute value or the "Floor distances" menu as a relative value.

If the values are not known, the floor position can be measured in the menu "Measurement". For this purpose, the lift can be operated with either the emergency recall operation pushes or inspection control pushes as well as with the sub menu "Travel movements" to the individual floors. If the lift is well levelled (difference to floor level should not be greater than 50mm), then the floor number is entered and the menu item "Measure floor" is selected to measure the floor position. This process can be performed in any order and repeated any number of times; the important thing is that each level must be measured at least once.

3.4.3.2 Setting the reference point

Since the magnetic tape of the absolute encoder or the encoder itself does not start at 0 by the lowest floor, a reference point must be chosen then. For this purpose, the lift must be put in any floor. The floor number is then entered in the "Set reference" menu and thereafter, the reference point is set by selecting the sub menu "Set reference".

3.4.3.3 Measure braking distances

After setting the floor positions like described above a reset should be performed via the menu item "Reset HSE" (alternatively, cut off power supply).

By selecting the menu item "Brake distances" the measurement of the brake and stop distances starts fully automatically with the different lift speeds in both directions.

After completion of the test runs, the parameters are stored with ENTER; the lift is then ready for operation.

3.5 Flush correction

Through the flush correction, deviations can be easily corrected in the flush position after teach-in (same procedure for both incremental and absolute encoders).

Before starting the level correction it is important, however, that the drive (e.g. VVVF) is properly set so that the lift always stops in about the same position in each floor.

Therefore it is advisable to call the State display 4 and then let the lift perform various trips (e.g. by starting "Test runs"). In order to achieve a good flush, it is necessary that a minimum deviation is indicated in the state display 4 after the lift stops in a floor (indicated by "DFP = xxx mm"). The difference should not be greater than ± 2 mm if using a VVVF; otherwise an accurate level correction is not possible. For larger deviations the settings of the drive should be pre-optimized and then the braking distances to be re-measured.

3.5.1 Flush correction by car operation panel COP

For this purpose, the sub-menu item "via COP" is started. The lift disables landing calls, opens the car doors and turns on the emergency lights.

By entering a car call the lift can now be moved to the floor to be corrected. There, the deviation of the car from the flush position is measured. If the lift stands too high, then the door open button is pressed multiple times (once per mm deviation). Between the individual button presses there is at least 1 second to wait. As acknowledgment the emergency light turns off shortly; only after the emergency light is switched on again the button should be pressed again.

If the lift stands too low, then the car call button of the current floor is pressed as described above.

This procedure can be repeated as often in any order of the floors.

The process is terminated by pressing the ENTER button on the HSE; the parameters are thereby stored.

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3.5.1 Flush correction by keypad of HSE or handheld terminal DSE

This procedure should be especially selected if it is possible to plug in the handheld terminal on the FVE and operate it from inside the cabin.

After starting the sub-menu item "via terminal" the lift disables the landing calls and opens the car door.

Using the cursor keys and ENTER, a floor can now be selected. When the lift reaches the destination floor, the deviation of the car from the flush position is measured. This value is entered using the arrow keys and pressing the ENTER key, whereby at a too low car position, a positive, and at a too high car position, a negative value is entered (also appears as an indication on the LCD display).

The bottom line also displays the deviation of the car from the currently in the controller stored level position; this should be as described above as small as possible, otherwise an accurate level correction is not possible.

The process can be repeated any number of times in any order. A final separate storage is not necessary here, since the values are stored in non-volatile immediately after each entry.

4. Error diagnosis

4.1 General procedure for troubleshooting

The lift controller software of MLC 8000 includes a comprehensive self-diagnostics. Faults that have occurred are stored in an error stack and can be accessed via keyboard and LCD display of the HSE or the hand-held terminal.

However, the HSE can not diagnose all faults clearly. For example, when the photocell is constantly interrupted, then the lift control can not determine whether the light barrier is defective or improperly connected or whether the light barrier is actually permanently, e.g. is interrupted by a person or an object in the door. This aspect must be strictly observed during troubleshooting.

In inspection mode disorders might be caused by the lift mechanic part. These error messages are of course also stored in the controller error stack and can lead to misjudgments in a later troubleshooting. Therefore, the error stack of the controller should be cleared after maintenance.

At the same time, the integrated real-time clock in the controller should be tested during each inspection. An incorrectly real-time clock or a discharged watch battery on the HSE lead to incorrect time stamps in the error stack and can therefore also lead to incorrect conclusions in troubleshooting.

4.2 LED indicators

The lift controller MLC 8000 has some LEDs, which indicate certain control conditions.

The LEDs of the individual control modules are listed in the Appendix. The main board HSE has 3 LEDs driven by the software:

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- "RUN" LED: When this LED flashes every second, the software of this module is running (The lift controller can of course still have a fault at this time).
The "RUN" LED is on (almost) every control module.
- "FAU" (fault) LED : : The lift is currently in an error state.
In the absence of this fault, the lift will automatically return to normal operation.
- "MAI" (maintenance) LED: Maintenance is necessary.
This LED is also set if, for example, the lift is still in operation, but an ESE or TSE module is defective or become more frequent in error (see "Error Warning")

The 4th LED on the module HSE is not controlled by the software, but indicates the presence of the electronics supply voltage 5V.

4.3 Initial troubleshooting using state display 1

Basic statements about actual controller state can be made based on the state display 1:

- Is the lift in normal operation or in error state?
- Is the safety circuit available?
- Is the lift inside door zone?
- Are special features enabled?
-

Further troubleshooting can be made on the basis of the state display 1 .
The precise structure of the individual state displays is described in detail in the section "State displays".

4.4 Overview HSE state

The actual state of the lift controller is always displayed in lowest line of the state display 1:

HSE state	Description
Emer.Stop	Emergency stop triggered, waiting for standstill
Init	Initialization procedure of all PCB's on CAN bus after power on
Search	Requesting actual state of all module after power on
Standstil	Normal operation mode: Lift is standstill in floor level
Moving	Normal operation mode: Lift is moving
Arrival	Normal operation mode: Lift is slowing down to levelling speed
Error	Error state, detailed information see error stack
CAN-Error	Data transmission error on CAN bus
Inspect.	Lift is in inspection mode
Em.recall	Lift is in emergency electrical recall operation mode
!Repair!	Lift out of operation due to frequent or fatal errors; detailed information see error stack
Terminal	Travel commands active via HSE keypad
PCB fault	At least 1 PCB not available on CAN bus; for detailed informations see

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	error stack
Starting	Normal operation mode: Lift is starting a trip
Leveling	Lift between 2 floors (e.g. after inspection mode or after an error); starting to next floor level.
Teach in	Calibration process (Tech in) active
SL error	Primary safety line interrupted
Door err.	Error cabin door
Door open	Lift between 2 floors with open car door
Refer.Run	Only lifts with magnetic switch positioning or incremental encoder positioning: Reference run to reset switch SGE or pre-limit switch VO / VU. Until reference run position of cabin is unknown for the lift controller.
Setup	Teach-in not done (Setup state)
Driveerr.	Error message (by digital signal or by CAN bus) from drive (frequency inverter, hydraulic system, ...)
ErrRelAct	Error while re-levelling, e.g. bypassing of door switches not working well
CAN-DRV	CAN bus connection to drive (e.g. frequency inverter) interrupted
SL ontrip	Safety line interrupted while lift was moving
Cont.err.	Error contactor supervising (e.g. contactor stuck)
Brakeerr.	Error brake supervising (e.g. brake contact not working)
Drivetrip	Error message (CAN bus or digital signal) from drive (e.g. frequency inverter, hydraulic system, ...) while moving
CAN-FVE	CAN bus connection to FVE interrupted
CAN-ASE	CAN bus connection to ASE interrupted
CAN-PSE	CAN bus connection to PSE interrupted (Positioning unit, e.g. AWG magnetic tape system)
Error VO	Upper pre-limit switch VO not switched or switched in wrong floor (e.g. floor counting error by magnetic switch positioning – check also SGO and SGU switch)
Error VU	Lower pre-limit switch VU not switched or switched in wrong floor (e.g. floor counting error by magnetic switch positioning – check also SGO and SGU switch)
Err.VOU	Both pre-limit switches Vo and VU on at the same time
Overtemp.	Motor overheated (Motor thermistor state)
Brakechk.	Brake shoes in bad conditions
SL rev.dr	Lift between 2 doors with open revolving door (safety line contact open)
SCcardoor	Lift between 2 doors with open car door (safety line contact open)
SL shdoor	Lift between 2 doors with open shaft door (safety line contact open)
Doorz.err	Door zone switch SGM is on, while lift is not in door zone regarding to information from positioning system
Zone err.	Door zone switch SGM is off, while lift is in door zone regarding to information from positioning system
KH5 n.on	Supervising contact of safety relay KH5 not closed (KH5 not off) while lift is inside door zone
KH5 n.off	Supervising contact of safety relay KH5 not off (KH5 not on) while lift is outside door zone
Accupower	Battery mode, main power supply (24V) off
Car light	Car light power is off
Overload	Overload state (signal from load measuring unit)
Relevel.	Re-levelling in work

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No CANbus	CAN bus connection failed complete
Trip time	Runtime monitoring according to EN81
Doortest	Door test mode (activated by pressing inspection up and down together for 5s or by HSE keypad ("Door commands"))
Limit sw.	Lift in final limit switch
UPS evac.	Automatic UPS evacuation
Saf. beam	Safety light beam interrupted
Overspeed	Overspeed normal operation or overspeed re-levelling
Wrong dir	Lift moved in wrong direction while travelling or positioning system did count in wrong direction
Hyd.Press	Hydraulic pressure too high or too low (digital signal)
Err. SGE	Wrong state of reset switch SGE in relation to actual floor. Error could also caused by floor counting error (e.g. problem with SGO / SGU or with incremental encoder)
Em.homing	Homing trip to lowest floor in case of an error (hydraulic lifts only)
Slip >>	Error from slip control system (difference between the 2 position measurement systems on motor and car)
Pos.error	Error on positioning system (e.g. AWG magnetic tape error)
Stoppush	Emergency stop push pressed (only, if emergency stop push has 2. Contact which is connected to lift controller input; in this case also number of emergency stop push is displayed)
Setuptrip	Lift in setup mode (assembly mode)
Serv.mode	Input „Service mode“ activated
Insp. pit	Lift in inspection pit mode
Deadm.off	Deadman control mode active
Saf.unit	Error on 2. Positionin system (only if double AWG is used as positioning system)
Shelter	Safety space was opened (Shaft door manually opened). Reset necessary.
Apron	Foldable apron unfolded
Evac-wait	Evacuation mode activated; lift is waiting for start signal
Railing	Foldable railing on car roof unfolded
Phase err	Phase error or phase sequence error
Bearer	Bearer for safety space active or bearer error
Pos.diff	Only lifts with incremental encoder: Difference between position measured by incremental encoder and door zone switch SGM (e.g. by slip)
Hold.err.	Error on holding system (pawl device)
Hold.in	Holding bolt are retracted
Hold.out	Holding bolt are extended
Raise up	Lift is moving upward from holding bolts
Hold.pos	Lift is moving toward holding bolts (to holding position)
Hold.test	Test mode for holding bolts activated (by switch)
Hold.pres	Hydraulic lift with holding device (pawl device): Low pressure even if lift controller did re-pump
Hold.err	Holded signal did not switch off while lift was moving upwards from holding bolts
No hold	No holded signal while lift was moving down to holding bolts
Divingerr	Lift is located between 2 floors; error while diving to next floor (diving not possible)
Governor	Wrong feedback signal from over speed governor (coil) or any other UCM

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	actor
SL start	Safety line shafts door off while lift wants to start a trip (shaft door lock)
OP go in	Operation lift: Operation device is retracting
OP is in	Operation lift: Operation device is retracted
OP turn.	Operation lift: Operation device is turning
OP go out	Operation lift: Operation device is extending
OP is out	Operation lift: Operation device is extended
OP ramp	Operation lift: Operation device is locked
OP error	Operation lift: Operation device error
Rampdrive	Lift in ramp drive mode
VVVF para	Drive parameters not synchronized between lift controller and inverter
ASE" Softw	Used ASE software incompatible with HSE software
FVE" Softw	Used FVE software incompatible with HSE software
Tech.test	Menu Technical Test started
CAN-Door	CAN bus connection to CANopen door drive interrupted
Uncontr.m	Uncontrolled movement (UCM) detected
No decel.	Deceleration control circuit triggered
Valveerr.	Valve error (valve feedback contact)
Lock test	Shaft door lock test state (activated by input function "Dr. lock test")
AWG error	Error message from absolute position encoder
SC-PSU	Safety circuit interrupted by PSU (e.g. Limax3CP)
Demo mode	Time-limited demo modus of the lift controller; for activation please contact INTEC GmbH
Quickstrt	Starting a trip in „Quick start“ mode (motor will be powered and brake will already opened even doors are still not completely closed)
Battery	Battery defective (Measurement of battery voltage every 24 hours)
Light scr	Light screen permanently interrupted or error signal from light screen
Pallet ->	Pallet lift: Pallet is extended
Pallet <-	Pallet lift: Pallet is retracted
Pal.limit	Pallet lift: Emergency limit switch of pallet hook triggered
Rescue	Emergency rescue mode: Monitoring of brakes / contactors / valves deactivated
SL bypass	Bypass switch safety line doors activated
Byp.Error (Bypass SC)	Error on monitoring contacts of bypass switch for safety line doors
Byp.-Door	Bypass switch safety line doors is activated, but door has no close switch (no movement allowed according to EN81-20)
Gear off	Safety gear contact triggered (Reset necessary)
Bef.Gear	Primary safety line (before safety gear) interrupted
SC door	Safety line car door erroneously bypassed
LS error	Light screen error (only by light screen with test signal)
Ramp off	Error on shaft door lock contact (only if 2. contact exists)
Safety in	Controller input function „Safety fct.“ Activated
Safe.stop	Controller input function „Safety stop“ activated
Braketest	Automatic brake test active
Brake err	Error detected during automatic brake test
Insp.pos	Automatic trip to inspection start position
Valvetest	Automatic valve test active

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Valve err	Error detected during automatic valve test
Door rev.	Door permanently blocked (mechanical problem)
Blocked	Start blocked by other moving lifts (special start block mode: only 1 lift can run at a time; e.g. in case of power failure and power supply by emergency power generator)
Slackrope	Slack rope detected (by load measuring device)
Rope diff	Rope load difference detected (by load measuring system)
Doortemp.	Door motor or door controller overtemperature
UPS error	UPS defective (Error signal from UPS)
Pist.trip	Piston compensation trip (hydraulic lifts with 2 pistons)
Tuning	Motor tuning mode (VVVF): Brakes stay closed by start signal
Pall.err.	Pallet lift: Pallet error detected
Surfing	Monitored landing door was opened without authorization
UPS charg	UPS low charging level
Insp.MR	Inspection machine room switched on
Max.load	Maximum load detected (load measuring system)
Setup PSU	PSU (e.g. Limax3CP) in Setup mode (no teach-in done)
No param.	Incorrect parameter value (at least 1 parameter out of range)
Fing.prot	Finger protection device on car door has triggered (by special input or by CANopen door drive)
!Mainten.	This message is displayed (flashing) if: <ul style="list-style-type: none"> - One or more ESE or TSE boards are defective (the lift usually still moves in this case) - Many different errors occurred (but usually they do not lead to a shutdown of the lift)

4.5 Overview HSE call state

If lift is not in normal call mode (not all calls enabled), in line 2 of state display the actual call state is displayed instead of the actual operation time:

HSE call state	Description
Firemen	Fireman mode active
Fire ev.	Fire evacuation mode active
Emer.run	Emergency trip
VIP run	VIP trip
Spec.run	Special trip
Lift off	Lift is switched off
Int.door	Intermediate door of cabin is opened
Rem. off	Lift is remote switched off
Land.off	Landing calls disabled (by input function or in menu "Test trips")
Car full	Cabin is full; landing calls are accepted, but not served
Parktrip	Park trip to parking floor active
Cl.run 1	Clock runs (also called Timer trips) are activated (by internal timer or by input function with external timer) In Clock run mode doors and floors can be disabled (see parameters "Door releases")
Cl.run 2	
Cl.run 3	
Cl.run 4	
Cl.run 5	
Earthqu.	Earthquake mode
Car att.	Special mode with lift operator

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Autocall	Automatic call function: Lift controller will always set new car calls by itself and run non-stop.
Up peak	Up-peak operation mode
Downpeak	Down-peak operation mode
Deadman	Deadman control mode active
Off-Disp	Out-of-operation display is switched on (by input function or in menu "Test trips") even if lift is in normal operation.
Evacuat.	Automatic evacuation trip to evacuation floor
Config.1	Call configuration mode active; see description of "Special parameters" – "Call config."
Config.2	
Config.3	
Config.4	
Config.5	
Haz.trip	Hazardous goods transportation mode
Handicap	Handicap mode according (e.g. extended door open stay time)
Ev.contr	Evacuation mode according to EN81-76
Em.Evac.	Emergency evacuation by manual brake opening
Main.int	Maintenance interval expired
Main.nec.	Maintenance interval will expire shortly
Simulat.	Lift simulation active (test mode for lift controller manufacturing; no real lift mode possible; see menu "Test trips")
Groupoff	Group control deactivated by input function „Group off”. All lifts work as single lifts.
Spec.VIP	Special VIP calls active (see input function)
Overload	Lift is overloaded
Goods	Goods transportation mode, activated by "Door stop push" or by special good transportation function (see menu "Transp.of goods")
Belt.int	Lift with belt suspension: Belt interval (almost) expired; belt must be changed. See menu "Maintenance"
Startbl.	Start blocking function active, e.g. by emergency power supply to make sure never 2 lift will start at the same time. See menu "Start blocking".
Testmode	Technical check activated by input function "Test mode".
Max-load	Maximum lift load is /was exceeded.
Slackrop	Slack rope (detected by load measuring system)
Ropediff	Too large difference between rope loads (detected by load measuring system)

4.6 Error stack

Within the error stack the last 50 errors with timestamp are stored. However, it will not appear in the error stack when an error is removed again.

Each error is displayed within 2 lines. In the upper line the date and time of the occurrence of this error is displayed ("timestamp"), eg "22.04.15 12:34:45". The next line shows the type of error, for example, "Drive Error". For some errors it is still displayed behind which control module has diagnosed the problem.

Use the cursor keys to scroll in the error stack.

By pressing ENTER, you can see more details to the error on which the cursor is currently displayed (Example) :

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Drive error	Fault name.
Error no. 160/0	The fault name was already displayed before starting error details.
Ext. No. -	Internal error number
Module HSE	In case of an external module with CANopen interface (e.g. VVVF), a device-specific error number may be displayed here. With some devices, an error text can also be displayed here by pressing ENTER.
State Moving	control module, which has diagnosed the error
Trips 16391	Controller state when the error occurred
Set speed v3	Trip counter when the error occurred
Dir. Upwards	Selected lift speed: 0 at standstill „vRL“: Re-levelling speed „v0“: Arrival speed „v1“: Intermediate speed 1 (for short floor distances) „v2“: Intermediate speed 2 (for short floor distances) „v3“: Nominal speed „vI“: Normal Inspection speed „vIS“: Slow Inspection speed „vR“ : Fast Electrical recall operation speed „vRS“ : Slow (normal) Electrical recall operation speed „vEE(UPS)“: Evacuation speed (UPS Evacuation) „vHu“: Lift with holding bolts: Up speed from holding bolts „vHd“: Lift with holding bolts: Down speed to holding bolts „vZ1“: Additional intermediate speed 1 „vZ2“: Additional intermediate speed 2
Drivest.Standst.	Selected lift direction ("Upwards" , "Downwards" or 0 at Standstill)
Floor 3	State of drive controller: „Stopped“ „Start“ „Enable“ „Star/Delta“ „Softstarter“ "Targ.ack" „Op.Brake“ „Moving“ „Slowing“ „Stopping“ „Cl.Brake“ „Sw.off“
Pos. 9312	Actual floor If the calibration process has not been completed or a required reference movement has not yet been carried out, then here "-" is displayed.
Speed 1200	Actual position in mm Reference position is lowest floor (= 0) If the calibration process has not been completed or a required reference movement has not yet been carried out, then here "-" is displayed.
O.1- 8	Actual speed in mm/s
I.1- 8	State of outputs 1-8 of HSE(from left, ■ = output is set)
I.9-16	State of inputs 1-8 of HSE(from left, ■ = input is set)
	State of inputs 9-16 of HSE(from left, ■ = input is set)

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Calls enabled	Calls enabled/disabled
LC disabled	Landing calls enabled/disabled
Start fl. 3	Start floor of actual / last trip
Target fl. 6	Target floor of actual / last trip
SL 1-4	State of safety line (from left): - Primary safety circuit - Safety circuit revolving doors - Safety circuit car doors - Safety circuit shaft doors (■ = Voltage present, Safety circuit closed)
M O U VO VU	State of positioning switches (from left): - SGM (level switch) - SGO (upper door zone switch) - SGU (lower door zone switch) - VO (upper pre-limit switch) - VU (lower pre-limit switch) (■ = switch is turned on)
Door 1-max	Door state door 1 to 3 (from left): (■ = Door is closed) (□ = Door is not closed)
Dr1 O C R L	State of door signals door 1 (from left): - Door open limit switch - Door closed limit switch - Reversing contact - Light screen (■ = input is set / Light screen is interrupted) (? = State is unknown, e.g. if communication between HSE and FVE is interrupted) (- = signal not present, e.g. door without limit switches)
Dr2 O C R L	See door 2
Dr3 O C R L	See door 3
Load Z H F O	State of load measurement (from left): - Zero Load (Car empty) - Half load - Full load (Nominal load) - Overload (■ = Limit reached)
Carlight off	State of car light
+24V Power on	24V power supply on = Power supply available off = Battery power supply
O1 O2 R↓ R↑	Temperature monitoring (from left): - Overtemperature 1 (1st temperature sensor) - Overtemperature 2 (2nd temperature sensor) - Machine room temperature below limit - Machine room temperature above limit (■ = Input active – temperature limit reached)
Temp. [°C]	Actual HSE board temperature (only hardware version 1.05)
Intern	Internal error counter

4.7 Error counter

The error counter shows the frequency of each error .

When calling the error counter menu, it shows first, since when the errors are counted (the time of the last deletion process of the error counter).

After that, the error rate is displayed in one line and the type of error in the next line.

With the error counter it can be detected whether certain errors, such as CAN-bus faults or door errors occur frequently and it is thereby possible to start troubleshooting before the lift goes out of order.

4.8 Behavior of the controller in case of error

When the lift controller diagnoses a fault, then the car will, depending on the type of error, immediately stopped or even attempted to go to the next floor.

Then the lift controller enters the error state. Calls are not cleared at this moment. If the problem is eliminated again, the lift controller mainly goes back to normal operation.

Only after a waiting period (parameter " Err.delay[s]" in menu " Timer parameter ") if the cause of the error is still there, all calls are cleared and blocked. Inspection control and emergency recall operation remain active even in the event of a fault. Hydraulic lifts evacuate, if possible, in the lowest floor.

4.9 Internal error counter

With each occurred error an internal error counter is increased by a defined value. The value by which the counter is incremented, depends on the type of error.

When the error counter reaches the maximum value of 100, then the lift goes out of operation. In state display 1 "defective" appears.

When starting any trip the internal error counter is decreased by 1 (unless the value is already 0).

This internal error counter is implemented to make sure the lift goes out of operation in case an error occurs very often. On the other side, the lift goes not out of order, if the same error occurs only sporadically and at longer intervals.

The error counter may be erased (set to 0) by the following actions:

- Switching off mains power supply (not necessary to remove HSE battery)
- Switching on the inspection control
- Switching on the emergency recall operation
- Pressing the reset button on the HSE

4.10 Error warning

By single faults the lift may remain in operation because of the error counter as described above.

Regardless of that a second counter is incremented by a similar mode, which outputs an error warning when it reaches a certain value. Then "Maintenance!" Indication appears in the status display 1 alternating with the current lift state.

If this text is displayed, error memory and error stack should be studied carefully in order to identify any "creeping" faults on time before a total failure of the controller happens and it can

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be fixed.

If there is a failure of ESE or TSE module the message "Maintenance" is displayed immediately, regardless of the current state of the counter. Through this text it is therefore pointed to defect TSE / ESE-assemblies because the lift remains in operation in this case.

Then it can be tested with "Hardware Test" (see next chapter) which modules have failed.

4.11 Hardware test of the individual controller boards

With the keyboard and the LCD display of the HSE or the handheld terminal a very effective hardware test of the individual modules can be performed.

If, for example, the firefighters function does not work, then it should first be checked whether the corresponding controller input is activated when the fire button is pressed.

At the same time, the outputs of the individual modules may be activated individually in order to test whether, for example, indicator lights or relays are properly connected.

After starting the hardware test, the inputs and outputs of the selected module are displayed. For inputs and outputs, which are assigned to a function, a corresponding letter appears (the meaning of these letters is explained in the chapter "Input and output parameters").

If an input or output is switched off, then a small letter is displayed, a switched on input or output is displayed by a capital letter. For inputs and outputs to which no function has been assigned, "-" is displayed as long as the input / output is not activated and "ε", if the input / output is enabled.

Using the cursor keys the cursor can be moved between the individual inputs and outputs. If the cursor is on an output, then by pressing the key "0" the state of the output can be changed (activate / deactivate). For the outputs 1-8 the state can be changed directly by pressing the corresponding button "1" to "8".

By pressing the ENTER key ↵ the detailed function of the corresponding input or output is displayed and can also be changed here.



The hardware test can be carried out during normal operation. However, activation or deactivation of individual outputs may result in malfunctions. Therefore, the hardware test usually should be performed only when the lift is at a standstill (e.g. by switching on the emergency recall operation switch).

Outputs, whose status has been changed during the hardware tests, retain this status until this output will be activated or deactivated by a new control action.

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4.12 Troubleshooting at CAN bus faults

The fault diagnosis by the lift controller only works as long as the CAN bus connection between the individual control modules works.

Even if errors in the data transmission are displayed in the error stack of the controller, the reason can only be found through a systematic approach.

At this point once again it has to be pointed out that the lift controller has 2 separate CAN bus systems:

- Control bus
- Shaft bus

In addition, some drives can also be connected via the RS485 bus (only if main board MCU is used).

For group of lifts (in some cases also single lifts with large hoisting height or large floor number), the shaft bus can be divided into individual branches by the bus coupler (CBK). In this case, the shaft bus is physically divided into different segments, but logically, it is for the lift controller still 1 shaft bus system.

If the data transfer on a CAN bus is totally disturbed, then the error "Bus off" appears. In this case, even the hand-held terminal can no longer be used to diagnose problems, but it is still possible to work with the keyboard and the LCD display on the HSE.

If a data transfer is possible, but some individual modules like FVE, TSE or ESE are missing, the CAN bus connection can be checked by hardware test menu.

If an assembly does not appear here, then it can have different causes:

- The corresponding module is defective
- The bus cable to this module is not connected correctly
- The node number of the module is not set correctly

If the data traffic on the CAN bus is totally disturbed, then the following procedure is recommended:

1. Switch off the power supply and measure the resistance between the two CAN bus lines Cx+ and Cx- with a multimeter. If the CAN bus cable is connected correctly, then the resistance is approximately 60Ω.

For this the CAN bus line is terminated by a 120Ω resistor on each end (resulting resistance is 60 Ω). This resistor is located on each PCB and may be activated by a jumper (see description of each module in the annex of this manual).



The termination resistor of the FVE module version 1.01 is always activated. So in some lift installations the CAN bus resistance may be 40Ω. However, the CAN bus will work without problems in this case.

2. Check the shield connection of the bus cable (if shielded cable used): The screen should be only connected on one side to 0(24V), preferably in the control cabinet. At the same time, the GND of power supply 0(24V) must be connected to PE at a single point (also in the control cabinet).

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3. Check that the two CAN bus lines CX+ and CX- are not reversed at any point and the bus cable is properly clamped.
4. Then switch on power supply again and check the communication in the hardware test menu.
5. If the CAN bus is still totally disturbed, then step by step, all bus modules should be separated from the CAN bus and tested by menu item "Hardware test" whether the other modules can communicate with each other. So it can be determined which of the modules may be defect.



If individual components are separated from the CAN bus, then it should always be taken into consideration that both cable ends are terminated with a 120Ω resistor (activated by jumper at the last module on each end of the CAN bus). However, the CAN bus works for testing purposes even if there is only a termination resistor at one end of the CAN bus activated, but it should be completed in normal operation always at both sides.

Are both ends of the cable open (no terminating resistor), then the CAN-Bus does not work!

It should be noted that the CAN bus data transfer may also be disturbed by external influences (shielded motor cables, missing suppressors on contactors, relays, brake magnets, and so on). These factors must be included within the troubleshooting.



For interference suppression (EMC) it is particularly important that coils (e.g. relays, brake, contactors) have a corresponding suppressor capacitor or similar. So the coil of the mechanical motor brake at roped lifts should necessarily be suppressed with a varistor. It should be noted that the suppressor is located as close as possible to the coil.

Node ID:

Each module, which is connected to the CAN bus, has its own node ID number. At each of the two CAN buses (control bus, shaft bus) each number must be unique, otherwise there will be disturbances in the data transmission, which are difficult to diagnose.

Since TSE and ESE modules are used at different CAN busses (control bus, shaft bus), it is allowed that a TSE as well as an ESE have the same node ID number.

The following error messages may be displayed when a node number is assigned twice:

- "CAN faulty xxx" (Module xxx has trouble sending / receiving data on the CAN bus)
- "CAN bus off xxx" (Module xxx turns because of frequent disturbances temporarily from the CAN bus.)
- "No connect. xxx" (No CAN bus connection to the module xxx)

The big problem with duplicate node ID numbers in a CAN bus network is that the 2 modules with the same node ID number interfere with each other and thereby disturb the entire bus. This may cause that other modules can no longer send messages. As a

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result, error messages appear from modules that actually work correctly.

Mostly a duplicate node ID number can be diagnosed with the menu "hardware test". If individual components are displayed partly as available, partly as absent, then this may assign to a duplicate node number.

The node ID number can only be assigned freely to TSE, ESE and CBK - modules. In the HSE and the FVE, the node number can not be changed. The assemblies PSE and ASE are also simultaneously assigned to the appropriate function by assigning the node ID number.

The node number of a TSE or ESE board can be tested in the following way:

- Disconnect all other TSE or ESE modules from the bus
- Start menu "hardware test" and read number of TSE / ESE

Example: Hardware test TSE:

----*----

In the displayed example the TSE board has the node ID number 4.

4.13 Apparent errors by anti misuse detection or special functions

The lift controller MLC 8000 has a variety of functions to call-misuse detection. When checking the lift controller it should therefore always take care that apparent errors can also be the result of misuse detection or of a special function.

Example: The lift controller always accepts only one call, any more operated car command is ignored.

Possible cause: The "Max.CC no ." parameter is set to 1 and thus limits the number of car calls.

4.14 Troubleshooting at the interface to external components

External control components (eg frequency, door control units) which are not directly part of the lift controller MLC 8000 can even recognize or cause errors, which are difficult to diagnose. For example, the lift controller monitors the signal sequence of VVFF connected via digital signals, while, conversely, the VVFF monitors the signal sequence of the lift controller. This monitoring is carried out partly in millisecond range and therefore it is sometimes difficult to understand what actually was the cause of an error message now.

To make it easier to detect errors, it is possible, to increase all monitoring times of the lift controller several times so that it is possible to measure digital signals by multimeter before all signals are switched off due to an elapsed monitoring time.

Example:

To start a trip the HSE switches on first the "Enable" signal of the VVFF. Then the lift controller waits for the "Ready" signal of the inverter. If this feedback signal is not set within the specified time (parameter "Ready=1"; default 1s), then the HSE disables the signal again and generates an error message. Within this second, it is hardly possible to measure if the "Enable" signal reaches the VVFF correctly or whether the VVFF activates the "Ready"

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signal , but is connected incorrectly to the HSE .

By setting the parameter "Ready=1" now to a value of 30 seconds, there is enough time to measure the signals with a multimeter.

Another way to diagnose theses error is to set individual signals by the menu "Hardware test" or, for example, to switch on contactors manually and to control the feedback signals.

4.15 Fault output

Any one or more outputs of the HSE, FVE, TSE or ESE can be configured as fault message output.

When an error has occurred then, after a time delay (parameter " Err.delay[s]"), these outputs are enabled.

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4.16 Error messages

Nr.	Error message	Description	Lift controller reaction
16/1	AWG Band dectekt	magnetic tape of the absolute encoder AWG defective	Check tape and change if necessary. For a detailed error analysis see manual of AWG
16/16	Gen.error	Test input "Spec.funct."- "Gen.error" activated	No further reaction, only for test purposes.
32/112	AWG defect	positioning system (absolute encoder AWG) defective	Emergency stop Lift continues operation if AWG has reset the error. For a detailed error analysis see manual of AWG.
35/0	Overcurrent	Overcurrent or short circuit on any output of this PCB	For information only; check wiring and PCB
49/0	Phase off	Phase error (signal of an external power supply monitor device)	Emergency stop; then out of service
49/1	Car light off	Car light power supply is missing	Rope lift: Stop in next floor Hydraulic lift: Trip to lowest floor Return to normal operation when car light power is on again.
50/0	Accu power	24V power supply off. All other errors are ignored in this state.	Emergency stop, , then error state. Automatic return to normal operation when power is on.
52/0	SL off	Safety line open due to a fault.	Error state "SL off". Automatic return to normal operation when the safety circuit is closed again.
52/1	SL off trip	Safety line open due to a fault while the lift was moving.	Emergency stop; then error state "SL off". Automatic return to normal operation when the safety circuit is closed again.
52/2	SL door off	Safety line of revolving shaft door, car door or automatic shaft door is missing while the lift wants to start a trip.	Waiting time of 4 seconds, then lift controller opens the doors and closes again.
52/3	SL final limit	Lift (probably) in final bottom limit switch. The error message is generated when the primary safety circuit is missing, while the lift is above top floor level or below bottom floor level (see parameters "Top limit" and "Bot.limit" in "General paramet.")	Rope lift: Back to normal operation if limit switch is closed. Hydraulic lift: If safety line is closed again lift goes to lowest floor and stops operation.

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Nr.	Error message	Description	Lift controller reaction
		Since the limit switch will be monitored generally only through the safety circuit (normally no additional separate contacts) the cause of failure can also be at a different contact within the primary safety circuit.	
52/4	Final lim.insp.	Safety circuit inspection limit switch open.	Emergency stop; start in opposite direction possible
52/5	Safety beam	Safety light curtain is interrupted during a trip.	Emergency stop. Safety beam will be resetted by pressing a new car call or the reset button of the safety beam.
52/16	SL bypass monit.	According to EN81-20 it is allowed to bypass safety circuit of doors by a switch for service purposes. This switch must be monitored by one or more feedback inputs. The error occurs if not all monitoring inputs have the same state.	Only emergency operation and inspection active. Error is only cleared if all monitoring inputs are set if bypass switch is activated.
52/17	SL gear off	Safety gear triggered (safety gear contact opened)	For monitoring an additional input "Safety line" - "Before gear" is necessary. Clearing this error is only possible by an reset input ("Safety line" - "Gear reset")
52/18	SL shaftdoor on	Safety circuit shaft doors still closed while doors are opened.	Test according to EN81-20. Check safety circuit, check for bypass wire. Back to normal mode by switching on inspection or recall operation for at least 5s or by resetting the lift controller.
52/19	SL doortest err.	Error while testing saftety circuit shaft doors according to EN81-20	Check wiring: If doors are completely opened the safety unit for door zone bypassing is activated for a short time, so that safety circuit input SL4 will be activated. If not this error message is set. Reason may be an error in wiring or a defective safety unit. If this error message occurs the 4th. time the lift goes out of operation. Back to normal operation by lift

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Nr.	Error message	Description	Lift controller reaction
			controller reset.
52/20	SL rev.door on	Safety circuit revolving doors still closed while they are opened (monitored by second contact to lift controller)	Test according to EN81-20. Check safety circuit, check for bypass wire. Back to normal mode by switching on inspection or recall operation for at least 5s or by resetting the lift controller.
52/21	Door ramp off	Additional contact on door ramp lock is opened while the lift is moving or wants to start	While starting: Door reopens up to 4 times, then all calls are cleared; new trial if new call is set. Check ramp lock contact.
52/22	SL car door on	Safety circuit car doors still closed while safety circuit shaft doors is opened.	Test according to EN81-20. Check safety circuit, check for bypass wire. Back to normal mode by switching on inspection or recall operation for at least 5s or by resetting the lift controller.
52/23	Bypass,no dr.cl.	Bypassing of door safety contacts is activated (bypass switch is on), but the car door has no door close switch to monitor door state while moving with bypassed door contacts.	Bypass switch without function, that means it is not possible to move the lift with activated bypass switch in case of door contact problems even with inspection or recall operation. The door controller must be retrofitted with a close switch.
53/0	Battery defect	Measured battery power below 7V or by 3 consecutive measurements (normally measured every 24 hours) always below programmed limit (see parameter "Batt.[mV]" in "Internal parameter")	Lift goes out of operation. After replacing the battery a "Battery check" must be executed or the lift must be resetted.
53/1	Battery warning	Measured battery power below programmed limit (see parameter "Batt.[mV]" in "Internal parameter")	Battery may be defective or discharged. Lift still in operation (see above).
54/0	UPS error	Error signal from UPS for emergency evacuation	Rope lift: Stop in next possible floor. Hydraulic lift: Lift goes to lowest floor. Re-levelling function still active. After deactivation of error signal return to normal operation.
54/1	UPS charge	"Discharged" signal from UPS for emergency evacuation	See UPS error above
66/0	PCB temp. ↑	PCB too hot	Only for information Momentary only FVE 2.1 is equipped with such sensor; here

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Nr.	Error message	Description	Lift controller reaction
			the input current is reduced automatically
67/0	Motor overtemp.1	Motor overtemperature (Input "Overtemp. 1" activated). The operating temperature depends on the characteristic of the PTC thermistor.	Rope lift: Stop in next possible floor. Hydraulic lift: Lift goes to lowest floor; Re-levelling function still active. After cooling down (deactivation of the input) return to normal operation.
67/1	Motor overtemp.1	Motor overtemperature (Input "Overtemp. 2" activated). The operating temperature depends on the characteristic of the PTC thermistor.	See above
67/2	Room temp. ↑	Machine room temperature is above limit (input "Roomtemp.max" activated).	See above
67/3	Room temp. ↓	Machine room temperature is below limit (input "Roomtemp.min" activated).	See above
67/4	HSE-Temp. ↓	HSE temperature too low	See above
67/5	HSE-Temp. ↑	HSE temperature too high	See above
67/16 67/17 67/18	Door1 overtemp. Door2 overtemp. Door3 overtemp.	Door motor overtemperature	Rope lift: Stop in next possible floor. Hydraulic lift: Lift goes to lowest floor. Re-levelling function still active. After cooling down (deactivation of the input) return to normal operation.
80/1	Wrong code	A module with an invalid hardware encoding (security code) is located on the CAN bus.	Module with the invalid hardware code is ignored by the system (see chapter "Hardware encoding").
96/0	SW error	Error in the internal program sequence of HSE, probably triggered by EMC interference or for example cold solder joints on the PCB.	Check EMC-compliant wiring of the lift, replace HSE if necessary.
97/0	Int.SW error or Lift WD-Reset	Internal software error of a module, triggering the "watchdog timer"; software restart. See above.	Emergency stop, re-initialization of the module, then return to normal operation. If this error occurs at a TSE or ESE-module, then the re-

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Nr.	Error message	Description	Lift controller reaction
			initialization is done during operation, ie, with no emergency stop. Check EMC-compliant wiring of the lift, replace PCB if necessary.
97/1	Lift Boot up	Lift restart after power on	Lift starts reset trip (if setup is already finished)
97/2	Restart xxx (xxx = PCB name)	Software restart of a module during operation (for example, when you connect an ESE module to a running lift).	Emergency stop, re-initialization of the module, then return to normal operation. If this error occurs at a TSE or ESE-module, then the re-initialization is done during operation, ie, with no emergency stop.
97/3	ASE Softw.<1.40	Due to changes in the CANopen standard, there are compatibility issues when using HSE modules with version from 1.32n and ASE modules older than version 1.40 This error message also sometimes occurs due to EMC problems - see errors above.	Lift is not running; HSE must be changed to older version or ASE to version 1.40 or newer..
97/4	FVE Softw.<1.40	See above	Lift is not running; HSE must be changed to older version or FVE to version 1.40 or newer..
97/5	Lift SW-Reset	Reset HSE was performed by software (with keypad of HSE or handheld terminal)	
97/6	Lift HW-Reset	Reset HSE was performed (with Reset button on HSE)	
98/1	Group param.	In a group of lifts the parameters for shaft bus PCBs ESE are not identical in all lifts.	Start menu item „Group sync“
98/2	Drive param.	Only for lifts with drives according to CANopen lift DSP417: The drive parameters do not correspond to the parameters stored in the lift controller.	To synchronize drive parameters start menu item "Read from drive" in menu "Drive parameter")
128/xx	SMS send error Fax send error PC send error	Error while sending an SMS, fax or PC alarm message.	Check data transmission line and receiver nummber / address.
129/16 129/17 129/18 129/19 129/20	CAN faulty CAN HW Overrun CAN SW Overrun CANB HW Overrun CANB SW Overrun CAN fault RXC	Failure in the data transmission on the CAN bus (CANB = shaft bus). If this error occurs, the last CAN bus message is automatically repeated, so that	Depending on the CAN Error type: Automatic repeated transmission of the disturbed CAN bus message; no further error reaction.

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Nr.	Error message	Description	Lift controller reaction
129/21 129/22 129/23 129/24 129/32	CAN HW Overr.1 CAN HW Overr.2 CAN HW Overr.3 CAN Overr.VT CAN fault Passiv	there is no data loss. This error can, for example, occur on the CAN bus when switching on the main switch or when connecting new modules. By increased number of such errors check CAN bus connection (see section „Troubleshooting at CAN bus faults“).	
129/48	No connect xxx (xxx = PCB name)	No reception of the "Heartbeat" message of a module (xxx) by the HSE. All CAN-Bus units send a "Heartbeat" message within a specified time for supervising.	Emergency stop. If the "heartbeat" of this module is received again, the system returns to normal operation. If this error occurs by a TSE or ESE assembly, then there is no emergency.
129/49	No HSE conn.	No reception of the "Heartbeat" message of the HSE.	Emergency stop. Following an internal diagnostic and then return to normal operation. If ESE or TSE modules do not receive heartbeat of HSE for more than 5 seconds they will switch off all outputs and switch on "Out of order" outputs.
129/50	Mand.ESE fault	Any ESE marked as "mandatory" is not available (defective or data transmission fault).	Finish last trip; then out of operation
129/51	Mand.TSE fault	Any TSE marked as "mandatory" is not available (defective or data transmission fault).	Finish last trip; then out of operation
129/64	CAN bus off	Automatic shutdown of the CAN bus due to many communication faults	Emergency stop, thereafter, an internal test of the data transfer follows. If the data transfer is again without errors, then there is a return to normal operation. At a CAN failure of a TSE or ESE-assembly, the lift remains in operation; there will be no emergency stop.
129/65	CANB bus off	Automatic shutdown of the CAN bus B (shaft bus) due to many communication faults	Lift keeps in operation; internal test of data transfer.
129/81	ESE err.branch x	CAN bus errors on shaft bus, branch x.	Check CAN bus (wiring, termination resistor, ...). Possible reason may be switch

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Nr.	Error message	Description	Lift controller reaction
			off/on of a single lift inside a group.
129/82	Branch off	Automatic shutdown of the CAN bus (branch x of the shaft bus) due to many communication faults.	See above
129/83	Error local ESE	CAN bus errors on shaft bus to an ESE, plugged directly on the HSE.	See above
129/96	No control bus	Data transmission on the CAN bus (control bus) is not possible. Possible reasons: - No CAN bus cable connected - No other bus module connected - PCB defective	Emergency stop , thereafter internal test of the data transmission. If the data transfer works again, then the system returns to normal operation.
129/97	CAN TX Overr.	CAN transmit buffer overflow on control bus Possible reasons: - Bus load too high - Frequently switching inputs - Errors in the controller software	Emergency stop. Check signal connection to controller inputs. Contact lift controller manufacturer.
129/98	No shaft bus	Data transmission on the CAN bus B (shaft bus) is not possible. Possible reasons: - No CAN bus cable connected - No other bus module connected - PCB defective	Lift continues operation. Internal test of data transmission
129/99	CANB TX Overr.	CAN transmit buffer overflow on shaft bus Possible reasons: - Bus load too high - Frequently switching inputs - Errors in the controller software	Lift continues operation. Check signal connection to controller inputs. Contact lift controller manufacturer.
129/100	No conn. to COP	No CAN bus data transmission to TSE boards inside car operation panel COP. Possible reasons: - TSE defective - COP not connected - CAN bus line disturbed	Lift continues operation. Internal test of data transmission
129/128	Overrun RS232	Data overflow on RS232 interface (too much incoming data in short time)	
129/129	Offl.Err.RS232	Disturbing signals on RS232 in offline mode	

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Nr.	Error message	Description	Lift controller reaction
129/130	Onl.Err.RS232	Disturbing signals on RS232 in online mode	
129/131	CRC error RS232	Invalid data received (wrong checksum) on RS232	
129/144	Overrun iModul	Data overflow on iModul (Modem, Ethernet, ...)	
129/145	Offl.Err.iModul	Disturbing signals on iModul (Modem, Ethernet, ...) in offline mode	
129/146	Onl.Err.iModul	Disturbing signals on iModul (Modem, Ethernet, ...) in online mode	
129/147	CRC error iModul	Invalid data received (wrong checksum) on iModul (Modem, Ethernet, ...)	
130/48	Mult. group no.	There are 2 HSE modules with the same group number in a lift group	The lift continues, however, landing calls and group control do not work properly.
144/1	Min.pressure	For hydraulic lifts: oil pressure below the limit (input "Min.pressure" activated).	Emergency stop. Back to normal operation if input is deactivated again.
144/2	Max.pressure	For hydraulic lifts: oil pressure above the limit (input "Max.pressure" activated).	Emergency stop. Back to normal operation if input is deactivated again.
144/16 144/16	Overload 2.Overload	Lift overloaded	Only measured if lift is located in a floor with open doors. Back to normal operation if overload input is off. The error message "2.overload" indicates, that an alternative load limit is temporarily activated via the special input function "2.Overload"
144/17	Max.load	Maximum load limit reached	Emergency stop. After the signal is deactivated, lift moves to lowest floor. Delete error by using load reset button. If there is no load reset button, then automatic return to normal operation.
160/0	Drive error	Fault signal from the drive at standstill state.	Error state. Back to normal operation if fault signal is deactivated.
161/0	Drive err.move	Fault signal from the drive while moving.	Emergency stop. Back to normal operation if fault signal is deactivated.
161/1	No Ready signal	The "Ready" signal from the drive is not activated on time.	Emergency stop. Back to normal operation inside 2 seconds.
161/2	No Brake signal	The "Brake" signal from the	Emergency stop.

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Nr.	Error message	Description	Lift controller reaction
		drive is not activated on time.	Back to normal operation inside 2 seconds.
161/3	Ready sign.n.off	The "Ready" signal from the drive is not deactivated on time.	Emergency stop. Back to normal operation inside 2 seconds.
161/4	Brake sig.n.off	The "Brake" signal from the drive is not deactivated on time.	Emergency stop. Back to normal operation inside 2 seconds.
161/5	RB/contac. off	The feedback signal from running contactors is deactivated while the lift is moving.	Emergency stop. Back to normal operation inside 2 seconds.
161/6	Brake=0 on move	The "Brake" signal from the drive is deactivated while the lift is moving.	Emergency stop. Back to normal operation inside 2 seconds.
161/7	Mov.=0 on run	The "Moving" signal from the drive is deactivated while the lift is moving.	Emergency stop. Back to normal operation inside 2 seconds.
161/8	Softst=0 on run	The "Ramp end" signal from the softstarter (hydraulic lifts) is deactivated while the lift is moving.	Emergency stop. Back to normal operation inside 2 seconds.
161/9	No Softst.signal	The "Ramp end" signal from the softstarter (hydraulic lifts) is not activated in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/10	RB/contact.on	The feedback signal from the running contactors is not deactivated after the trip is finished.	Back to normal operation if the signal is deactivated.
161/11	Brakesig.not off	The "Brake" signal from the drive is activated while the lift is in standstill state.	Back to normal operation if the signal is deactivated.
161/12	Softst.not off	The "Ramp end" signal from the softstarter (hydraulic lifts) is activated while the lift is in standstill state.	Back to normal operation if the signal is deactivated.
161/13	CAN:TimeoutBrake	Only by drives according to CANopen lift DSP417: No message to open the brake in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/14	CAN:Timeout VoEn	Only by drives according to CANopen lift DSP417: No message to apply power to the motor ("Voltage Enable") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/15	CAN:TimeoutReady	Only by drives according to CANopen lift DSP417: No CAN message "Ready=1" ("Ready to switch on") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/16	CAN:Timeout Br=0	Only by drives according to	Emergency stop.

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Nr.	Error message	Description	Lift controller reaction
		CANopen lift DSP417: No message to close the brake ("Speed zero") in time.	Back to normal operation inside 2 seconds.
161/17	CAN:TimeoutRdy=0	Only by drives according to CANopen lift DSP417: No CAN message "Ready=0" ("Operation disabled") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/18	RDY signal off	The "RDY" signal from the drive is deactivated while the lift is moving.	Emergency stop. Back to normal operation inside 2 seconds.
161/19	RDY signal on	The "RDY" signal from the drive is activated while the lift is in standstill state.	Back to normal operation if the signal is deactivated.
161/20	RDY signal n.ff	The "RDY" signal from the drive is not activated in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/21	CAN:TimeoutOpDis	Only by drives according to CANopen lift DSP417: No CAN message to stop operation ("Operation disabled") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/22	CAN:TimeoutOpEn	Only by drives according to CANopen lift DSP417: No CAN message to start moving ("Operation enabled") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/23	CAN:Timeout Move	Only by drives according to CANopen lift DSP417: No CAN message that lift started moving ("No speed zero") in time.	Emergency stop. Back to normal operation inside 2 seconds.
161/24	CAN:Timeout Targ	Only by drives according to CANopen lift DSP417: No acknowledge CAN message for new target in time (only in "Position mode")	Emergency stop. Back to normal operation inside 2 seconds.
161/32	Drive standby	No return from standby mode	Perform drive reset (voltage off/on)
162/0	Contact not on	Running contactors are not switched on while starting a trip or suddenly switched off while moving.	Emergency stop. Back to normal operation inside 2 seconds.
162/1	Contact. not off	Running contactors are not switched off on trip end.	Back to normal operation if all running contactors are switched off.
163/0 163/64 ... 163/71	Brake not opened Brake1 not opened ... Brake8 not opened	Brakes are not opened while starting a trip or suddenly switched off while moving.	Emergency stop. Back to normal operation inside 2 seconds.
163/1 163/80 ...	Brake not closed Brake1 not closed ...	Brakes are not closed on trip end.	Back to normal operation if all brakes are closed.

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Nr.	Error message	Description	Lift controller reaction
163/87	Brake8 not closd		
163/2	Brake monitoring	Wear limit of brakes reached.	Stop in next floor, then out of operation.
163/3	Governor not on	The coil on the overspeed governor is not switched on (if overspeed governors is used for uncontrolled movement prevention)	Emergency stop. Back to normal operation inside 2 seconds.
163/4	Governor not off	The coil on the overspeed governor is not switched off on trip end (if overspeed governors is used for uncontrolled movement prevention).	Back to normal operation if coil on overspeed governor is switched off.
163/5 163/7 163/9 163/34	Valves not open ↓Valve1 not open ↓Valve2 not open ↑Valve not open	Safety valves (UCM - A3) do not open in time	Emergency stop. Back to normal operation inside 2 seconds.
163/6 163/8 163/10	Valve not closed	Safety valves (UCM - A3) do not close in time at trip end	Back to normal operation if valves are closed.
163/11	Brake opened	Brake opened while lift is in standstill state.	Check brake and brake contacts. Error message is also displayed if brake is opened manually for example for emergency evacuation).
163/12 163/13 163/14 163/35	Valve opened ↓Valve1 opened ↓Valve2 opened ↑Valve opened	Safety valves (UCM - A3) open while the lift is in standstill state	Check valve and valve contacts. Error message is also displayed if valve is opened manually.
163/15	Em.Valve not op.	Emergency down valve ("iValve") not opened in time while starting a trip	Check valve and valve contacts.
163/16	Em.Valve not cl.	Emergency down valve ("iValve") not closed in time at trip end.	See above
163/17 163/18 163/19 163/20 163/21 163/22 163/23 163/24	Brake 1 defect Brake 2 defect Brake 3 defect Brake 4 defect Brake 5 defect Brake 6 defect Brake 7 defect Brake 8 defect	Lift did move more than programmed limit while automatic brake check was carried out	Out of operation Reset necessary to go back to normal operation
163/25 163/26	A3 valve defect Dn.valve defect	Lift did move more than programmed limit while automatic valve check was carried out	Out of operation Reset necessary to go back to normal operation
163/32	SC off Braketest	Safety line open while brake test was active; Brake test canceled	Perform brake test manually (Menu „Technical check“ – „Mechanical Brake“ – „Brake standstill“)

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Nr.	Error message	Description	Lift controller reaction
163/33	SC off Valvetest	Safety line open while valve test was active; Valve test canceled	Perform valve test manually (Menu „Technical check“ – „A3/Down valve“)
163/48	Relaistestfehler	When using a safety module PSU (e.g. Limax3CP), the output relays are tested cyclically	Manually test the output relays via hardware test. Replace Limax3CP error still exists.
164/xx		Error messages for VVVF of manufacturer "Lust" controlled by CAN bus. Please check operating manual of inverter for error diagnosis.	Emergency stop. After standstill the lift controller sends an error reset message every 2 seconds to the VVVF. once the VVVF cleared the error message to lift controller goes back to normal operation.
176/1	VO in doorzone	The upper prelimit switch VO switches within the door zone (incorrect shift position). One possible cause is that one of the door zone switch has not switched off.	Emergency stop. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic).
176/2	VU in doorzone	The lower prelimit switch VU switches within the door zone (incorrect shift position). One possible cause is that one of the door zone switch has not switched off.	See above
176/3	Error VO/VU	The switching state of at least one of the prelimit switches VO or VU is wrong (for example both switches on or lift in lowest floor, but VU is not on). This error message may also occur if the door zone switches SGO/SGU are not working well; so the lift controller may have miscount the floor number.	Emergency stop. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic).
176/4	SGM off in level	According to the measurement of the positioning system the lift is located inside door zone, but the door zone switch SGM is off. Possible reasons: - switch SGM defective - Positioning system defective, for example incremental encoder not connected well).	Emergency stop. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic) and the positioning system is counting well again. Mainly a reset is necessary. If the motor encoder is used as positioning system this error also may occur during technical test. In this case a reset has to be performed.

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Nr.	Error message	Description	Lift controller reaction
176/5	SGM on,doorz.off	According to the measurement of the positioning system the lift is located outside door zone, but the door zone switch SGM is on. Possible reasons: see above.	See above
176/6	KH5 not on (if using MCU: Zon. not on)	The feedback signal from the safety circuit for moving with open doors was not activated while the lift was entering the door zone.	Emergency stop. Back to normal operation if feedback signal is switched on again. Check safety relais on HSE (KH5, KH6, KH7) and poitioning system / doorzone switch).
176/7	KH5 not off (if using MCU: Zon. not off)	The feedback signal from the safety circuit for moving with open doors was not deactivated while the lift was leaving the door zone.	See above
176/8	Premature stop	Lift stops before reaching the level zone. Possible reason: - Teach-in not done accurately - Level zone too small - Setting of drive (VVVF) not correct - drive parameters inside lift controller (delay times, ..) are not set correctly.	Lift starts re-levelling
176/9	Late stop	Lift has stopped behind the level position. Possible reasons: see above	Lift starts re-levelling
176/10	Relev.too short	Lift starts re-levelling, but is still outside the levelling zone when stopping. Possible reasons: see above. This error also occurs if the safety relais for moving with open doors (KH5, KH6, KH7) not in right switching position after power on. In this case send the lift to another floor once.	Lift starts re-levelling again (up to 6 times)
176/11	Relev.too long	Lift stops too late while re-levelling and leaves the level zone again on the other side. Possible reasons: see above.	Lift starts re-levelling again (up to 6 times)
176/12	Relev.overspeed	While re-levelling the lift exceeds the maximum permitted speed	Emergency stop. Back to normal operation inside 2 seconds.

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Nr.	Error message	Description	Lift controller reaction
		(Parameter „v Relev“)	Check setting of parameter "v Relev"; if possible increase parameter
176/13	Overspeed	The lift exceeds the maximum permitted speed (Parameter „v Nominal“) by at least 20%.	Emergency stop. Back to normal operation inside 2 seconds. Check setting of parameter "v nominal"
176/14	Wrong direction	The positioning system detects a different direction of movement than the selected direction. Possible reasons: - Positioning system defectice - Direction signals to drive not connected well or defective - wrong drive setting - motor cable wrong connected - Field direction of power supply wrong (change 2 phases)	Emergency stop. Back to normal operation inside 2 seconds.
176/15	Lift fast on VO	If moving upwards the upper prelimit switch VO was switched on while the lift was still running with v3 (position of VO wrong). In general, the lift controller must slow down the lift before VO switches on. Only by lifts with just 2 floors the prelimit switches may be used as slowdown switches.	Lift is slowing down to arrival speed v0 if the prelimit switch goes on. Check and correct position of prelimit switch VO. If incremental or absolute encoder (AWG) is used as positioning system: check parameter "Dec. v3 ↑" and place the prelimit switch by about 90% of this value before highest level.
176/16	Lift fast on VU	If moving downwards the lower prelimit switch VU was switched on while the lift was still running with v3 (position of VU wrong). In general, the lift controller must slow down the lift before VU switches on. Only by lifts with just 2 floors the prelimit switches may be used as slowdown switches.	Lift is slowing down to arrival speed v0 if the prelimit switch goes on. Check and correct position of prelimit switch VU. If incremental or absolute encoder (AWG) is used as positioning system: check parameter "Dec. v3 ↓" and place the prelimit switch by about 90% of this value before lowest level.
176/17	Magnet wrong	Only for positioning system via "Switch": Switching sequence of the position switches (door zone switches, slow down switch) wrong.	Stop in next floor. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic). Check all position switches.

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Nr.	Error message	Description	Lift controller reaction
176/18	SGV in doorzone	Slow down switch SGV switched inside door zone (wrong position, see switching sequence in lift schematic). A possible reason is also, that one of the door zone switches did not switch off.	Stop in next floor. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic). Check all position switches.
176/19	SGE in doorzone	Reference switch SGE switched inside door zone (wrong position, see switching sequence in lift schematic). A possible reason is also, that one of the door zone switches did not switch off.	Stop in next floor. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic). Check all position switches.
176/20	Error SGE	State of reference switch SGE wrong. (wrong position, see switching sequence in lift schematic). A possible reason is also, that one of the door zone switches did not switch off.	Stop in next floor. Back to normal operation if all position switches have the right state again (see switching sequence diagram in lift schematic). Check all position switches.
176/21	Slip error	For lifts with slip monitoring: slip too large	Emergency stop, than out of operation
176/22	AWG2 CAN fault	CAN bus connection to 2. AWG disturbed	Emergency stop Back to normal operation if CAN bus connection works again
176/23	AWG2 error	Fault signal from control unit (UEA) if using double AWG	Stop in next floor, than out of operation
176/24	Shelter top open	Shelter monitoring in shaft head triggered	Only moving with inspection / emergency recall operation possible; otherwise emergency stop
176/25	Shelter bot.open	Shelter monitoring in shaft pit triggered	See above
176/26	Bearer top off	Input signal from automatic bearer in shaft head not switched on while control output for bearer is set.	Emergency stop, than out of order. Back to normal operation if input is switched on
176/27	Bearer top on	Input signal from automatic bearer in shaft head still switched on while control output for bearer is off.	Emergency stop, than out of order. Back to normal operation if input is switched off
176/28	Bearer bot.off	Input signal from automatic bearer in shaft pit not switched on while control output for bearer is set.	See above
176/29	Bearer bot.on	Input signal from automatic bearer in shaft pit still switched on while control output for bearer is off.	See above

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Nr.	Error message	Description	Lift controller reaction
176/30	Shelter open	Shelter monitoring triggered	Only moving with inspection / emergency recall operation possible; otherwise emergency stop
176/31	Apron off	Apron is pulled out even if it should be pulled in (depending on actual lift position and type of apron)	Emergency stop, than out of order. Back to normal operation if apron has right state again.
176/32	Apron not off	Apron is not pulled out even if it should be (depending on actual lift position and type of apron)	Emergency stop, than out of order. Back to normal operation if apron has right state again.
176/48	Interm.door	Intermediate door opened while lift was moving	No further reaction. Only for information or for better fault analysis if contact of intermediate door is also connected inside safety circuit. If intermediate door is open lift may only be used in special operation (special key function)
176/64	Pos.difference	When door zone switch SGM was switched on the currently measured position differs significantly (parameter "Max. Diff. SGM) from the stored position measured during teach-in.	Emergency stop, than out of operation. Check positioning encoder (function, mechanical fixing!), if necessary do new teach-in. If motor encoder is used for positining this error may occur during technical check. In this case reset the lift controller (power off)
176/80	Bolts not out	Time-out while pulling out the holding bolts.	After the configurable number of trials the lift moves to lowest floor and goes out of operation.
176/81	Bolts not in	Time-out while pulling in the holding bolts.	After the configurable number of trials the lift lowers back to holding position and goes out of operation.
176/82	Bolt out on trip	Holding bolt are suddently not complete pulled in anymore while the lift is moving	Emergency stop. Than the lift cntroller tries to pull in the holding bolts. If possible back to normal operation.
176/83	Bolt error	Not possible to move the holding bolts.	Out of operation
176/84	Re-pump error	Lift is in holding position; re-pumping started by signal "Low pressure": Even if the lift has reached the max. position for re-pumping (parameter "Pump off[mm]") the signal "Low pressure" is still on.	Stop re-pumping; out of operation
176/85	Reached signal	Even if lift has moved up from the holding positioning and pulled in the holding bolts the	Stop operation If "Hoded signal is switched off back to normal operation

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Nr.	Error message	Description	Lift controller reaction
		feedback signal "Holed" is not off.	
176/86	No reached sign.	Even if lift is already below holding position (Parameter „Hold.zone[mm]“) the signal "Holed" is not switched on.	Stop operation If "Holed signal is switched on back to normal operation.
176/87	Hold.trip error	5 not succesfull attempts to put lift to holding device or move back from holding device.	Out of operation
176/88	Diving error	10 not succesfull attempts to move the lift back to next level ("Diving", for example after an error or after inspection trip).	Out of operation
176/89	Insp.overspeed	Overspeed in inspection mode	Emergency stop. Back to normal operation inside 2 seconds.
176/112	OP device err.	Faulty condition of the OP device (e.g. set both limit switches)	Back to normal operation if OP device has defined state again.
176/113	OP device ramp	OP-device is unlocked while the lift wants to start	See above
176/114	OP dev. not out	OP device can't move out	See above
176/115	OP dev. not in	OP device can't move in	See above
176/116	OP dev. ramp on	Ramp of OP device can't move out	See above
176/117	OP dev. ramp off	Ramp of OP device can't move in	See above
176/120	Pallet hook err.	Timeout while pullin/push out pallet	Back to normal operation if pallet hook is in one of the end positions
176/121	Pallet limit	Pallet final limit switch activated	Back to normal operation if final limit switch is deactivated.
176/128	Uncontr.movement	Lift moved out of the door zone while the doors are open (see EN81 Annex A3)	Out of operation. Back to normal operation only by operating a special Reset switch or by switching on emergency recall operation.
176/129	Input unc.move	Lift controller has recognized uncontrolled movement, but the input to check the uncontrolled movement state has not switched on.	Out of operation. Back to normal operation only by operating a special Reset switch or by switching on emergency recall operation.
176/130	Em.stop push	Emergency stop push pressed. No error, just for information	Back to normal operation, if emergency stop push is released.
176/131	No deceleration	Lifts with slow down control circuit: Lift didn't slow down to defined speed at the final floors	Emergency stop Back to normal operation after a few seconds.
176/132	Dec.circ.not off	Lifts with slow down control circuit: Control circuit still triggered at standstill	Back to normal operation if control circuit has right state again

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Nr.	Error message	Description	Lift controller reaction
176/133	Dec.circ.fault	Reset of deceleration circuit not possible	Check deceleration circuit, check deceleration circuit reset (see output function „Safety space“ – „Decel.reset“)
176/134	Dec.bypass	Feedback signal from deceleration circuit bypass relays has wrong state.	Check bypass relay, check feedback input.
192/1	Trip time out	Time between 2 state changes of shaft switches SGM (door zone) exceeded (Trip time monitoring according to EN81; parameter "Triptime[s]").	Emergency stop, out of operation
192/2	LS or callmisuse	Number of trips on car calls, in which the light screen has not been interrupted, exceeded (parameter „Check LS“). Possible reason: - car call misuse by pressing all car call buttons - Light screen not working	All car calls cleared; no further error reaction
192/3	Alarm call	Emergency call button was pressed. The emergency call is only displayed in the fault memory, if an input of HSE (normally input 14, since it is already connected to the HSE with the emergency line) has been parameterized as "Alarm call".	No further error reaction
192/4	Trip time stop	Trip time exceeded even though the lift is already on braking / stopping	Emergency stop Back to normal operation after 2 sec.
192/5	Slack rope	Slack rope monitoring by load measurement device	Emergency stop. After the signal is deactivated, lift moves to lowest floor. Delete error by using load reset button. If there is no load reset button, then automatic return to normal operation. Check ropes and load measurement device.
192/6	Rope difference	Too large difference between rope loads	Emergency stop. After the signal is deactivated, lift moves to lowest floor. Delete error by using load reset button. If there is no load reset button, then automatic return to normal operation.

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Nr.	Error message	Description	Lift controller reaction
			Check ropes and load measurement device.
192/7 192/9	Surfing Surfing test	Signal from external anti-surfing device or from surfing test input	Emergency stop By test input finish last trip
192/8	Firekey misuse	Fire key in car was operated without firecall before	switch off fire key in car
241/1 242/1 243/1	Door x close err.	Timeout while door is closing	Check door motor / door controller Check setting of parameter "Closetime [s]" Lift controller starts closing several times (parameter "Close attempts"), than all calls are cleared. New close attempts if new call is pressed.
241/2 242/2 243/2	Door x open error	Timeout while door is opening	Check door motor / door controller Check setting of parameter "Opentime [s]" Lift controller starts opening several times (parameter "Open attempts"), than all calls are cleared and lift out of operation. New open attempts if new call is pressed.
241/3 242/3 243/3	Door x reop.error	Timeout while door is closing after reopening by light screen	See above
241/4 242/4 243/4	Door x opn.switch	Dooropen-limit-switch of a door is suddenly deactivated without door command.	Lift controller retries to open / close the doors by a new call
241/5 242/5 243/5	Door x cls.switch	Doorclose-limit-switch of a door is suddenly deactivated without door command.	Lift controller retries to open / close the doors by a new call
241/6 242/6 243/6	SL Door x shorted	Safety circuit of car door shorted If the door has no limit switches the reason for this error may be a defective door controller / door motor	Out of operation (dangerous state). Check safety switch and wiring
241/7 242/7 243/7	Door x nudging	Forced door closing initiated by a permanently interrupted light screen (only if parameter "Nudging" is set)	If possible, lift closes the door with reduced force. If available the buzzer signal is switched on while door is closing
241/8 242/8 243/8	Door x light scr.	Light screen permanently interrupted (parameter "Max. LS [s]")	If nudging is enabled (see above) forced door closing
241/9 242/9 243/9	Door x rev. input	Door reverse input (mechanical blocking signal) permanently interrupted	Back to normal operation if reverse input is off.
241/10 242/10	Door x wrong fl.	Only for electrical operated shaft doors with limit switches:	Out of operation Back to normal operation if this

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Nr.	Error message	Description	Lift controller reaction
243/10		Door open limit switch is operated in other floor (maybe shaft door in any other than the actual floor is open)	shaft door is closed again
241/11 242/11 243/11	Door x Error LS	Error signal from light screen	Lift still in operation, door nudging (if enabled)
241/12 242/12 243/12	Error LSx test	Error while testing the light screen with a test signal (see output functions). The test signal is set by the lift controller if the lift reaches the door zone of the target floor. The light screen must than indicate an interruption – if not this error message is set.	If this test fails some timest he lift stops operation. Note: The light screen must be equipped with such a test input.
241/13 242/13 243/13	Doorx blocking	Door reverse input (mechanical blocking) was activated some times while door was closing (see parameter „Max.reverse“)	Door remains open until new call is pressed.
241/14 242/14 243/14	Dr x Finger prot.	Finger protection sensor of door x activated	Check door mechanic and finger protection sensor, reset lift controller
255/0	Device specific	Error message from CANopen lift device of other manufacturer	Check error stack of device, see manual of device
Exxx		Error code of an external CAN open module (e.g. VVVF Zetadyn with CANopen connection)	See operation manual of this device
	Unknown err.	An error code has been sent by an external CAN open module, which is not yet described inside the lift controller.	See operation manual of this device

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4.17 Error messages during teach-in procedure

Error: Lift did not go to top floor!	During teach-in the lift could not reach the top floor. Possible causes: - Faulty door zone switch SGM or switching points for SGM set incorrectl - Lower prelimit switch VU has not switched off - Upper prelimit switch VO has not switched on
Door error	Door closing error when starting the teach-in trip
Lift not in bottom floor	Lift not located on the bottom floor when starting teach-in procedure. The shaft switches must have the following states when starting teach-in procedure (complete calibration or calibration shaft switches): - door zone switch SGM switched on - upper prelimit switch VO switched off and lower prelimit switch VU switched on (if available) or reference switch SGE off (if available) - SGO and SGU (if available) switched on
Teach in not possible, check lift state!	Tech-in not possible because actual lift state is not "Setup" (e.g. Inspection, Emergency recall operation, error state).
Time exceeded	Exceeded time between 2 status changes of SGM, SGO or SGU during teach-in (see parameters "triptime[s]").
State changed. New state: Xxxx	Lift state changed during teach-in (e.g. error state or emergency recall operation switched on)
Floorcount error Check SGM	The door zone switch SGM has switched too often during the teach-in procedure (e.g. due to bouncing of the switch).
VO switched in doorzone	Upper prelimit switch VO switched while the lift was inside the door zone. Check switching point.
VU switched in doorzone	Lower prelimit switch VU switched while the lift was inside the door zone. Check switching point.
SGE switched in doorzone	Reference switch SGE switched while the lift was inside the door zone. Check switching point.
Error on SGO	Upper door zone switch SGO not working during teach-in.
Error on SGU	Lower door zone switch SGU not working during teach-in.
Position of SGO wrong!	Error in switching sequence SGO (SGO switched at undefined or at wrong position). Possibly SGO and SGU are reversed.
Position of SGU wrong!	Error in switching sequence SGU (SGU switched at undefined or at wrong position). Possibly SGO and SGU are reversed.
Count direction wrong!	Counting direction of the position encoder incorrectly. The two channels of the encoder must be changed.
Setup position switch not done!	The teach-in of the braking distance was started before teach-in of the floor positions (magnetic switches) was finished.
Encoder is not counting	No signals from encoder during teach-in trip. Check encoder and wiring!
Encoder error	Irregular encoder signals during teach-in trip. Check encoder and wiring!
Door zone too small for stop distances! Check settings!	In normal case, the door zone (SGM or parameter "Vane length" if using absolute encoder) should be adjusted so that the point where all sppeed signals will be switched off is located inside door zone. The teach-in trip has however measured that this is not the case in at least

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	<p>1 floor. Therefore, either (if possible) change settings on the drive to shorten stopping distance (lower arrival speed v_0) or enlarge the door zone.</p> <p>If this is not possible the stopping accuracy may be not very good.</p>
Level zone too small for lift speed! Automatic calculation <ET>	<p>The level zone (parameters "Level zone \uparrow" and "Level zone \downarrow") is too small in relation to the measured braking distances for relevel speed v_N. Thus, re-levelling is not possible.</p> <p>When pressing ENTER the parameters for the flush zone are adjusted automatically. However, it is better to lower the re-levelling speed v_N on the drive if possible.</p>
Re-level speed Too fast for Lift with UCM!	<p>For lifts with safety unit to protect against uncontrolled movement UCM (EN81-A3) the lift must be switched off if the re-level speed exceeds 200 mm/s. But the speed measurement during set-up procedure measured a re-level speed higher than 200 mm/s.</p> <p>Adjust re-level speed!</p>
Teach-in not necessary, just set param. "Setup ready" to Yes	<p>This message appears if it is not necessary to do a teach-in trip (e.g. for lift with only magnetic switches for positioning).</p>

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5. Travel commands and Door commands via keypad (HSE or handheld terminal)

5.1 Travel commands

Using the keypad of the HSE or hand-held terminal travel movements of the lift can be performed (similar to the emergency recall operation). However, during these movements the safety circuit is not affected and must be completely closed.

If the menu "travel commands" is started as the lift moves, then an emergency stop is carried out first.

While the menu "traveling motion" is active, all other movements (also emergency recall operation and inspection control) are disabled.

The following commands can be set:

- '1': Movement in upward direction with fast emergency recall operation speed vR
- '3': Movement in downward direction with fast emergency recall operation speed vR
- '4': Movement in upward direction with slow (normal) emergency recall operation speed vRS
- '6': Movement in downward direction with slow (normal) emerg. recall operation speed vRS

The lift moves as long as the corresponding key is pressed. When releasing the button, the lift stops.

At movements using the keypad, the lift does not stop independently (unless the safety circuit is interrupted). It is thus e.g. possible to drive via keyboard the lift up to the limit switch.

If at the start of the menu item "travel commands" the doors are open, then the door will be closed first when a key is pressed ('1' '3' '4' or '6'). Are the doors closed and the key is still pressed, then the lift starts the travel movement.

If the handheld terminal is disconnected while the menu item "travel commands" is activated, the lift does not automatically return to normal operation. The handheld terminal must then be re-connected and the menu item "travel commands" must be closed (it is, of course, also possible to closed the menu directly on the HSE).

Error messages in the "Travel commands" menu

If no movements can be performed with the keyboard by any lift controller error, then the appropriate error message is displayed on the bottom line of the LCD display:

- "Safety line off": Safety circuit is not closed
- "CAN-Error Drive": CAN bus connection to the drive disturbed
- "Brake error": Motor brake is not opened or closed
- "Timeout Stopping": No signal from drive in time that lift did stop
- "Contactor error": Travel contactors not energized or de-energized
- "Drive error": Error message from drive (e.g. VVVF)

Check error stack for more informations about the error.

5.2 Door commands by keypad

Using the keypad of the HSE or the handheld terminal door commands may be set and at the same time the reaction of the door can be tested (door switch, light barrier, reversing contact, etc.).

Door commands can be given only if the lift is at standstill.

While the menu "Door commands" is active, all other movements (also emergency recall operation and inspection control) are disabled.

After starting the menu "Door commands" the same state image 2 appears (Door state) as described in chapter "State displays".

The following commands can be set by short pressing the corresponding button:

- '1': Open car door 1
- '2': Close car door 1 (Light screen is active)
- '3': Close car door 1 (Light screen is deactivated - "Nudging")
- '4': Open car door 2
- '5': Close car door 2 (Light screen is active)
- '6': Close car door 2 (Light screen is deactivated - "Nudging")
- '7': Open car door 3
- '8': Close car door 3 (Light screen is active)
- '9': Close car door 3 (Light screen is deactivated - "Nudging")
- '0': Stop all doors immediately



In lifts with manually operated revolving landing doors, the car doors can be closed with keyboard commands only when the revolving landing door is closed and thus the safety circuit input SK2 of HSE is set.

5.3 Door commands by inspection switches

By simultaneously pressing the inspection up and down push for at least 5 seconds (while inspection is switched on), the controller starts the door test mode. As a acknowledge signal, buzzer, gong and bypass signal are switched on briefly (starting with HSE software version 1.43j)

In this mode, the car doors can be opened by pressing the inspection up-button and closed by operating the inspection down-button. When releasing the button, the door movement will be stopped immediately.

By turning off the inspection switch the door test mode is terminated.

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6. Test of the safety functions of the lift control (Technical inspection)

Most safety features of the lift controller are implemented through safety switches or safety circuits. This section only describes the functions in which control software or the hardware of the control modules get involved in the implementation of the safety function.

Partial parameters must be changed for testing a function. In this case, the parameters should not be permanently stored, so that after a system-reset, the original parameter values are available again.

If the internal error counter has reached its limit due to tests carried out (state display 1 shows "!Repair!"; see chapter "Error counter"), then the error counter can be cleared by activating the emergency recall operation switch for a few seconds. After switching off this switch again, the controller returns to normal operation.

To test the safety features there are 2 different ways:

1. A largely automated way can be automatically carried out the required interventions in the control sequence of the lift controller and the auditor has to start only this menu item.
2. A "conventional" way, at which parameters are manually adjusted or cables must be clamped.

For both ways basic knowledge to use the control menu is required.



If any test is done, hydraulic lifts always run to lowest floor before they stop operation ("E.Homing").

Below both options are described.

6.1. Automated Test

6.1.1 Testing the safety circuit for moving with open doors

The lift must be in normal operation. To start the test the menu item "Technical check" -> "Open door safety" must be selected.

On the HSE or handheld terminal the actual floor is displayed in the top line. In the 2nd line the actual lift state is displayed (normally "Standstill", "Moving" or "Arrival").

If the lift is in "Standstill" state, the controller sets a car call to any other floor. When starting the trip to this floor the lift controller will not switch off the door zone signal (KH7 stays on).

When arriving the destination floor the door lock overbridging is not carried out and the lift displays the error "KH5 n.on".

Since the safety circuit is in the wrong switch state after this test, a reset of the error can be carried out only by turning off the control voltage (or the main switch) incl. disconnecting the battery cable.



If a position supervision unit PSU (e.g. Limax 3CP) is used instead of the HSE safety relays for moving with open doors it is not possible to test this unit with the automatic test like described above. Please refer to user manual of position supervision unit.

6.1.2 Testing the trip time monitoring

The lift must be in normal operation. For testing, the menu item "Technical check" -> "Trip time" must be started.

In the display of the HSE the actual floor is displayed. In the 2nd line the current controller state is displayed (normally "Standstill", "Moving" or "Arrival").

If the lift is in "Standstill" state, the controller sets a car call to any other floor. When starting the trip to this floor the parameter "Triptime[s]" is automatically set to 2 seconds.

After expiration of the trip time an emergency stop is carried out and the new state "Trip time" is displayed.

Exiting the menu item with ESC, the parameter "Triptime [s]" will be set back to the old value and the error will be deleted.

6.1.3 Testing the final limit switches

The lift must be in normal operation. For testing, the menu item "Technical check" -> "Limitswitch top" or "Limitswitch bot." must be started.

In the display of the HSE the actual floor is displayed. In the 2nd line the current controller state is displayed (normally "Standstill", "Moving" or "Arrival"). In 3rd line the actual position in mm is displayed, while the 4th line shows the difference between floor level of the actual floor and the actual position.

The lift controller sets itself a call to the top or bottom floor. If the lift is already in the top or bottom floor the lift first sets a call to any other floor, before starting the trip to the top or bottom floor.

When arriving the top or bottom floor the lift will slow down like in normal operation, but then will go up to the final limit switch with arrival speed v0.

If the lift hits the final limit switch, the new state "SL on trip", followed by "SL error" and, after a few seconds, "Limit sw.".

In 4th line it is displayed now the exact triggering position of the final limit switch (if the lift uses a digital positioning system like AWG or encoder).

If the lift is then manually lowered when testing the upper limit switch so far that the top limit is switched on again, then a homing to the bottom landing takes place, if it is a hydraulic lift.



Between tripping the final limit switch and storing this state the lift controller needs 3 to 5 seconds. This time delay is necessary before lowering the lift manually for testing homing function of hydraulic lifts.

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When exiting the limit switch test menu with ESC, no return to normal operation takes place (starting from software version 1.29i), because that partially led to irritation at the test sequence. Here then a reset is required (menu item "Reset HSE")



If the lift controller on reaching the final limit switch does not display "Limit sw." after a few seconds, then usually the parameter "Top limit" or "Bot.limit" is set incorrectly.

6.1.4 Testing car and counterweight buffer

The lift must be in normal operation. For this test the final limit switch must be shorted manually.

For testing, the menu item "Technical check" -> "Car buffer" or "Counterw.buffer" must be started.

In the following picture it is possible to select the speed for the buffer test. For lifts without CANopen drive it can be selected between one of the pre-defined speeds v0, v1, v2, v3, vZ1 oder vZ2 ausgewählt werden; while for lifts with CANopen drive the speed value in mm/s can be set by number keys.

Test can be started by pressing ENTER. The lift controller sets itself a call to the top or bottom floor. If the lift is already in the top or bottom floor the lift first sets a call to any other floor, before starting the trip to the top or bottom floor.

At slow down position the lift controller changes to the selected speed and keeps moving up to the buffer.

After standstill the HSE display shows the exact position where the buffer did stop the lift (as long as a digital positioning system is used).



Do not forget to remove the limit switch bypass once the test is finished!



The selected test speed (by CANopen drive) must not be larger than the nominal lift speed!

6.1.5 Overspeed

6.1.5.1 Moving with overspeed

In order to really test the burst pipe protection (hydraulic lifts) or the safety gear it is necessary to run the lift with overspeed.

By lifts with CANopen connection this test may be done fully automatic, because the lift controller directly sets the moving speed by CAN bus. By this test the moving speed is set to 150% of the nominal speed.

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For lifts without CANopen connection the moving speed must be increased manually, e.g. by adjusting the hydraulic valve or by changing the nominal speed parameter inside the VVVF.

During this test the speed monitoring of the lift controller is deactivated (otherwise the lift would do an emergency stop before the lift reaches the set speed).

When starting the menu item "Technical check" -> „Speed limit“ -> „Overspeed trip“ the actual floor is displayed in 1st line. In 2nd line the target floor must be entered. After pressing ENTER the lift starts the trip to the selected floor. In 2nd line the actual lift state is displayed now. In the 3rd line the actual speed is displayed while 4th line shows the maximum speed reached (only lifts with digital positioning like AWG or encoder).

6.1.5.2 Testing the speed monitoring

The lift controller constantly monitors whether or not the rated speed of the lift is exceeded by more than 20%.

The test can only be done in lifts with digital positioning (like AWG or encoder). An important requirement for this test is, that the parameter "v Nominal" is set correctly (see "General parameters" -> "v nominal"; automatically measured during teach-in).

The lift must be in normal operation. For testing ,the menu item "Technical check" -> „Speed limit“ -> „Speed check“ must be started.

In the display of the HSE the actual floor is displayed. In the 2nd line the current controller state is displayed (normally "Standstill", "Moving" or "Arrival").

If the lift is in "Standstill" state, the controller sets a car call to any other floor. When starting the trip to this floor the parameter "v nominal" is automatically set to 80% of its original value.

After exceeding the speed threshold an emergency stop is carried out and the new state "Overspeed" is displayed.

Exiting the menu item with ESC, the parameter "v nominal" will be set back to the old value and the error will be deleted.

6.1.6 Testing the safety gear

The automated testing of the safety gear is only possible if:

- A coil for remote triggering the safety gear is provided which is driven by an output of the lift controller. This output is to be programmed as follows :

```
Fct    Spec.out.
Sub Saf.gear test
Polarity invers
```

or

- A coil for descent stopping system via safety gear is provided which is driven by the lift controller. This output is to be programmed as follows :

```
Fct    Safety space
Sub    Governor
Polarity normal
```

(additional parameters see „Special param.“ -> "Safety Shelter").

or

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- the safety gear is controlled by an electronic system PSU (e.g. Limax3CP)

When starting the menu item "Technical check" -> "Safety gear" first the floor where the safety gear should be triggered must be entered. With the cursor keys it is also possible to select a reduced speed for safety gear test (only HSE software version 1.38b or newer). Pre-setting is nominal speed v3, but reduced speeds v1 or v2 can be selected.

The lift then moves towards to the floor which had been set. Between 300 and 500 mm before reaching the defined floor (depending on the lift speed) the safety gear is triggered, so that the lift within functioning safety gear stops approximately at flush level of the selected floor (advantageous if, for example, test weights must be unloaded).

Within the control display of HSE / handheld terminal the trigger position is displayed in the 3rd line and in the 4th line the way in mm, that was laid back after the safety gear was triggered (only with digital positioning like AWG or encoder).

6.1.7 Testing the motor brake

The testing of the individual brake shoes is only possible if they are connected via separate relays of the HSE.

The outputs for switching the brake have to be programmed as follows:

```
Fct      Drive
Sub Brake cont.
Signal no. 1
Polarität normal
```



Beginning with HSE Software version 1.43d it is necessary that every brake output has a unique number. Up to HSE software version 1.43c only relays of HSE can be used as brake outputs

6.1.7.1 No brake opening at start

When starting the menu item "Brake not open" the lift controller sets a car call in the top or bottom floor (depending on which floor is further away from the current car position, i.e., depending on where the car is currently located, the brake test is performed in upward or downward direction).

When starting, the mechanical brake is not actuated, and it can be checked whether the lift moves further even with closed brake. Any existing feedback contacts of the brake are to be ignored by the lift controller.

The LCD display will show how far the lift has possibly moved with closed brake.

6.1.7.2 Drop off the brake or a single brake shoe while moving

This menu item is used to test, if the lift is slowing down if one brake fails operation.

When starting the menu item "Technical check" -> "Mechanical brake" -> "Brake off trip" the lift controller sets a car call to the top or bottom floor (depending on which floor is further away from the current car position, i.e., depending on where the car is currently, the brake test is performed in upward or downward direction).

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After reaching the rated lift speed, depending on the menu selection, one brake stays open while all other brake outputs will be switched off. The drive controller is also turned off at this moment; any existing feedback contacts of the mechanical brake will be ignored by the lift controller.

Within the LCD screen of HSE or handheld terminal, the position at which the brake is switched off appears in the 3rd line. The 4th line indicates how far the car has moved since the shutdown (only with digital positioning like AWG or encoder).

6.1.7.3 Testing every single brake while lift is in standstill

By this test every single brake shoe is tested while the lift is in standstill state. Always just 1 brake will stay closed while all other brakes are opened. The lift controller will check if the lift moves by any single brake.

In order to carry out this test at least 2 independent by HSE relays controlled brakes are necessary.

Timing parameters for this test may be set by parameter ("Special param." – "Brake check")

On LCD screen of HSE it is shown how many mm the lift did move by this test.

6.1.8 Testing of A3 and down valve

With this menu item „A3/Down valve“ the lift controller first opens the down valve and checks if the A3 valve will hold the lift in level. Second the A3 valve is opened and it is checked if the lift stays in level.

Timing parameters for this test may be set by parameter ("Special param." – "Valve check")

On LCD screen of HSE it is shown how many mm the lift did move by A3 and down valve.

6.1.9 Testing the monitoring inputs for motor brake (roped lifts) or valves (hydraulic lifts)

With this menu item "Brake/Valv.check" the monitoring inputs of the lift controller for motor brake or hydraulic valves are checked.

If starting the test menu a sub menu for selecting the brake or valve input appears.

6.1.9.1 Brake / valve opened while lift is standstil

With this menu item the reaction of the lift controller is tested if the brake or valve is opened while the lift is not moving.

For this the selected monitoring input is inverted internally. Depending on the defined monitoring time the lift controller goes to error state.

The LCD display shows the actual floor, the actual position and the lift controller state.

6.1.9.2 Brake / valve doesn't open on trip start

With this menu item the reaction of the lift controller is tested if the brake or valve is not opened while the lift controller starts moving.

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The lift controller sets itself a car call to any other floor and ignores the brake / valve monitoring input. Depending on the defined monitoring time the lift controller carries out an emergency stop.

After 3 new trials to start a trip the lift controllers goes out of operation.

6.1.9.3 Brake / valve doesn't closed on trip end

With this menu item the reaction of the lift controller is tested if the brake or valve is not closed at trip end.

The lift controller sets itself a car call to any other floor. At trip end the brake / valve monitoring input is ignored by the lift controller. Depending on the defined monitoring time the lift controller goes out of operation.

6.1.10 Testing the contactor monitoring (Contactor drop off control)

The lift must be in normal operation. For testing, the menu item "Technical check" -> "Runn. contactor " must be started.

Here must be entered first, which relay of the HSE should not be switched off at trip end. The selection is made by pressing a numeric key like shown in the table below:

Numeric key	HSE - Relay
1	KH11
2	KH12
3	KH13
4	KH14
5	KH15
6	KH16
7	KH41
8	KH42

Only the numeric keys are accepted, where the appropriate relay is programmed as a drive output relay (output function "Drive").

After defining the relay number the lift controller sets at random car call to another floor. At the end of the trip to this floor the corresponding HSE relay is not switched off. Within the LCD display the current floor and the control condition are displayed.

By pressing the ESC key, the HSE relay is switched off and the test is ended.

6.1.11 Uncontrolled movement

For testing the lift behavior by uncontrolled movement the lift controller starts a trip in upward or downward direction (like selected).

The LCD display shows the actual floor, actual position and difference to floor level (and with this the distance the cabin moves away from floor level until the UCM device stops the lift).

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This test is only possible if the UCM protection is done by the lift controller. If a UCM system from another manufacturer is used the test must be done according to that documentation.

For more details please refer to the TUEV certificate of the lift controller.



Up to HSE software version 1.38p this test is done for roped lifts by just opening the motor brake. The lift will move than, depending of the load, in up or down direction away from level zone. Starting with HSE software version 1.38q the lift is moving by motor force out of door zone into the selected direction.

6.1.12 Testing the Deceleration monitoring circuit

The lift must be in normal operation. For testing, the menu item "Technical check" -> "Deceler.check" must be started.

For testing the deceleration monitoring circuit the lift moves to the selected final floor (top or bottom), but will not slow down at the specified deceleration point („Parameter“ – „Special param.“ – „Deceler.check“ – „Slow [mm]“). By this the monitoring circuit will trip and the error is displayed.

The LCD display shows the actual floor, actual position and difference to floor level.

If the lift position is too closed to the selected final floor, then the lift first moves to a floor in opposite direction, from where the lift is able to move with nominal speed to the final floor.

If a position supervision unit PSU (e.g. Limax 3CP) is used for deceleration monitoring this automatic test is not done in top or bottom floor. It is done related to the shaft center for safety reasons. The LCD display shows the difference to the shaft center in this case.

6.2. Conventional Test

6.2.1 Testing the safety circuit for moving with open doors

For conventional test a defective door zone switch SGM is simulated.

For this the door zone switch SGM is disconnected while the lift is moving (simulated error: door zone switch not switched on while arriving door zone) or the SGM input is connected to 0(24V) while the lift is still in a floor (simulated error: door zone switch SGM is not switched off while leaving the door zone). In both cases lift stopps operation once the trip is finished.

6.2.2 Testing the trip time monitoring

For testing the parameter "Triptime[s]" (menu "Parameter" -> "Timer parameter") is set to a value which is less than the time it takes for the lift for the ride between 2 floors (leaving a door zone and entering the next door zone). Normally a setting of 2s works for this test.

After that, a car call is given by keyboard (menu item "Set car calls" or keyboard command „1xx↓“, e.g. „104↓“ for a car call to floor 4) .

If the "Triptime[s]" between switching on and off of the door zone switch SGM is exceeded , then the lift performs an emergency stop and remains out of order. Within the LCD display ,the text "Trip time" appears at state display 1 alternately with "Repair" .

6.2.3 Testing of parking trip to lowest floor by hydraulic lifts

Hydraulic lifts must normally move to the bottom floor after at least 15 minutes. To test this function, the parameter "Parktime[s]" 1.32z parameters must be set to a smaller value (eg 20 seconds). This parameter is located in the menu "Parameter" -> "Special param." -> "Parking trip" (by HSE software older than 1.33 the parameter is located in the menu "Parameter" -> "Timer parameter").

The modified time is only activated when the lift has carried out a new ride. Therefore, a car command should be entered to any other floor. (Menu item "car calls" or keyboard command "1xx↓", eg "104↓" for a car call in Floor 4).

After the lift has reached the new floor, the lift moves automatically to the "Park floor" after the "Parktime[s]", if no new call is placed (at hydraulic lifts the lowest level should always be set as "Park floor").

To prevent the entry of new landing calls while testing, the landing calls should be disabled (via the menu item "Test" -> "Disable LC" or by keyboard command "6↓").

6.2.4 Testing of emergency light

If the supply voltage of the car light is switched off, the lift controller automatically switches on the emergency-light. The emergency light is also switched on if the power supply of the lift controller is switched off.

By hydraulic lifts it can be additionally checked whether the lift moves to the bottom floor immediately.

6.2.5 Testing the final limit switches

First the lift should be moved to top or bottom floor with a car call (menu item "Set car calls" or keyboard command "1xx↓", eg "104↓" for a car call in Floor 4).

After that the menu item "Travel commands" is started" and the lift is moved by pressing the '1' or '4' key (for upward direction) or '3' or '6' (for downward direction) is driven. Once the final limit switch is reached, the lift will stop immediately. Within the bottom line of the LCD display , the message "Safety line off" appears.



After performing the test, the menu item "Travel commands" must be finished by pressing ESC. Otherwise even the emergency recall operation will not work and it is not possible to move the lift away from the final limit switch.

6.2.6 Testing the traction (driving ability)

Since the emergency recall operation switch bridges the final limit switches, it can be tested, directly after testing the final limit switches (see above), if the car or the counterweight are pulled up or if the ropes begin to slip on the drive pulley if moving on.

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6.2.7 Testing the speed monitoring

The lift controller constantly monitors whether or not the rated speed of the lift is exceeded by more than 20%.

The test can only be done in lifts with digital positioning (like AWG or encoder).

To test this monitoring, the parameter "v Nominal" is set to a smaller value.

After that, a car command is given via keyboard to another floor (menu item "Set car calls" or keyboard command "1xx↵", .e.g "104↵" for a car call in Floor 4).

It should be noted that the distance to the target floor is large enough that the lift starts at nominal speed v3.

Upon reaching the 120% of the newly setting of parameter "v nominal" the lift stops immediately and displays the error "Overspeed" within the LCD screen (state display 1).

After the emergency stop, the lift moves to the nearest floor and then starts again. Only after the 3rd occurrence of "overspeed" the lift is completely out of order.

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7. Parameters of lift controller

The lift controller MLC 8000 has a large number of parameters by which the controller can be adapted to various requirements.

All parameters are stored in a nonvolatile memory (EEPROM) of the HSE (ICs U1 and U2 of the HSE). These memory modules are located in a socket, so they can be replaced easily and without tools, if the HSE is defective and must be replaced. Therefore the parameters must not be re-entered while replacing a HSE module.

7.1 Saving parameters

Newly changed parameters are initially stored only in the RAM of the HSE. This means that after a reset or power down all the changes are lost.

For fixed saving of the parameters in EEPROM, the menu item "Save parameters" must be started or the storage process can be started by the key command "9.↓". The saving process takes a few seconds and may be carried out while the lift is in normal operation.

By this all changed parameters are generally saved, i.e., it is not possible to save only individual parameters.

7.2 Parameter backup

All parameters of the lift controller are completely stored in the EEPROM U1.

In the second EEPROM U2, a copy of the parameter set can be stored for backup purposes. This backup copy can be created by the menu item "Create backup" in the menu "Parameter" - "Parameter backup". All parameters of the first EEPROM are identical copied to the second EEPROM.

If accidentally parameters of the lift controller are changed and saved and the lift isn't working anymore, then via menu item "Reload Backup" the parameter set can be reloaded from the backup copy. However, it must be sure that in fact there is a backup in the second EEPROM.

After reloading the backup the parameters need to be saved separately (see above).



After each change of parameters or at the latest after commissioning, a backup of the parameters should be made.



It is also possible to make a copy of all parameters on a computer with the PC software "Liftcontrol". See manual of "Liftcontrol"

7.3 Changing parameters

Parameters can be changed using the keyboard or the HSE or with the handheld terminal. Both the changing and saving of the parameters can be carried out during normal operation of the lift.

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For most parameters, the changes will take effect immediately. Only when changing basic parameters such as number of floors, number of doors, type of positioning, drive type, a reset (voltage incl. Battery on / off, reset button or Software reset by keypad) is required.

To change a parameter the cursor is moved by cursor keys to this parameter (cursor is a flashing rectangle shown on the left side).

By pressing the ENTER key "↵", the cursor jumps to the right and is now represented by an underscore (by some parameters the cursor disappears).

Now, the new parameter value can be entered. Here 2 different parameter types are distinguished:

- Numeric parameters: The new parameter value can be entered using the numeric keys.
- Text parameters: The parameter value can be selected from a list using the cursor keys.

By pressing ENTER again, the new parameter value is accepted and the cursor reappears on the left edge of the display as a flashing rectangle.

If the ESC button is operated instead, the parameter is set to the original value.

7.4 Changing of parameter "Floor name"

The parameters "Floor name" consist of 2 symbols for the car indicator.

The procedure for entering these parameters differs somewhat from the normal parameter input.

After pressing ENTER, first the number, letter or symbol for the left sign for the floor indicator may be selected with the cursor keys. By repeated pressing of ENTER the cursor jumps to the right character and it is also possible to select this sign by cursor keys. After that, another pressing of ENTER is required to accept the changes.

7.5 Transferring parameters when replacing defective modules

Since all control parameters are stored inside the HSE, no settings are required if defective components (except for the HSE) have to be changed. Only the node number of ESE and TSE modules as well as ASE and PSE must be set.

If the HSE needs to be replaced, it is possible to apply the EEPROM memory of the old HSE (of course only as long as these memory circuits are not damaged).

Both EEPROM circuits U1 and U2 (see Annex) are carried out socketed and can be pulled out of the socket without any special tools by hand or using a small screwdriver.

When inserting the EEPROM in the new HSE it is to be ensured that the two circuits are not interchanged, and that the direction of insertion is maintained (not rotated 180 °!).

To change the circuits the power supply to the HSE must be switched off and the external battery must be disconnected.capt

After switching on the power again, the HSE tests if there is a valid parameter set in the EEPROM. If not, then following message appears " No actual parameter set! Load

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default:ENT, Skip ESC ".

This message can have 3 different reasons:

- The EEPROM is actually empty or defective
- The two EEPROMs are reversed when changing
- There is a new HSE used with a different (newer) software version

If pressing ENTER, all parameters are checked for validity. All parameters that are within their valid range are retained, all other parameters (for example, all in a new software version newly added parameters) are set to a default value.

If, after the next reboot of the HSE (on / off voltage or reset button), this message appears again, then the EEPROM is probably faulty.



Important note: When changing the HSE or replacing defective relays only relays with 2 changeover contacts must be used!

7.6 Parameters for freely programmable inputs and outputs

Almost all inputs and outputs of the lift controller MLC 8000 are freely programmable and have no fixed function.

The function of the inputs and outputs can be set by parameters via the keyboard of the HSE or the hand-held terminal. It does not matter in most cases (exceptions: see description of the relevant function) whether the input or output function is set for the HSE, the FVE or for an ESE or TSE board.



There are only a few functions that can only be set to specific modules (e.g. drive speed signals can only be programmed for ASE and HSE). Even it is possible to programm such functions like speed signals to a FVE - they will not work.

A parameter for an input or output consists of 6 sub parameters:

- Main function Fct
- Sub function Sub
- Lift Lift
- Floor Floor
- Door Door
- Switching Logic Logic

Depending on the selected main function only the necessary sub parameters will be displayed (for example if "Load" is selected as main function, the sub parameter "Door" is not necessary and will not be displayed).

The sub parameter "Lift" is only displayed, if the input or output is programmed for an ESE parameter.

Sometimes the name of any sub parameter is changed depending on the selected main function (for example if "Land.call" is selected as main function, the name of the sub function is changed from "Sub" to "Dir", because the sub function defines the call direction of the landing call).

If all settings for an input or output are finished, one of the following items has to be selected:

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- Confirm: All sub parameter will be applied
- ESC: Cancel all changes, back to old settings

7.7 Functions for free programmable inputs and outputs

7.7.1. Input functions

Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
Land.call	Direction: - Up - Down - Up+Dn	Call floor	Doors	„normal“ landing call
Land.call1	Direction: - Up - Down - Up+Dn	Call floor	Doors	Mainly used for landing calls inside a group of lift, if a landing call should call any special lift. Example: In a lift group just 1 lift goes to lowest floor. Normally it doesn't matter for a user which lift will serve a landing call. But if the user wants to go to lowest floor it is important that just that 1 lift serves the floor. This additional landing call should be programmed as Land.call1.
Land.call2	Direction: - Up - Down - Up+Dn	Call floor	Doors	See above
Special LC	Call floor	-	Doors	Special landing call (Landing call with higher priority than "normal" landing call)
VIP LC	Call floor	-	Doors	VIP landing call (Landing call with higher priority than special landing call)
Emerg.LC	Call floor	-	Doors	Emergency landing call (Landing call with higher priority than VIP landing call)
Car call	Call floor	-	Doors	„normal“ car call
Spec.funct.	Car fan	-	-	Car fan push More settings see "Special param." - "Car fan"
	Special run	-	-	Special run (landing calls off - only car calls active) More settings see „Special param.“ – "Special run adj."
	VIP run	-	-	VIP run (landing calls off - only car calls active) More settings see „Special param.“ – "VIP run adj."
	Emerg. run	-	-	Emergency run (landing calls off - only car calls active)

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
				<i>More settings see „Special param.“ – "Emerg. run adj."</i>
	Hazard run	–	–	<i>Hazardous good transportation function More settings see „Special param.“ – "Hazard transport"</i>
	Lift off	–	–	<i>Switching off the lift in current / next floor</i>
	Lift off disp	–	–	<i>Input for activating the "Out of order" display (e.g. for maintenance activities)</i>
	Door op.push	Floor (only if set on ESE input)	Doors	<i>Door open push More settings see „Door parameter – Gener.door para."</i>
	Door cl.push	Floor (only if set on ESE input)	Doors	<i>Door close push More settings see „Door parameter – Gener.door para."</i>
	Dr.stop push	Floor (only if set on ESE input)	Doors	<i>Door stop push (for keep door open e.g. for loading / unloading)</i>
	Dr.stopswitch	–	Doors	<i>Door stop switch (for keep door open e.g. for loading / unloading)</i>
	Presence.sen..	Floor (only if set on ESE input)	Doors	<i>Anteroom surveillance to extend the door open time (if passengers are waiting for the lift)</i>
	Clear calls	–	–	<i>Push input to clear all calls</i>
	Clear Carcall	–	–	<i>Push input to clear all car calls. The lift stops in next floor and opens the doors. If doors are not enabled in this floor, the lift moves to the next floor with enabled doors.</i>
	LC off	–	–	<i>Disable all landing calls</i>
	Remote off	Floor	Doors	<i>Remote switch off lift First lift goes to the floor programmed with this input and opens the door. Second the lift goes to the floor programmed in „Special param. – Remote off" and goes out of operation. Starting with HSE software version 1.44s "Remote off" is available as main function and up to 5 different functions can be programmed.</i>
	Interm.door	–	–	<i>Switch on intermediate door. If intermediate door is open the lift may only be used in special run mode (key switch) or any other special control with higher priority (VIP run, ...)</i>

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Clock run 1	–	–	Input to start clock runs. More settings see „Special param.“ – "Clock run" and also "Door releases" Note: The clock run 1 may be activated by this input as well as by the internal timer (see „Special param.“ – "Clock run")
	Clock run 2	–	–	Input to start clock runs. More settings see „Special param.“ – "Clock run" and also "Door releases"
	Clock run 3	–	–	See above
	Clock run 4	–	–	See above
	Clock run 5	–	–	See above
	Safety beam	–	–	Safety beam for lift without car door
	Seismic wave	–	–	Seismic wave (earthquake warning) If lift is moving in direction toward counterweight lift stops immediately and move to next floor into opposite direction with reduced speed. If lift is already moving away from counter weight, lift will reduce speed and stop in next floor. After deactivation and a defined waiting time lift will go back to normal operation. For more settings see „Special parameter“ – „Earthquake mode“.
	Earthquake	–	–	See seismic wave input above. However, lift will not go back from earthquake mode even input is deactivated. Reset is required for going back to normal operation.
	Auto-call	–	–	Starting the autocal function More parameter see „Special param.“ – "Auto-call funct."
	– Up peak – Dn peak	–	–	Inputs for lifts with high traffic: During up peak (down peak) the lift only serves landing calls in up direction (down direction) and ignores the landing calls in opposite direction. Note: This function may be activated by this input as well as with the internal timer function (see "Group control")
	Final limit	–	–	Additional contact on final limit switch to check, if the final limit switch is opened.
	Em.stop	Signal no.	–	Emergency stop push operated (2 contact additional to contact in safety circuit) With setting "Signal no." it is possible to connect different emergency stop pushes (e.g. emergency stop pit, emergency stop inspection, ...) to the lift controller. Note: The same signal no. should not exist more than 1 time in a lift.
	Anti-surfing	–	–	Signal from anti-surfing device
	Surfing test	–	–	Test signal for anti-surfing function
	Phase error	–	–	Contact from phase relay

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	UPS error	Signal no.	–	Error output from UPS
	UPS discharged	Signal no.	–	"Discharged" output from UPS
	AWG2 err.	Signal no.	–	Error signal from AWG2 evaluation unit (POS2) if the "Double-AWG" is used for positioning By using the signal no. (1 and 2) the error signal may be connected twice for safety reasons (the evaluation board POS2 has 2 error outputs - 1 standard and 1 inverted)
	Insp.limit	Direction	–	Input for inspection limit switch
	Insp.start	Floor	–	Push button input to start a trip to a position, from where it is easy to go on top of car. This function is activated if all actual car calls are handled. Position must be defined in "Positions/imp." "Dec./stop dist." – "Insp.start". There the distance below the selected floor is defined. Function will be deactivated by switching on inspection mode, emergency recall operation or starting menu "Travel commands" on HSE. Note: Up to HSE version 1.45e it is not possible to define a floor for this input function. In this case inspection start position is defined as absolute position inside the shaft.
	Start lock	Signal no.	–	Input for function „Start blocking“ (only 1 lift should run at the same time, e.g. in case of emergency power supply): If this input is set this lift is blocked because another lift is already moving. Up to 8 lifts can be connected for this function. If no floor is selected (Floor = 0) the the lift stops below the actual floor.
	Lock active	–	–	Input to activate the function "Start blocking"
	Service mode	–	–	In service mode only Inspection, Emergency recall operation and travel commands from keypad may be used, otherwise lift is out of operation.
	Test mode	–	–	input to disable car and landing calls; can be used e.g. for technical test.
	Safety fct.	Signal no.	–	Input function for a safety shutdown of the lift. If this input is activated once, the lift will stay off until a reset function or inspection / recall operation are activated (see below). If the lift is moving while this function is activated, the lift will first finish this trip before going out of operation. Re-levelling, inspection operation, emergency recall operation and fireman operation are still in work.
	Safety stop	Signal no.	–	Input function for a safety stop of the lift. If this input is activated once, the lift will stop immediately and stay off until a reset function or inspection / recall operation are activated (see below). Inspection operation and emergency recall operation are still in work.
	Safety reset	–	–	Input to reset the safety shutdown (see above)

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Insp.Reset	–	–	Reset button input to return back from inspection pit mode Push: With this setting, the function is activated by simply pressing the input. Pulses: By pressing 2*long - 2*short the function is activated (long: at least 1s, max 4s, short: max 1s, distance between pulses less than 3s). Thereby it is e.g. possible to additionally use a freely accessible landing call button as "Reset Insp." (connecting the landing call push to a second input with function "Reset Insp." - "Pulses")
	Load Reset	–	–	Reset button if load measurement unit detected maximum load, rope difference or slack rope.
	SL bypass	Signal no.	Doors	Safety circuit car or shaft door shorted (according to EN81-20) - lift only moves now with recall operation or inspection. For safety reason it is possible to use 2 (or more) inputs (with different "Signal no.") In this case the lift controllers checks if all inputs are switched at the same time.
	Open dr.trip	–	Doors	Input enables trips with open car doors (e.g. freight lifts, hazardous goods lifts). Additionally a safety circuit to bypass the safety line of the doors is necessary. Bypass must also be enabled/disabled by special output function "Open dr.trip".
	Piston trip	–	–	Input to activate piston balance trip
	Max.speed	Type: v1 or v2	–	Limitation of max. lift speed by input (for example for reduced speed while emergency power supply)
	Call config.	–	–	Input to activate "Call configuration mode" See also "General param." - "Call config."
	Test runs	–	–	Input to activate test runs
	Doors off	–	–	Input to switch doors off (for example for technical test)
	Dr. lock test	–	–	If the input "Door lock test" is activated, the lift always stops above floor limit in each floor (in top floor below floor limit) depending of the setting "Lockt.[mm]". In this way it is possible to check the shaft door lock in each floor (requirement in Austria)
	2.Overload	–	–	This input can be used to temporarily activate an alternative overload threshold. With conventional load measurement, the load input "2.Overlad" is used instead of input "Overload". With CANopen or analogload measurement an alternative overload limit is used (see parameter "Load limits" – "2.OL [kg]").
	Car empty	–	–	Sensor if car is empty Required for "Call configuration mode" to switch from 1 configuration to next.
	Group off	–	–	Input to separate a group of lifts into single lifts. Note: For this function it is necessary to have at least 2 separate shaft bus cables with bus coupler CBC.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Standby	–	–	Activation of standby mode (for VVVF) Note: The VVVF must either have an input to activate standby function or must be connected by CANopen lift.
	Forc.stop off	–	–	Input for enabling the lift after a forced stop (see "Special param." - "Forced stop")
	Telec.off	–	–	Deactivation of all special functions initiated by remote control
	Gen.error	–	–	General test input for error diagnosis. If this input is activated, an error message is added to the error stack of the lift controller. No other reaction.
	Reset HSE	–	–	Force a reset of HSE and all other boards connected to control bus by input
	Reset ESE	–	–	Force reset of all ESE boards connected to shaft bus
	Roll.text	Signal no.	–	With this signal one of three special texts (if using PMA) or pictures (if using LCD-047 or LCD-057) are activated on the display. This text or pictures must be pre-defined and programmed by INTEC GmbH (if using PMA) or may be created by PC software "LCDDesign" and downloaded to LCD-047 or LCD-057. The input function may be programmed to any input of the PMA, LCD-047 or LCD-057.
Attend.funct.	Car attend.	–	–	Activation/Deactivation of attendance mode (lift operator) by switch
	Car att.push	–	–	Activation/Deactivation of attendance mode (lift operator) by push
	Car att.off	–	–	Push to deactivate attendance mode. This input can't be used to activate attendance mode
	Call dir.up	–	–	Button to select next travel direction
	Call dir.down	–	–	See above
	Call bypass	–	–	Call of actual floor is ignored as long as the button is pressed
	LC bypass	–	–	Button to ignore landing calls. If lift stops in a floor landing calls are enabled automatically.
	Ignore LC	–	–	Switch to ignore landing calls
	LC off push	–	–	Button to clear and disable landing calls. If lift stops in a floor landing calls are enabled automatically.
Fire control	Firemen run	–	–	Activation of fire department trip
	Fire call	Floor	Doors	If this input is activated, the lift goes immediately to the programmed fire evacuation floor and opens the defined doors. Lift goes out of operation and doors remain open. Note: All 3 fire call inputs have same priority. First activated fire call will be handled.
	Fire call 2	Floor	Doors	2. Fire call for alternative floor / alternative doors.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Fire call 3	Floor	Doors	3. Fire call for alternative floor / alternative doors.
	Fire evac.	Signal no.	–	General fire detector Note: With setting of "Signal no." up to 8 inputs may be programmed as "Fire evac"
	Fire alarm	Floor	–	Fire detector in specific floor
	Fire return	–	–	Input to return to normal operation even if fire
	Firemen off	–	–	Input to return to normal operation from firemen mode. Only possible if firemen run or fire call is switched off.
UPS Evacuat.	UPS evac.	–	–	Evacuation by UPS to next floor (depending on state of input "Half load" - if exists) See also "Special param." - "Evacuation"
	UPS-brake	–	–	Manually operated emergency evacuation by manual brake opening. If this input is activated the HSE changes to state display with actual speed (bar graph) and direction.
	Evac.active Evac.act. 2 Evac.act. 3	Evac.floor Evac.floor Evac.floor	Doors Doors Doors	Evacuation trip to the evacuation floor; programmed doors will be opened. See also "Special param." - "Evacuation" Note: If lift is moving in upward direction while this function is activated, the lift will stop immediately if parameter "UPS Evacuation" – "Direct." is set to "downwards" (starting with HSE software version 1.42l) With the 3 different input functions ("Evac.active", "Evac.act. 2" and "Evac.act. 3") it is possible to define 3 different evacuation floors. Anyway, only the 1. activated evacuation floor will be processed. Lift goes back to normal operation if all 3 input functions are deactivated.
	Evac.enable	–	–	Start signal for evacuation trip (for evacuation sequence of several lifts).
	Evac.normal	–	–	Input to switch back to normal operation even if "Evac.active" input is set.
Evacuation	Evac.active	–	–	Input to start evacuation mode according to EN81-76
	Ev.enable CC	–	–	Input for enabling car calls in evacuation mode
	Evac.stopped	–	–	Input to stop evacuation mode
Remote off	Signal no.	Floor	Doors	Remote switch off function. Up to 5 different functions ("Signal no.") are possible. First lift goes to the floor programmed with this input and opens the door. Second the lift goes to the floor programmed in „Special param. – Remote off“ and goes out of operation. Up to HSE software version 1.44r "Remote off" is a sub function of "Spec.func."
Disable CC	Floor	–	Doors	Input to disable car calls for specified floor and doors.
Enable CC	Floor	–	Doors	Input to enable car calls for specified floor and doors.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
Disable LC	-	Floor	Doors	Input to disable landing calls for specified floor and doors.
Enable LC	Dir.: - Up - Down - Up+Dn	Floor	Doors	Input to enable landing calls for specified floor and doors.
Visit.call 1	Call floor	Targetfloor	Doors in Call- and Target floor	If this input is activated first the landing call for the specified "call floor" and "call doors" is enabled for some seconds. If inside this time the landing call is pressed, the lift will go to this floor. If the lift arrives the call floor the car call for the specified target floor is enabled for some seconds. See also "Special param." - "Visitor calls". Note: On the sub parameter "Doors", both the doors for the landing call as well as for the car call are set (doors for landing call displayed on the left side; doors for car call displayed on the right side). To set doors for the landing calls the keys 5, 6 and 7 are used, while keys 1, 2 and 3 are used to set the doors for the car call. To clear a door press same key again.
Vis.call2 up	Call floor	Targetfloor	Doors in Call- and Target floor	If this input is activated first a landing call in up direction is set to the call floor. If the lift reaches the call floor, the car call to the target floor is enabled for some time („Special param. – Visitor calls”). See above how to set the doors for call floor and target floor.
Vis.call2 dn	Call floor	Targetfloor	Doors in Call- and Target floor	See above; landing call in down direction is set.
Visit.call 3	Call floor	Targetfloor	Doors in Call- and Target floor	If this input is activated first the landing call to the call floor is enabled for a certain time (see „Special param. – Visitor calls”). If inside this time the landing call is pressed the lift goes to this call floor. Once the call floor is reached the lift controller automatically sets a car call to the target floor. See above how to set the doors for call floor and target floor.
Targ.call up	Call floor	Targetfloor	Doors in Call- and Target floor	If this input is activated first a landing call in up direction is set to the call floor. If the lift reaches the call floor, the lift controller automatically sets a car call to the target floor. See above how to set the doors for call floor and target floor.
Targ.call dn	Call floor	Targetfloor	Doors in Call- and	See above; landing call in down direction is set.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
			Target floor	
Vis.request	Call floor	-	Doors	Enables a call to the programmed floor and doors. For more detailed description refer to "Special param. - Visitor floors" in chapter "menu structure"
Special VIP	Call floor	-	Doors	If a special VIP call is activated, the lift serves this floor, but on the way to this floor the lift also serves all already stored car calls. New car calls are not accepted during this times, while new landing calls will be stored but not served. Once the lift arrives the target floor the next new car call is served as priority call directly. After that the lift goes back to normal operation.
Dest.call	Targetfloor	Callfloor	Doors in call and target floor	In principle, a destination selection call can be set via this input function. However, there are usually special destination selection panels used in such lifts, on which the assigned lift is display too. Note: With setting „Door“ both the doors for call floor (3 digits on the left of the LCD display; activated/deactivated by buttons 5, 6 and 7 for doors 1, 2 and 3) and for target floor (3 digits on the right; activated/deactivated by buttons 1, 2 and 3 for doors 1, 2 and 3) can be set.
CBK alloc.	CBK number	Lifts		In addition to setting this allocation by parameters (see parameter sub menu "Group control") it is possible to change the CBK allocation temporarily with this input function. See also parameter description „Group control“.
Hazard.call		Floor	Doors	Special control sequence for hazardous goods. Input to set a call for transportation of hazardous goods. If no separate door open push exists (Parameter „Hazard transport“ -> „Door input“ is set to „no“) this input may also be used to open / close the doors if the lift is located in the programmed floor. Additional settings see description of parameter set „Special param. - Hazard transport“
Hazard.door		Floor	Doors	Button to open or close the doors in hazardous transportation mode.
Pallet call	Call floor	-	Doors	Only for special car lifts with pallets: Call to get empty pallet or call to transport pallet to specified floor.
Pallet state	Floor	-	Door	Only for special car lifts with pallets: Sensor signal, if there is a pallet in the specified floor at the specified door side.
Pallet hook	- Hook middle - Hook end - Hook mid.le - Hook mid.ri - Hook end.le	-	-	Only for special car lifts with pallets: Sensor signal for position of pallet hook

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	<ul style="list-style-type: none"> - Hook end.ri - Final limit 			
Pallet test	<ul style="list-style-type: none"> - Test on - Pallet in - Pallet out 	-	-	Only for special car lifts with pallets: Input signals for pallet test
Inspect.	<ul style="list-style-type: none"> - On - Up - Down - Slow 	-	-	Control inputs for inspection control. If no slow input is programmed the lift always runs with normal inspection speed vI (see parameter "Speed signals") in inspection mode; only in final floors the speed is reduced to vIL.
Door test		-	-	Input to start door test mode. In door test mode it is possible to operate the doors with inspection switches (Up/Down). Additional it is possible to start the door test mode by pressing inspection up and down push together for at least 5s while inspection is switched on.
Shaftdr.test	<ul style="list-style-type: none"> - Opening - Closing 	Floor	Door	Input to open an electric operated shaft door. The outputs to operate the shaft door must be assigned to an ESE. Additional end of safety circuit SK4 must be off and the lift must not be located inside the door zone of the assigned door
Pos.	SGM	-	-	Input for door zone switch SGM
	SGO	-	-	Input for upper door zone switch SGO
	SGU	-	-	Input for lower door zone switch SGU
	VO	-	-	Input for upper prelimit switch VO
	VU	-	-	Input for lower prelimit switch VU
	SGV	-	-	Input for slow down switch SGS
	SGE	-	-	Input for reference switch SGE
Car light	-	-	-	Supervision input for car light power supply
Load	Zero load	-	-	Car empty; used for call misuse detection If the car is empty and more car calls than defined in parameter „Max. CC empty“ in „Special param.“ -> „Anti nuisance“ are pressed, then all car calls will be cleared.
	Half load	-	-	Half of nominal load in cabin.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
				<i>This input is used for evacuation trip to next floor with battery supply. Depending of this input the lift either goes to floor above or floor below.</i>
	Full load	–	–	<i>Cabin full; landing calls will be ignored.</i>
	Overload	–	–	<i>Car overloaded; lift will not start any trip until input is switched off again. The overload input will be ignored as long as the doors are closed and the lift is moving.</i>
	Max.load			<i>Max. load reached, lift goes out of operation; reset necessary</i>
	Slackrope			<i>Slack rope detected, lift goes out of operation; reset necessary</i>
	Rope diff.			<i>difference between the load of the different ropes is too large, lift goes out of operation, reset necessary.</i>
	2.Overload			<i>input for alternative overload signal. Must be activated by input function "2.Overload"</i>
Door input	Door opened	(Floor)	Door	<i>Door open limit switch</i>
	Door closed	(Floor)	Door	<i>Door closed limit switch</i>
	Door reverse	(Floor)	Door	<i>Mechanical obstruction while door is closing (reversal contact)</i>
	Rev. Door	(Floor)	Door	<i>Additional contact at revolving shaft door (mainly only 1 contact for safety circuit is available on the shaft door)</i>
	Door lock	(Floor)	Door	<i>Additional contact on door lock</i>
				<i>Hint: The setting "Floor" is only available if the door signal is connected to a ESE (e.g. electrical operated shaft door)</i>
	Door error		Door	<i>Error signal from door controller (to be done)</i>
	Door alm.op.		Door	<i>In fireman mode if parameter "Door open = reverse": If this signal is activated the door is not re-closed even if door open push is released.</i>
	Door alm.cl.		Door	<i>For later use</i>
Light screen	Light screen	–	Doors	<i>Light screen (photo sensor) signal</i>
	Error	–	Doors	<i>Light screen (photo sensor) error signal</i>
	Finger prot.	–	Doors	<i>Finger protection sensor: Door stops immediately while opening</i>
Safety line	SL1 (Primary)	–	–	<i>Supervision input of primary safety circuit</i>
	SL2 (Rev.dr.)	–	–	<i>Supervision input of safety circuit revolving door and inspection control</i>
	SL3 (Cardoor)	–	–	<i>Supervision input of safety circuit car door</i>
	SL4 (Shaftdr)	–	–	<i>Supervision input of safety circuit shaft door</i>
	Before gear	–	–	<i>Supervision input of safety circuit directly before safety gear</i>

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Gear reset	–	–	Input to reset an error if safety gear was triggered
Alarm call	–	–	–	Alarm call input. If input13 of HSE is programmed as "Alarm call" than each pressing of the alarm call button is stored in the error stack of the lift controller.
Em.op.	<ul style="list-style-type: none"> – On – Up – Down – Fast 	–	–	Control signals for emergency recall operation. If no fast signal is programmed than the lift is always running with slow speed vRL (see parameter "Speed signals"). If the fast button is pressed the lift will go with speed vR.
Setup trip	<ul style="list-style-type: none"> – On – Up – Down – Fast 	–	–	Control signals for setup trip. In setup trip the lift is running with vRL or VR (if fast button is operated).
Insp.pit	<ul style="list-style-type: none"> – On – Up – Down – Slow 	–	–	Control inputs for inspection control in shaft pit. If no slow input is programmed the lift always runs with normal inspection speed vL (see parameter "Speed signals") in inspection mode; only in final floors the speed is reduced to vL.
Ramp drive	<ul style="list-style-type: none"> – On – Up – Down 	Floor	Doors	Control signals for ramp drive according to EN-81. The ramp drive control signals are only working if the lift is located in the assigned floor. For more settings see „Special param.“ -> „Ramp drive“
Deadman	On	–	–	Input for deadman control. Deadman control may be activated by this input or by the parameter „Deadman control“ (see „General paramet.“)
	Enable	–	–	Enabling deadman control
	Up	–	–	Upward button for deadman control
	Down	–	–	Downward button for deadman control
	Move	Floor	–	Instead of upward and downward button a single button "Move" may be used. If this button is pressed the lift will go to into the direction of the next car call. By a 2 floor lift the lift will go to the other floor. If "Floor" is defined (not 0) the lift will go to the specified floor.
Car sensor	– Door 1	–	–	Sensor inputs for the position of a vehicle inside the car The lift only starts a trip if only the middle sensor is activa

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	<ul style="list-style-type: none"> - Door 2 - Door 3 - Middle 			
Drive	Contact.sup.	-	-	Signal input for contactor supervision
	Fault signal	Signal no.	-	Fault signal of the drive (VVVF, hydraulic valve control board, softstarter, ...) With setting of "Signal no." it is possible to connect more than 1 fault signal to the lift controller (e.g. hydraulic lift with fault signal from VVVF for pump and valve control board).
	Ready (RDY)	-	-	Ready signal from drive (ready to start)
	RB/Contactor	-	-	Signal from drive to switch on the mains contactors
	Brake	-	-	Signal from drive to switch on (open) the brake
	Brake enable	-	Signal no.	Signal to open brake. Mainly for heavy weight lifts with more than 1 drive unit Note: Not possible to connect to ASE board.
	Moving	-	-	Feedback signal from drive that lift is moving
	Softstarter	-	-	Feedback signal from softstarter („Ramp end“)
	Slow valve	-	-	Hydraulic lifts with motor valve: Limit switch for slow speed (pulse; must be switch off if valve is closed and by completely opened valve) Used for re-levelling speed
	Brake separ.	-	-	Mainly used for heavy weight lifts with more than 1 drive unit. During normal operation the lift controller will only open the brakes if all "Brake enable" inputs (see above) are switch on. For synchronization it may be necessary that some brakes should stay closed. If this input function is activated, then the brakes will be operated accordingly to the associated "Brake enable" input.
Safety space	<ul style="list-style-type: none"> - Bearer top - Bearer bot. 	-	-	Signal that bearer in top or bottom floor is active. For more settings see „Special param.“ -> „Safety space“)
	<ul style="list-style-type: none"> - Shelter top - Shelter bot - Shelter 	-	-	Supervision contact for safety space in shaft pit or shaft top (e.g. contact on bottom shaft door if shaft door is opened manually). For more settings see „Special param.“ -> „Safety space“)
	Reset shelt.	-	-	Reset input to go back to normal operation if safety shelter was opened
	Car apron	-	-	Contact on folding car apron. For more settings see „Special param.“ -> „Safety space“)

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Railing	–	–	Contact on car top railing
	Governor	Dir.	Signal no.	Contact on descent stopping system for UCM (EN81 A3; e.g. system on overspeed governor or similar). With setting of "Signal no." it is possible to have up to 8 (for HSE version 1.43k or lower: 3) signals connected to different inputs of the lift controller.
	Uncontr.Mov	–	–	Feedback signal from relay to monitor a detected uncontrolled movement (UCM) See also output function "Safety space" - "Uncontr.Mov.")
	Reset Unc.M.	–	–	Reset input to go back to normal operation after lift controller detected an uncontrolled movement (UCM)
	Ignore Gov.	–	–	Input to deactivate feedback signal on overspeed governor. Input may be used for maintenance, if contact on overspeed governor is not working well.
	Decel.check	–	–	Feedback signal for deceleration check. Mainly signal is generated by external safety unit from 2 independent signals: lift controller output ("Spec.out" - "v-limit" - see above) and inverter speed limit output.
	Decel.bypass	Direction	–	By lifts with deceleration check (see above) it is necessary to bypass the safety unit if starting a trip from bottom or top floor. See output function „Safety space“ – „Decel.bypass“. With this input function this bypass output can be monitored.
Hold.bolt	Activate	–	–	Signal to activate holding device. For more settings see „Special param.“ -> „Holding bolts“)
	Low pressure	–	–	Hydraulic low pressure signal for lifts with holding device. If this input is set the lift controller starts re-pumping.
	– Bolt out – Bolt in	Signal no.	–	Limit switches on the holding device. With setting of "Signal no." up to 4 independent switches may be connected to the lift controller.
	Holded	–	–	Signal that lift is in holding position.
	– Test on – Test in – Test out – Test Stop – Test up – Test down	–	–	Control signals to check the functionality of the holding device. - Test on: Activate test mode - Test in: Move holding device in - Test out: Move holding device of - Test Stop: Stops all movement of holding device immediately - Test up: Moves lift upwards with speed vHu - Test down: Moves lift downwards with speed vHd
OP device	– Out – In	–	–	Limit switch on load derrick of a hospital operation lift with automatic loading / unloading.

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Right	–	–	Contact on rotary table of a hospital operation lift with automatic loading / unloading.
	Ramp	–	–	Contact on load interlock of a hospital operation lift with automatic loading / unloading.
Slip test		–	–	Pulse count input for slip monitoring (2. position sensor on car; sometimes necessary on lifts without machine room).
Brake/valve	Brake contact	Signal no.	–	Supervision input for motor brake (up to 8 different inputs)
	Brake warning	–	–	Warning contact for wear of motor brake
	– Up valve – Down valve – Emerg.valve	– Signal no. Signal no.	– – –	Supervision contact for hydraulic valves (up to 2 different down valves; starting with HSE software 1.47a also 2 different emergency valves possible)
Pressure	– Minpressure – Maxpressure	–	–	Hydraulic pressure signal Note: Not the same function like overload input!
Temp.	– Overtemp.1 – Overtemp.2	–	–	Temperature sensor, mainly used for motor or oil temperature supervision.
	– Doortemp.1 – Doortemp.2 – Doortemp.3	–	–	Input for door motor temperature sensor
	– Roomtemp.min – Roomtemp.max	–	–	Machine room temperature sensor
	Fan temp.	–	–	Temperature sensor for switching the motor fan
	Oil temp.	–	–	Temperature sensor for oil temperature. If this input is active (oil is too cold), then the lift carries out oil warming trips after a programmed time interval. For time interval see parameter group "Oil warming".
No init	–	–	–	Auxiliary function to prevent parameters from being written by the HSE to the corresponding ESE or TSE module (sometimes required for modules from other manufacturers; in this case, this auxiliary function is programmed to any input parameter of the module)
Conn.IO		Signal no.	–	The function "Connected IO" is used to virtual connect an input on any PCB inside the lift controller to several outputs on different PCBs of the lift controller without any wiring. It is possible, for example, to program an input of the car top board FVE, where a shaft light button is connected, as "Conn.IO", Signal no. 1. By program an output relay of the HSE as "Conn.IO", Signal no. 1, this relay may

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
				<i>switch the shaft light without any wiring inside the trailing cable. Up to 16 (starting with version 1.44; before 8) connections are possible inside a lift controller.</i>

7.7.2. Output functions

Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
Land.call	Direction: - Up - Down - Up+Dn	Call floor	Doors	Acknowledgement output of "normal" landing call; see input functions
Land.call1	Direction: - Up - Down - Up+Dn	Call floor	Doors	Acknowledgement output of landing call 1; see input functions
Land.call2	Direction: - Up - Down - Up+Dn	Call floor	Doors	Acknowledgement output of landing call 1; see input functions
Special LC	Call floor	-	Doors	Acknowledgement output of special landing call; see input functions
VIP LC	Call floor	-	Doors	Acknowledgement output of VIP landing call; see input functions
Emerg.LC	Call floor	-	Doors	Acknowledgement output of emergency landing call; see input functions
Car call	Call floor	-	Doors	Acknowledgement output of car call; see input functions
CC+level	Call floor	-	Doors	Acknowledgement output of car call; see input functions. Additional this output will blink as position indicator if the lift is located in that floor
Spec.out.	Car fan	-	-	Output for car fan May be used as output to switch on the car fan as well as for acknowledgement of car fan button. More settings see „Special param.“ -> „Car fan“
	Special mode	-	-	Output is activated if lift controller is in one of the special modes: - Special trip / VIP trip / Emergency trip - Lift switched off - Landing calls disabled - Clock run

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Special run	–	–	Output is activated if lift controller is in Special trip mode
	VIP run	–	–	Output is activated if lift controller is in VIP trip mode
	Emerg. run	–	–	Output is activated if lift controller is in Emergency trip mode
	Out of work	–	–	<p>“Out of work” indicator; output is activated if:</p> <ul style="list-style-type: none"> - Error state - Doors disabled - Maintenance count has reached its limit (see menu item „Statistics“ -> „Maint.count“ and parameter „Maint.interval“) - Car calls disabled - Landing calls disabled (only if output is programmed on an ESE board on the shaft bus) <p>Additional this output is activated during normal operation:</p> <ul style="list-style-type: none"> - by setting in menu item „Test“ -> „Out of work“ - by input function „Special func.“ -> „Out of work“ (see input functions above)
	Inspection	–	–	Output is activated in inspection mode (top of car or shaft pit)
	Inspect.Car	–	–	Output is activated in inspection mode (top of car)
	Inspect.Pit	–	–	Output is activated in inspection mode (shaft pit)
	Ramp drive	–	–	Output is activated in ramp drive mode
	Buzzer	Type: -Load -Door -Load+Door -Carcall -Load+CC -Door+CC -Load+CC+Door	–	<p>Depending on the setting "type" the buzzer may be used for different functions:</p> <ul style="list-style-type: none"> - as overload buzzer - while forced door closing (Light screen ignored) - short acoustic signal (2s) if a car call is pressed
	CC Buzzer	–	–	Car call buzzer; same function like above setting "Car call"
	LC Buzzer	Floor	Doors	Landing call buzzer; short acoustic signal (2s) if landing call is pressed.
	Remote off	–	–	Output is activated, if lift is switched of with input function "Remote off" (see above).

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Switched off	–	–	Output is activated if lift reached the remote off floor (see input function "Remote off" above).
	Overload	–	–	Overload indication
	Full load	–	–	Full load indication
	Occupied	–	–	Output, that lift is occupied; output is set if at least 1 call is set or, if exist, the revolving door is opened.
	Hallcalls off	–	–	Output is set, if landing calls are disabled
	Visit.call	–	–	Output is set if visitor call is active. Output may be used to ask other users to leave the lift because visitor call is only handled if car is empty (only by setting "Lift empty: yes" – see "Special param." – "Visitor call")
	Door op.push	–	Doors	For fireman lifts: If in fireman mode the doors don't open automatically (only by pressing the door open push), than this output is activated if the door open push is active (acknowledement lamp inside door open push). See also „Special para.“ -> „Firemen run“
	Door cl.push	–	–	For fireman lifts: If in fireman mode the doors don't close automatically (only by pressing the door close push), than this output is activated if the door close push is active (acknowledement lamp inside door close push). See also „Special para.“ -> „Firemen run“
	Dr.stop push	–	–	Acknowledement lamp inside door stop push
	Loading	–	–	Function for transportation of goods is active
	Door closing	–	–	Output is set if doors are closing
	Door opening	–	Doors	Output is set if doors are opening
	Release Door	–	–	Output will be set if doors are blocked (delay time see „Door parameter“- „Gener.door para.“- „Rel.sign[s]“)
	Piston trip	–	–	Output is set if piston balance trip is active
	Saf.beamreset	–	–	Output to reset a safety beam after interrupting the safety beam while lift is moving. The output is only set after a new car call is pressed. The output is then pulsed at intervals of 2s until the light curtain is really resetted.
	Insp.start	Floor	–	Output is set if floor reaches the inspection start position in defined floor. If "Floor" is programmed as 0, this output will be set independent from floor. See also input function "Insp.startpos".

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Insp.Reset	–	–	Output is set for 1s if Reset inspection pit is done.
	SL bypass	–	–	Safety circuit car or shaft door shorted (according to EN81-20) Note: This output is also activated for 1s if Reset inspection pit is done (see above).
	Level zone	–	–	Output for switching a flush display if it can not be switched directly by a magnetic switch. Output is active when the lift is inside the door zone.
	Level	–	–	Output is set if lift is in level.
	Standstill	Floor	–	Output is set if the lift is in a floor level and the drive is switched off.
	Prior.LC	–	–	Output is set, if the lift reaches the door zone off the target floor by a priority landing call (special, VIP or emergency landing call) and the doors are completely opened. Output is switched off again if the doors are closing.
	VIP active	–	–	Output to show that special or VIP mode is activated and the lift is ready to move.
	Callconf.mode	Signal no.	–	Output to display the actual call configuration (see „General Param.“ - "Call config.") "Signal no." = actual call configuration number
	Clock run 1	–	–	Output is set if Clock run 1 is activated.
	Clock run 2	–	–	Output is set if Clock run 2 is activated.
	Clock run 3	–	–	Output is set if Clock run 3 is activated.
	Clock run 4	–	–	Output is set if Clock run 4 is activated.
	Clock run 5	–	–	Output is set if Clock run 5 is activated.
	Clock run	–	–	Output is set if at least 1 Clock run is activated.
	Auto-call	–	–	Output is set if auto-call function is active
	Earthquake	–	–	Output is set if earthquake modus is active
	Handic.LC	–	–	Landing call for handicap people activated. See also "Special param. - Handicap people")
	Handic.CC	–	–	Car call for handicap people activated. See also "Special param. - Handicap people")
	CAN-AWG	–	–	If using the "Double AWG" for positioning the 2. AWG is connected by a separate CAN bus. With this output function (and a relay connected to this output) it is possible to connect this CAN bus temporarily to the CAN bus A (Control bus) of the lift controller (for configuration, teach in, diagnosis).

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Zone Reset	–	–	Output to switch off the SGM signal for a short time in order to set the safety unit for moving with open doors in right state. This may be necessary e.g. after a software reset of HSE or after HSE was powered in battery mode.
	Safety circ.	Signal no.	–	Output is set if the corresponding point of the safety circuit is closed (=Signal no.)
	Safety fct.	–	–	Output is set if the safety shutdown (input "Spec.fct."-"Safety fct.") is activated.
	Door op.ind.	–	Doors	Output is set if the corresponding door is completely opened.
	Open dr.trip	–	Doors	Output is set if trip with open doors is active (see input function "Open dr.trip")
	Parking trip	–	–	Output is set during a parking trip.
	Parking	–	–	Output is set if lift is parked in the parking floor.
	Emerg.stop	–	–	Output is set if input "Em.stop" is activated.
	Start lock	–	–	Output for function "Start blocking". Output is set if the lift is moving.
	Trip request	–	–	Output is set if lift has a trip request, e.g. handling a call, starting evacuation trip or similar. Output is cleared once the trip is finished. If at this moment the lift already has a new call, than the output is set again once the door open stay time is over.
	Carlight off	–	–	Output is set if the car light is on.
	Alarm enabl.	–	–	Output to prevent emergency call misuse. Output is activated if lift is moving or door is opened in a floor.
	LC request	–	–	Output is activated for 1s if a landing call is pressed, while this call is disabled by any special function.
	Drive off	–	–	If the lift is not used for a longer timer (see Parameter „Energy savings“ -> „Drive off[s]“) the drive (e.g. VVVF) may be switched to standby with this output. In standby mode the fault signal from the drive is ignored. Note: The drive should be equipped with a standby input for this function. However, it is also possible to use this output to switch off the power supply of the drive.
	Door off	–	–	Output to switch off the door controller if the lift is not used for a longer time and the doors are closed (see Parameter "Energy savings"-> "Door off[s]")

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Hazard mode	–	–	Output for signaling a „Hazard transport“ (Input „Hazard run“ active)
	Hazard call	–	–	Output for signaling that a hazard call was pressed.9999
	Saf.geartest	–	–	Output for automated testing the safety gear (see menu item "Technical check")
	v limit	–	–	Programmed speed limit exceeded (see "Special param. - Deceler.check")
	Teach-in	–	–	Teach in mode activ
	Group off	–	–	Output for signaling that group control is deactivated
	Cooling	–	–	Output for cooling (e.g. control cabinet fan); switched by temperature sensor on HSE (from hardware version 1.05)
Error outputs	Fault signal	–	–	General fault output
	Safety modul	–	–	Fault signal: Error in safety unit
	Safety circ.	–	–	Fault signal: Safety circuit erroneous opened
	Door error	–	Doors	Fault signal: Door error
	Overtemp.1	–	–	Fault signal: Motor overheated (input overtemperature 1
	Overtemp.2	–	–	Fault signal: Motor overheated (input overtemperature 2
	Roomtemp.max	–	–	Fault signal: Machine room temperature too high
	Roomtemp.min	–	–	Fault signal: Machine room temperature too low
	HSE-Temp.max	–	–	Fault signal: HSE temperatur too high (Sensor on HSE)
	HSE-Temp.min	–	–	Fault signal: HSE temperatur too low (Sensor on HSE)
	Safety gear	–	–	Fault signal: Safety gear tripped
	Drive error	–	–	Fault signal: Drive error (fault signal from drive)
	Min.pressure	–	–	Fault signal: Hydraulic pressure too low
	Max.pressure	–	–	Fault signal: Hydraulic pressure too high
	Trip time	–	–	Fault signal: Trip time exceeded
	Overspeed	–	–	Fault signal: Overspeed
	Light screen	–	Doors	Fault signal: Light screen alway interrupted
	Door rev.inp.	–	Doors	Fault signal: permanent door blocking (door reverse input)
	Brake check	–	–	Fault signal: Brake monitoring

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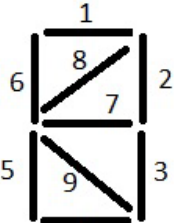
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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Saf.beam err.	–	–	<i>Fault signal: Safety beam interrupted</i>
	Car light	–	–	<i>Fault signal: Car light off</i>
	Maint.interv	–	–	<i>Fault signal: Maintenance interval expired</i>
	Maint.warn.	–	–	<i>Fault signal: Maintenance required</i>
Attend.funct.	Car attend.	–	–	<i>Attendant mode activated by input</i>
	LC bypass	–	–	<i>Output for signaling that landing calls are ignored temporarily in attendance mode (car is full)</i>
Fire control	Fire state	–	–	<i>Fire alarm active (Firemen call or Firemen trip)</i>
	Fire service	–	–	<i>Firemen trip active</i>
	Fire call	–	–	<i>Firemen call active (Trip to Fire alarm floor)</i>
	Fire alarm	–	–	<i>Fire alarm active</i>
	Evac.floor	–	–	<i>Fire alarm evacuation floor reached</i>
	Fire warning	–	–	<i>Outputs iss et if fireman mode or fire alarm is activated, but lift is in inspection mode</i>
UPS Evacuat.	Evacuation	–	–	<i>Evacuation mode active</i>
	Evac.ready	–	–	<i>Evacuation floor reached</i>
	UPS ev.ready	–	–	<i>UPS evacuation to next floor ready</i>
	Brake release	–	–	<i>Output for so-called "stutter braking" for emergency evacuation: If for the emergency evacuation the mechanical brake is opened only via push button, this output switches when presetting speed is reached (see "General param." - "v Brake."). The brake closes again and the lift is stopped; falling below the speed, the output switches off and the brake will open again.</i>
	Evac.active	–	–	<i>Evacuation run active; after reaching the door zone output is switched off delayed by 10s</i>
	Moving up	–	–	<i>Lift is moving upwards</i>
	Moving dn	–	–	<i>Lift is moving downwards</i>
Evacuation	Evac.active	–	–	<i>Evacuation trip according to EN81-76 active</i>
	Evac.stopped	–	–	<i>Evacuation trip stopped</i>
Visit.call 1	Callfloor	Targetfloor	Doors in Call- and	<i>Call acknowledgement for Visitor call 1 (see input functions)</i>

Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
			Target floor	
Vis.call2 up	Callfloor	Targetfloor	Doors in Call- and Target floor	Call acknowledgement for Visitor call 2 in upward direction (see input functions)
Vis.call2 dn	Callfloor	Targetfloor	Doors in Call- and Target floor	Call acknowledgement for Visitor call 2 in downward direction (see input functions)
Visit.call 3	Callfloor	Targetfloor	Doors in Call- and Target floor	Call acknowledgement for Visitor call 3 (see input functions)
Targ.call up	Callfloor	Targetfloor	Doors in Call- and Target floor	Call acknowledgement for Target call in upward direction (see input functions)
Targ.call dn	Callfloor	Targetfloor	Doors in Call- and Target floor	Call acknowledgement for Target call in downward direction (see input functions)
Vis.CC enab.	Callfloor	-	Doors	Output for signaling that car call is enabled for programmed time by a visitor call 1 or 2
Vis.LC enab.	Callfloor	-	Doors	Output for signaling that landing call is enabled for programmed time by a visitor call 1 or 3
Vis.request	Callfloor	-	Doors	Acknowledgement output for visitor request.. For more detailed description refer to "Special param. - Visitor floors" in chapter "menu structure"
Special VIP	Callfloor	-	Doors	Call acknowledgement for Special VIP call (see input function)
Dest.call	Targetfloor	Callfloor	Doors in call and target floor	Destination call acknowledge (see input functions)
Hazard.call	Floor		Doors	Hazard call acknowledgement(see input functions)
Pallet call	Call floor	-	Doors	Only for special car lifts with pallets: Acknowledge output for pallet call (see input function).

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
Pallet relay	<ul style="list-style-type: none"> - Pallet in - Pallet out - Pallet fast 	-	Door	Only for special car lifts with pallets: Output signals to pull pallet in / push pallet out for specified door side.
Level displ.	Type: <ul style="list-style-type: none"> - 1 of n - Binary - Graycode - 7-Segm. - 9-Seg.K 	Signal no. 	Offset	Outputs for controlling a conventional car level indicator (1-of-n-coded, binary coded or Gray code). With 1-of-n setting the output is set according to the setting "Signal no" in each floor. For binary or gray code the signal number corresponds to the relevant binary digit within the binary or Gray code. Via the parameter "Offset" it can be selected, which binary or Gray code value is output in which floor. When set to '1' the binary or Gray code value 1 is set in the 1st floor, in floor 2 the value 2, etc. When set to '0' the binary or Gray code value 0 is set in the 1st floor (that means all outputs off), etc. The assignment of the "Signal no." for a 7- or 9-segment display is shown in the picture. For this type of displays it can be adjusted via the "offset" if the units digit (= 1) or ten's digit (= 2) is to be controlled.
Hall lantern	Dir.	Floor ⁴	Doors	The hall lantern output is used for signaling that the lift reaches a floor. The signal is activated if the lift slows down for arrival. Always the direction of the next handled call is displayed. The signal is deactivated if the doors are closed again. If no further call exists the hall lanterns for both directions are displayed. The settings "Dir.", "Floor" and "Doors" can be omitted optional; then the output is valid for all directions / Floors / Doors.
Dir.arrow	Dir.	-	-	If the lift is moving the direction arrow for the travel direction is set, while in standstill the direction to the next call is displayed. While moving the arrows light up continuously; in standstill state the arrows are flashing every second.
Mov.arrow	Dir.			Moving arrows always show the actual travel direction.
Gong	Dir.	Floor	Doors	Output to control a gong. More settings see „Special param.“ - „Gong“
Speech	Direction up	-	-	Signal for speech unit for next travel direction upwards (set by every change to upward direction).
	Direction dn	-	-	See above; for downward direction
	Car call	Floor		Signal for speech unit that car call for "floor" pressed
	Door closing	-	-	Signal for speech unit if the door starts closing. With door parameter „Cls.delay[s]" a delay time between the speech

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
				<i>message and door closing may be set.</i>
	Door opening	–	–	<i>Signal for speech unit that door starts opening.</i>
	Enable	–	–	<i>Enable signal for speech unit for actual floor information. As floor signals the output function „Speech level“ is used.</i>
	Clock run 1	–	–	<i>Signal for speech unit that clock run 1 is enabled.</i>
	Clock run 2	–	–	<i>Signal for speech unit that clock run 2 is enabled.</i>
	Fire state	–	–	<i>Signal for speech unit that Firemen mode is activated.</i>
	Fire service	–	–	<i>Signal for speech unit that Firemen run is activated.</i>
	Fire call	–	–	<i>Signal for speech unit that Firemen call is activated.</i>
	Fire alarm	–	–	<i>Signal for speech unit that Fire alarm is activated.</i>
	Evac.active	–	–	<i>Signal for speech unit that Evacuation run is started.</i>
	Special mode	–	–	<i>Signal for speech unit that Special mode is activated.</i>
	Special run	–	–	<i>Signal for speech unit that Special trip is activated.</i>
	VIP run	–	–	<i>Signal for speech unit that VIP trip is activated.</i>
	Emerg. run	–	–	<i>Signal for speech unit that Emergency trip is activated.</i>
	Fault signal	–	–	<i>Signal for speech unit that fault condition is entered.</i>
	Out of work	–	–	<i>Signal for speech unit that lift goes out of operation.</i>
	Use card	–	–	<i>Signal for speech unit that a temporarily disabled car call was pressed.</i>
Speech Level	Control type: – 1 of n – Binary – Gray code	Signal no.	Offset	<i>Level information for speech unit. See also output function "Level display" above. The floor level announcement is started by the "Enable" signal (see above). See also "Special param. - Speech unit"</i>
Inspect.	– Up – Down	–	–	<i>Status signal that Inspection, Inspection pit or Inspection machine room up or down is pressed,</i>
Pos.	– SGM – SGO – SGU – VO	–	–	<i>Position output functions to simulate magnetic switches (for travel simulation and testing purposes only).</i>

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	<ul style="list-style-type: none"> - VU - SGV - SGE 			
Car light	-	-	-	Output function to switch off the car light if the lift is not used. See "Timer parameter" -> „Carlight off [s]“. As default relay KF5 of FVE is used for this function, because this relay is already wired with the car light supply.
Door output	Door opening	(Floor)	Door	Output for door opening. The setting "Floor" is only available if the output function is programmed for an ESE board, e.g. for controlling an electric operated shaft door.
	Door closing	(Floor)	Door	Output for door closing. The setting "Floor" is only available if the output function is programmed for an ESE board, e.g. for controlling an electric operated shaft door.
	Door nudging	(Floor)	Door	Output for door nudging (Light screen ignored).
	RetiringRamp	(Floor)	Door	Output to control the door ramp
	Add.Ramp	(Floor)	Door	Output to control an additional door ramp which must be on if the door is moving.
	3-wire:ST1 3-wire:ST2 3-wire:ST3	-	Door	Door control signals for special 3-wire interface (e.g. AT-120)
				Note: For electrical operated shaft doors the door relays for each shaft door can be connected to the ESE in each floor. For this it is possible, to set additionally the floor number.
Light screen	Test	-	Door	Output to test the light screen. For this function the light screen must be equipped with a test input. The lift controller sets this output if arriving the door zone of the target floor for a short time. By this the light screen must indicate an interruption. If not, the lift controller sets an error message.
Emerg.light	-	-	-	Emergency light output. As default output A7 of FVE is used for emergency light; in general every other output may be used as emergency light output, as long as this PCB is battery power supplied (+24A).
Car sensor	<ul style="list-style-type: none"> - Door 1 - Door 2 	-	-	Output to display if the vehicle is right in the middle of the lift cabin or if it is still too closed at a door (sensor at this door still interrupted; see input function "Car sensor").

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	<ul style="list-style-type: none"> - Door 3 - Middle 			
Traffic lift	<ul style="list-style-type: none"> - Red - Green 	Floor	Doors	Traffic light output on doors of a vehicle lift (car lift).
Pre-Traffic	<ul style="list-style-type: none"> - Red - Green 	Floor	Doors	Outputs for controlling a right of way traffic light for a car lift. The green light switches on if the lift moves into a floor or is already in one floor and no other vehicle is inside the lift. The green light indicates a waiting driver that he can already drive up to the shaft door.
Drive	Running cont	-	-	Output for the running contactor.
	Fast cont.	-	-	Output for the fast speed contactor.
	Slow cont.	-	-	Output for the slow speed contactor.
	<ul style="list-style-type: none"> - Up cont. - Down cont. 	-	-	Output for the upward or downward contactor.
	Brake cont.	Signal no.	-	Output for the brake contactor. Starting with HSE software version 1.43: Up to 8 different brake outputs possible. To enable automatic brake test all brake outputs must have unique signal number.
	<ul style="list-style-type: none"> - Star cont. - Delta cont. 	-	-	Output for the star and delta contactor.
	<ul style="list-style-type: none"> - Direction up - Direction dn 	-	-	Direction signal Upward / Downward for the drive
	<ul style="list-style-type: none"> - Speed sig.1 - Speed sig.2 - Speed sig.3 - Speed sig.4 - Speed sig.5 - Speed sig.6 - Speed sig.7 - Speed sig.8 	Dir.	-	Speed signals for speed selection of the drive. The selection which speed signal is set for which lift speed is defined with setting of the parameters „Speed signals“ (see chapter "Parameters" above). With setting of „Dir.“ it may be selected if this speed signal output should be set in both direction (mainly by VVVF drives) or only in one direction (e.g. for hydraulic control board "Bucher" or "Beringer")

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	Enable drive	–	–	Enable signal for drive
	Start signal	–	–	Start signal for drive
	Valve(delay)	–	–	Control output for delayed switch off the valve (while stopping first pump motor is switched off; than after a programmed time (see drive parameter) the valve is switched off.
	Cont.v.delay	–	–	Output to switch off the pump motor if delayed valve off is necessary (see above).
	Trip cont	–	–	Output to switch a trip contactors. Compared with the running contactor (see above) the trip contactor is switched off after all other signals are switched off and the contactor supervision detected that all other contactors are really off. So the trip contactor can't be supervised by the contactor supervision input.
	Slow start	–	–	Output to switch a special start contactor to reduce the starting current for the slow motor windings (e.g. with special starting resistors in series)
	Re-levelling	–	–	Output is set while re-levelling
	Open valve	–	–	Hydraulic lifts with motor valve: Output to open motor valve
	Close valve	–	–	Hydraulic lifts with motor valve: Output to close motor valve
	Holding	–	–	Holding trip (trip to / from holding bolts)
	Doorz.bypass	–	–	Output to enable door zone bypass for moving with open doors Conditions: - while re-levelling - if arriving the target floor, if lift is inside door unlocking zone and if lift speed is low (Parameter „v Adv.door“)
	Error reset	–	–	Output for error reset the drive unit (mainly VVVF). The drive unit must provide such an error reset input. In case of error the lift controller will set and reset this output every 2s until drive unit goes back to normal operation.
	Motor fan	–	–	Output to switch the motor fan. Output is set: - while moving with off delay (Parameter „Vent.time[s]“ in menu „General param.“) - if input „Fan temp.“ is activated
Safety space	– Bearer top	–	–	Output to switch an electrical operated bearer for safety space

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
	- Bearer bot.			
	-Bear.top Warn -Bear.bot.Warn	-	-	Output for signaling that manual operated bearer must still be put in.
	Car apron	-	-	Output for electrical locking of folding car apron.
	Governor	Dir.	-	Output to activate a descent stopping system (e.g. coil on overspeed governor, emergency stopping valve, A3 device,)
	Uncontr.Mov	-	-	Output uncontrolled movement (UCM) detected. Used to switch off safety circuit.
	Bypass UCM	-	-	Output to switch descent stopping system (e.g. coil on overspeed governor, A3 device) from safety line to direct power supply to prevent from safety gear triggering if safety line is interrupted during a trip.
	Decel.bypass	Direction	-	Output to bypass the deceleration check safety unit while the lift starts a trip from top or bottom floor. For monitoring this bypass outputs see input function „Safety space“ - „Decel.bypass“.
	Decel.reset	-	-	If moving with reduced speed it is possible that the deceleration check safety unit is in wrong state because the actual speed is about the same like deceleration speed and the 2 sensors get different results. With this output function it is possible to reset the safety unit. The output is set during standstill state for about 2 seconds.
	- Safe ↑ - Safe ↓			Output to display that Safety space is secured
Hold.bolt	- Bolt out - Bolt in	-	-	Output to pull in / pull out holding bolts.
	- Bolt is out - Bolt is in	Signal no.	-	Output for signaling "Holding bolt x is pulled out"
	Holded			Output, that lift is completely on holding bolts
OP device	- Out - In	-	-	Output to pull in / pull out the load derrick of a hospital operation lift with automatic loading / unloading.
	- Right - Left	-	-	Output to move the rotary table of a hospital operation lift with automatic loading / unloading.
	Ramp	-	-	Output to switch the load interlock of a hospital operation lift with

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Main function	Sub function/ Direction/ Floor	Floor	Doors	Description
Conn.IO	<ul style="list-style-type: none"> - "--" - on delay - off delay - on+off - Pulse - Bistable - blink 	Signal no.	Delay[s]	<p><i>automatic loading / unloading.</i></p> <p><i>See description of input function.</i></p> <p><i>Additionally it may be defined for each single output</i></p> <ul style="list-style-type: none"> - on delay - off delay - on and off delay - Pulse <p><i>The delay or pulse wide may be programmed with "Delay[s]".</i></p> <p><i>By using the "Bistable" function the state of the output is toggled always if the connected input is switched on.</i></p> <p><i>With setting "blink" the output flashes 1/second.</i></p>

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8. Setting the node ID

Since the various components of the lift controller MLC 8000 are connected via the CAN bus, each module must have a separate node ID. By setting the node ID of a module a specific function is simultaneously assigned.

At some modules (HSE, FVE, handheld terminal), the node ID is hard-coded; in other modules (UEA, PMA, LCI16, LCD-047, LCD-057), the node ID must be programmed before use.

Basically the setting of the node ID is done by the following steps:

- Putting the Initialization jumper on the relevant module (see module description in the appendix)
- Connecting the module to the CAN bus (ESE to shaft bus, other modules to control bus)
- Optional: Checking whether the module actually is in Initialization mode and was recognized by the HSE in the "Hardware Test" menu - "ESE test" (only ESE) or "TSE test" (with all other modules): in the LCD display of the HSE "INI" is displayed in the right upper corner.
- Start menu item „Node ID“ on HSE
- Depending on the required function select the corresponding submenu item:
 - Node ID TSE
 - Node ID ESE
 - Node ID ASE
 - Node ID PSE
 - Node ID Simul. (used for lift simulation)
- When setting the node ID of TSE, the TSE number must be entered first and subsequently menu item "Initialization" must be selected.
- When setting the node ID of ESE, additionally to the ESE number the branch number must be entered before the menu item "Initialization" is selected.
The branch number depends on the bus couple unit CBC which is switched between HSE and ESE in some lifts (mainly lift groups). If no bus coupler CBC is used the branch number is always 1.
- "Successful" appears on the LCD display of the HSE
- Disconnect module from CAN bus and voltage
- Set Initialization jumper back to old position
- Connect module back to CAN bus

In difference of the described procedure, the node ID of the bus coupler modules CBC is set directly via DIP switches (see CBC description in the appendix).

9. Group control

9.1 Principle of Group control

The software for group control is automatically included in the software of any HSE module, i.e., there is no separate group control module needed. In order to realize the control group,

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only the shaft bus of both controllers must be connected together.

The following parameters must be set in addition:

- Group size (number of lifts inside a group)
- Group number

It should be ensured that any HSE within a lift group has a different number (= node ID of the HSE on shaft bus).

Since the landing calls are also connected via ESE modules on shaft bus, all HSE modules get all the information of operated landing calls and can operate them internally. Using a special algorithm, the HSE modules distribute the landing calls to different lifts of the group. In this algorithm the shortest possible waiting time for passengers is calculated. The call allocation does not take place static, but is every 200ms recalculated so that the group control can continually adapt new changing conditions (e.g. input of a new car call in a cabin; interruption of the light barrier of a door during closure, ...) . So it is also guaranteed that all landing calls are handled, even if a lift will shut down during operation.

In principle, up to 64 ESE modules can be connected to a CAN bus; with a larger number of ESE modules the use of bus coupler CBC is required. However, the CAN bus is designed so that the modules should be connected in a "linear structure". But this is not possible for a group of 3 or more lifts with a separate shaft each. In these cases before reaching the 64 ESE modules already, bus couplers CBC should be used (recommended is the use of bus couplers CBC already in groups of 2 lifts with 2 landing-call displays per floor).

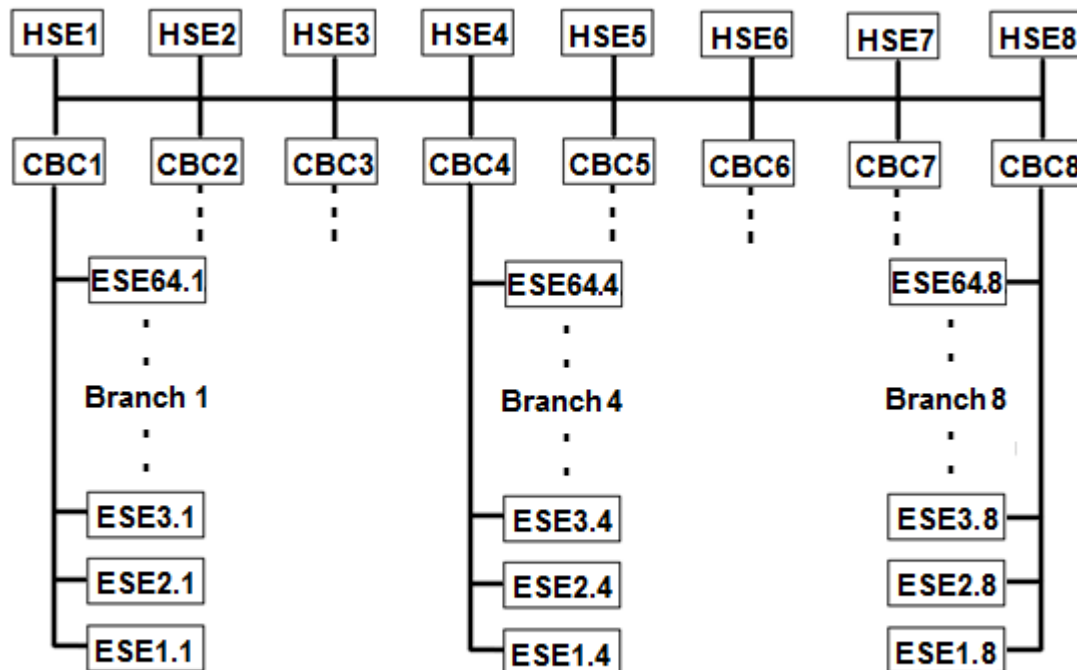
Note also that the bus coupler modules CBC get different node numbers. The branch ID of each ESE module depends on the node ID of the bus couple module CBC.

Through the bus couplers CBC the shaft bus is physically divided into various bus segments. It is important that each bus segment is enclosed again on both sides with a terminating resistor (120 Ohm each; see module description in the appendix) .

The power supply of the ESE modules and the bus coupler CBC can be done via a separate 24V power supply or by the 24V power supply of each individual lift controller. In this case, it should be noted that the 24V power lines of each lift controller are to be decoupled from each other via diodes.

The picture below shows the maximum configuration of a lift group (8 lifts, 8 bus couplers CBC, 512 ESE modules)

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9.2 Parameter synchronization within a lift group

All parameters and thus also the input / output parameters of ESE modules of a lift controller are stored in the EEPROM of the HSE Unit.

Since the group control must continue to work if individual lifts of the group are not in operation, it is necessary to save the same ESE parameters in all lift controllers in this group.

Therefore, after changing parameters of an ESE module ,synchronization is required.

The menu item " Group sync." inside the main menu "Parameter" is started on the module at which the ESE parameters have been changed. The HSE then sends the relevant parameters to all other lifts of the group. It is important that the other lifts of the group are turned on when you start the group synchronization.

10. Destination selection control DSC

10.1 Principle of destination selection control

With lift controller MLC 8000 it is possible to realize a destination selection control.

With a destination selection control the target floor is already selected on the floor and the user is assigned a specific lift of a group. A special control panel is required for this, where the user can select the target floor. This can be done, for example, using a numeric keypad or a touch display. It is important, that any single user enters his request separately.

If a new target is entered, a so called "weighting factor" is calculated by each HSE of the lift group, which includes the number of calls already stored, the need of an additional stop due

to the new call and the capacity of the cabin. With this factor, the lift controller ensures, that the capacity of the cabin is not exceeded (see "General parameter" – "Max.people")

Within 200ms after the call has been entered, the controllers of the lift group decide among themselves, which lift can process the new call most efficiently based on the calculated "weighting factor". The number of this lift is displayed to the user on the control panel. If no lift in the group can handle the call at the moment, then no message is generated by the lift controller on the control panel; the panel itself then generates a message that all lifts are currently busy.

The assignment to a lift in the group is fixed and cannot be changed later. So if, for example, a lift is switched off, then all users who have already been assigned to this lift must re-enter their call.

10.2 Control panels for destination selection control

Up to 15 control panels per floor can be connected via CAN bus to the lift controller. Each control needs a unique ESE node ID (see above, chapter "Setting the node ID" and chapter "Group control"), whereby the numbering of the control panel is independent of the node ID.

The control panels transmit the following informations via the CAN bus:

- Function: Target call (08h)
- Sub-Function: Target floor
- Lift: Numbers of the lifts (bitwise), which should handle this call
- Floor: Call floor
- Doors: Doors in call floor and target floor (bitwise; Bit 0...3: Doors in call floor, Bit 4...7: Doors in target floor)
- State: Number of control panel (Bits 0 to 3); Option code (Bits 4 to 7)

10.3 Option code

No.	Option code	Meaning
0	Normal	Normal destination call
1	Handicap call	For a handicapped call a certain number of places inside the cabin are reserved for the handicapped person, e.g. for a wheelchair (parameter "Destinat.control" – "Handic.places"). Beside this, the disabled call is handled like a normal call. All lifts have the same priority; that means the most efficient lift will serve this call. If a specific lift should handle this call in priority, this can be set by using the parameter "Destinat.control" – "Handicap prio."- In case a priority other than '0' is set here, the lift with highest priority serves this call; if this lift is out of service, then the lift with the second highest priority will serve the call, etc. If a lift in the group is not made to handle disabled calls, then the parameter "Handic.places" can be set to a value greater than the capacity of the cabin ("General parameter" – "Max.people")
2	Transport	Destination call for transport of goods (Zielwahlruf für den Transport von Gütern (not implemented yet)
3	VIP call	The VIP call is served by the "most efficient" lift. Existing calls remain

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		stored, but the VIP call is handled first.
4	Special call	If a special destination call is set, the “most efficient” lift still handles all already stored calls, but will not accept any new call. If all stored calls are handled, this lift will serve the special call.
5	Handicapt call with empty car	With this option code, the „most efficient” lift still handles all already stored calls, but will not accept any new call. Once the cabin is empty, the lift moves to the call floor and serves the handicap call. If desired, a priority of the lifts can be set (see above, option code 1 “Handicapt call”).
6	Emergency call	After entering an emergency call, the “most efficient” lift immediately clears all stored calls, drives directly to the emergency call floor and opens the door. The target floor is then approached without interruption.

10.4 Special functions for lifts with destination selection control

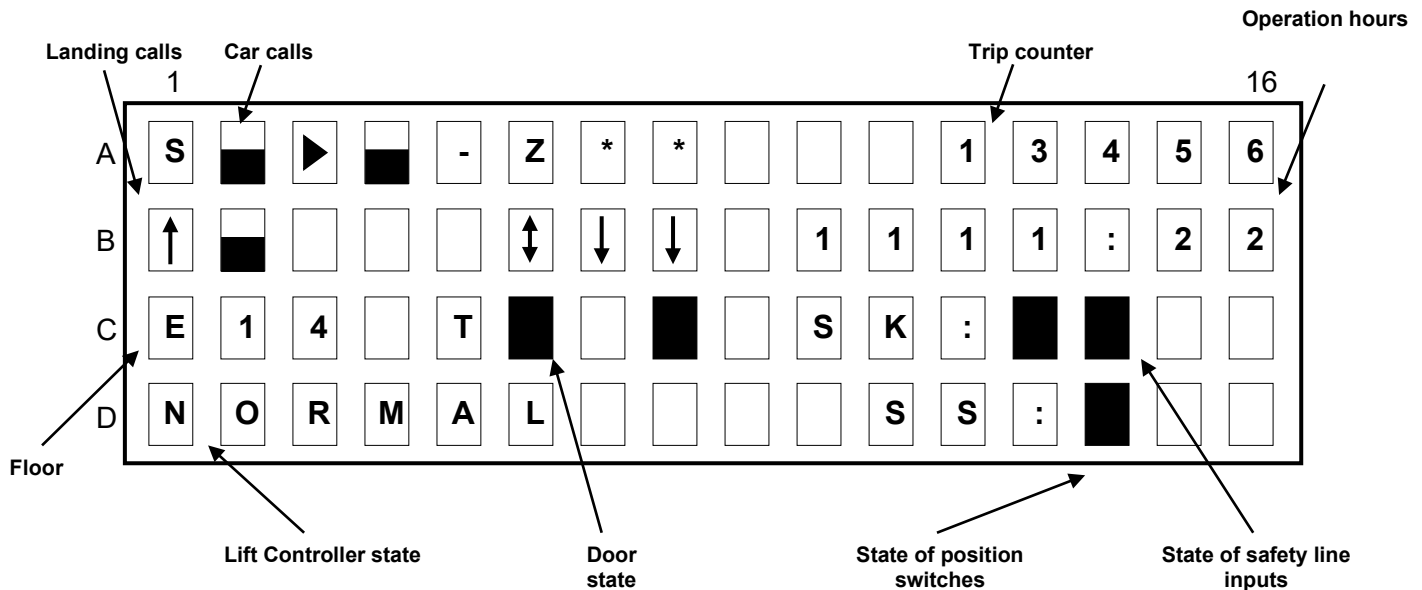
Special control functions such as “Remote off”, special trips, emergency trips etc. also work with lifts that are equipped with destination selection control. It is also possible to install standard call panels inside the cabin on the floors in addition to the control panels of the destination selection control.

For example, emergency calls can be parametrized and connected, which immediately call a lift to an emergency floor. An emergency car call can then be set to the destination floor via the car panel.

11. State display

11.1 State display 1 (General overview)

Example:



Symbols for car and landing calls

- V Priority call
- * normal car call
- ↑ Landing call in upward direction
- ↓ Landing call in downward direction
- ↕ Landing call in up- and downward direction
- Car or landing calls disabled
- Calls enabled, but no active call is set
- P Parking trip
- S Start floor
- Z Target floor
- Actual floor by upward trip
- ◄ Actual floor by downward trip
- > Actual floor by upward arrival (arrival speed v0)
- < Actual floor by downward arrival (arrival speed v0)
- Actual floor in standstill state



For lifts with more than 8 floors an additional state display for car and landing calls is available between state display 1 and 2.

11.2 State display 2 (Door state)

	1								16							
A		D	o	o	r	1				D	o	o	r	2		
B	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
C	T	i	m	e	=				T	i	m	e	=			
D	S	t	a	t	e				S	t	a	t	e			

- ☒ = Input is active (switched on)
- ☐ = Input is not active (switched off)
- = Input does not exist

If the state is unknown (e.g. CAB bus not working) than „?“ is displayed as input state.

- 1: Light screen
- 2: Door reverse signal (mechanical obstacle)
- 3: Door open push
- 4: Door stop push
- 5: Door open limit switch
- 6: Door closed limit switch
- 7: not used
- 8: not used

Time: Door check time (e.g. max. waiting time until door is opened/closed)

State: Actual door state



For doors controlled by CANopen, by pressing ENTER for at least 1s the door opening width in [mm] will be displayed in line 3 instead of the door check time.

11.3 State display 3 (Timer values)

	1														16	
A	T	i	m	e	r	s			T	T	.	M	M	.	J	J
B	D	T	=						h	h	:	m	m	:	s	s
C	P	T	=										t	t	°	C
D	L	T	=						T	R	T	:				

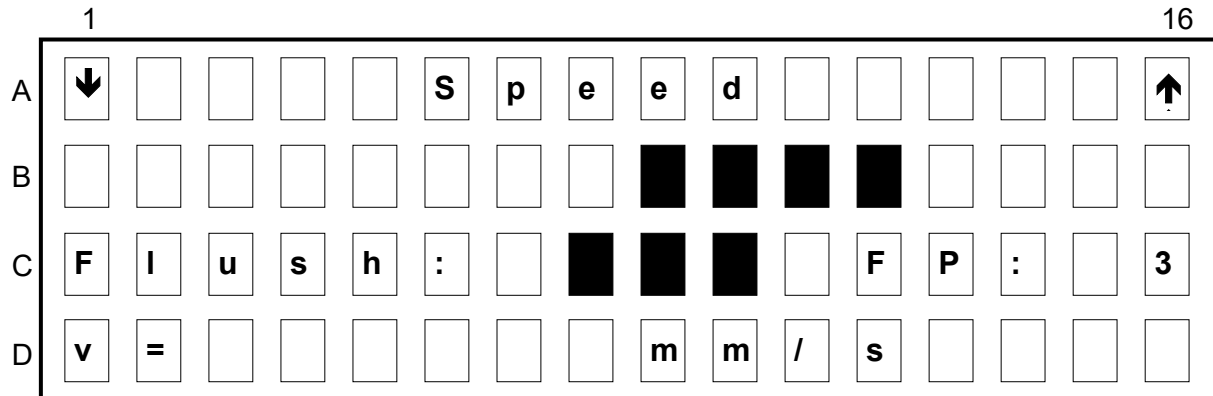
DZ: Door time (Door open stay time in floor)
 PZ: Park time (Time until starting parking trip)
 LT: Load time (Door stop time)
 TRT: Trip time (Trip supervision timer if lift is moving)
 TT.MM.JJ: Actual date
 hh:mm:ss: Actual time
 tt °C: Aktuelle Platinentemperatur (erst ab HSE Hardware-Version 1.05)

11.4 State display 4 (Position and Speed)

	1															16
A	P	o	s	i	t	i	o	n				F	P	=		
B	P	O	S	=								m	m			
C	D	F	P	=								m	m			
D	v	=							m	m	/	s		v	v	v

FP: Actual floor
 POS: Actual position in relation to lowest floor (Position lowest floor = 0).
 As long as teach-in is not ready or lift didn't finish the reference trip after power on the position is shown in brackets. Be noted that this isn't the real lift position in this case, but with this value it is possible to check if the position encoder works well.
 DFP: Difference between actual floor and level position.
 if a negative value is displayed the lift is located below level, with a positive value the lift is above level.
 v: Actual lift speed in mm/s
 vv: Actual selected lift speed (v0, v1, v2, v3, vZ1, vZ2, vI, vIS, vR, vRS, vUPS)

11.5 State display 5 (Emergency evacuation)



This State display is shown, if emergency evacuation by brake opening is activated (if input "UPS Evacuat." - "UPS brake" is switched on).

The bar graph in second line shows the moving direction and moving speed of the lift (bar graph to the right - upward direction; to the left - downward direction).

If the lift reaches the level zone the display shows "Flush".

FP: Actual floor

Flush: 3 black squares if lift is in floor level

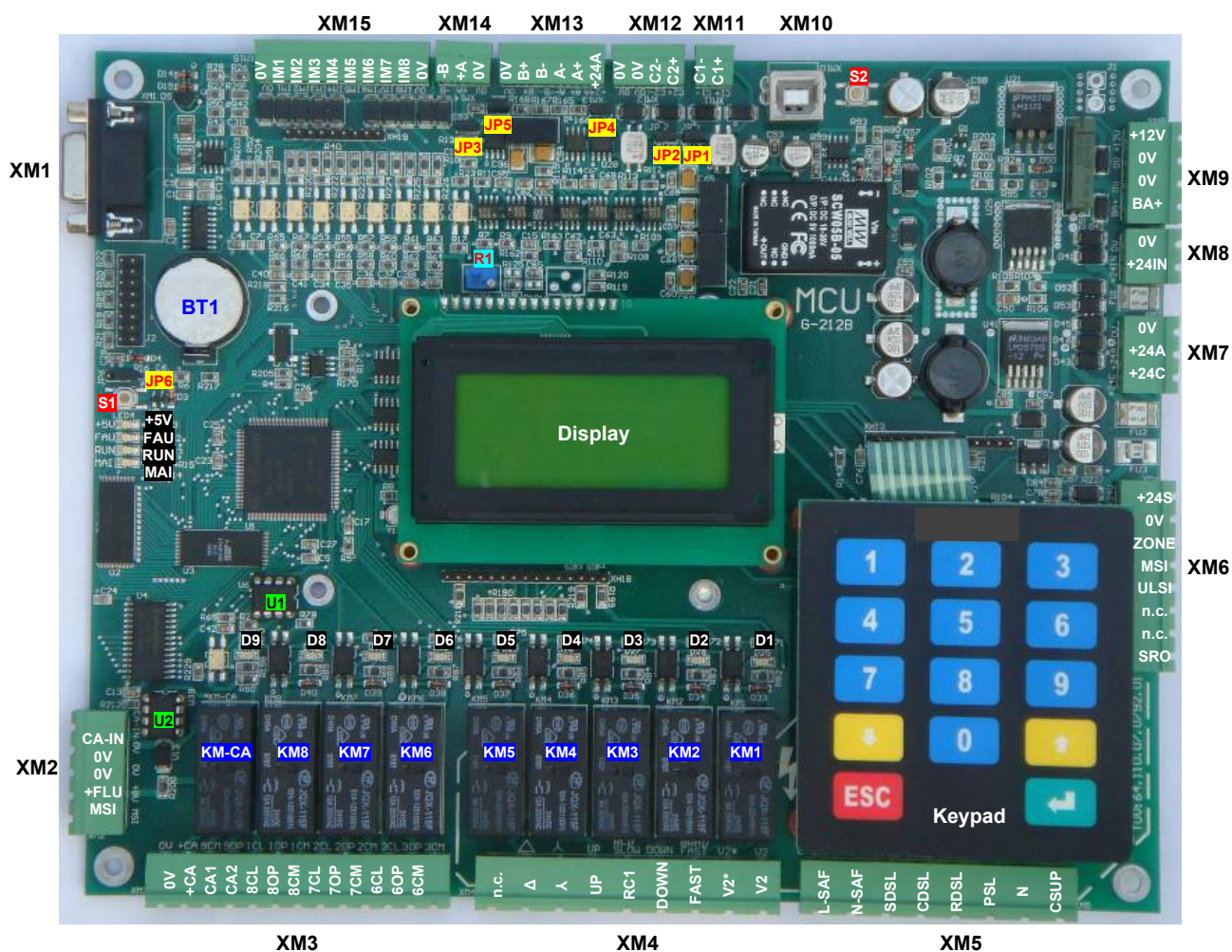
v: Actual lift speed in mm/s

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Appendix 1. Technical specifications

Appendix 1.1 Module MCU



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Position	Function
JP1	Jumper CAN bus terminator CAN1 (control bus) → Jumper must be set if MCU is located at the end of the CAN bus cable (control bus).
JP2	Jumper CAN bus terminator CAN2 (shaft bus) → Jumper must be set if MCU is located at the end of the CAN bus cable (shaft bus).
JP3	Jumper CAN bus terminator RS485 → Jumper must be set if MCU is located at the end of the RS485 bus cable.
JP4 JP5	Setting for encoder type connected to MCU: - 5V-Encoder signals: Set both jumpers - 24V (10...30V) Encoder signals: Remove both jumpers
JP6	Jumper for Software download (Boot mode). Remove jumper for normal operation.
BT1	Battery for real time clock MCU
R1	Potentiometer (variable resistor) for display contrast
S1	Reset button
S2	internal use only
U1	Parameter EEPROM for all lift parameters.
U2	Backup EEPROM, contains a backup copy of all parameters
D1 bis D9	Status LED for state of relays KM1 to KM8 and alarm call relay KM-CA.
+5V	Status LED for 5V controller power supply
FAU	Fault LED (lift controller fault)
RUN	LED "Software is running"
MAI	Maintenance LED (Maintenance necessary)
XM1	RS-232 interface (mainly used for software update)
XM2	CA-IN Alarm call input (low aktiv); directly connected to alarm relay KM-CA
	0V 0V – power supply
	0V 0V – power supply
	+FLU Battery buffered 24V power supply with integrated series resistor (2kΩ) for connecting an LED as flush signal
	MSI Input for door zone switch MSI
XM3	0V 0V – power supply
	+CA Alarm call relay KM-CA, N.O. contact. Other side of contact is connected internally with battery buffered 24V power supply. Mainly used for alarm horn.
	CA1 CA2 Alarm call relay KM-CA, N.O. contact., potential-free
	8CL Relay KM8 (MCU Output 8): Output relay KM8, N.C. contact
	8OP Relay KM8 (MCU Output 8): Output relay KM8, N.O. contact
	8CM Relay KM8 (MCU Output 8): Output relay KM8, common
	7CL Relay KM7 (MCU Output 7): Output relay KM7, N.C. contact
	7OP Relay KM7 (MCU Output 7): Output relay KM7, N.O. contact
	7CM Relay KM7 (MCU Output 7): Output relay KM7, common
	6CL Relay KM6 (MCU Output 6): Output relay KM6, N.C. contact
	6OP Relay KM6 (MCU Output 6): Output relay KM6, N.O. contact
	6CM Relay KM6 (MCU Output 6): Output relay KM6, common
XM4	n.c. Not connected
	Δ Relay KM5 (MCU Output 5): N.O. contact; Default: Delta contactor (Hydraulic lifts); Brake contactor (Rope lifts)
	Y Relay KM5 (MCU Output 5): N.C. contact; Default: Star contactor (Hydraulic lifts)
	UP Relay KM4 (MCU Output 4): N.O. contact; Default: Upwards contactor

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Position	Function	
	RC1/ SLOW	Relay KM3 (MCU Output 3): N.O. contact; Default: Main contactor (Running contactor) Note: For lifts with safety unit for moving with open doors the relay KM3 must always be used as running contactor even if nothing is connected to KM3, because by a second contact of KM3 the door zone bypass will be enabled.
	DOWN	Relay KM2 (MCU Output 2): N.O. contact; Default: Downwards contactor
	FAST	Relay KM1 (MCU Output 1): N.O. contact; Default: Fast contactor
	V2*, V2	Relay KM1 (MCU Output 1): Additional, potential free N.O. contact
XM5	L-SAF	Connection for end of safety circuit to switch contactors
	N-SAF	Neutral safety circuit (Output to connecting neutral to contactors)
	SDSL	State input safety line shaft doors (MCU Input 12), for 110V to 230V AC
	CDSL	State input safety line car doors (MCU Input 11), for 110V to 230V AC
	RDSL	State input safety line revolving shaft doors (MCU Input 10), for 110V to 230V AC
	PSL	State input primary safety line (MCU Input 9), for 110V to 230V AC
	N	Neutral safety circuit (Input)
XM6	CSUP	Input for contactor supervision (MCU Input 13), for 110V to 230V AC
	+24S	24V power supply output to safety unit SRU; I _{max} =0.5A (electronic fuse on MCU).
	0V	0V power supply for safety unit SRU
	ZONE	Feedback signal from safety unit SRU (lift in door zone)
	MSI	Output door zone switch MSI to safety unit SRU channel A
	ULSI	Output 2. door zone signal to safety unit SRU channel B (generated by software, logical OR of USI and LSI signals)
	n.c.	Not connected
	n.c.	Not connected
XM7	SRO	Safety circuit door zone bypass for moving with open doors (output of safety unit SRU)
	0V	0V – Power supply (to trailing cable)
	+24A	Battery buffered 24V power supply (to trailing cable); I _{max} = 1.0A (electronic fuse on MCU)
XM8	+24C	24V – Power supply (to trailing cable); I _{max} = 1.8A (electronic fuse on MCU). If larger power is necessary the trailing cable should be connected directly to the 24V power supply unit.
	0V	0V – Power supply input for MCU
	+24IN	+24V – Power supply input for MCU
XM9	+12V	Battery buffered 12V - Power supply (e.g. for Intercom); I _{max} = 0.5A; overload and short-circuit-proof
	0V	0V – Power supply
	0V	0V – Connection for negative pol of external 12V battery
	BA+	Connector for positive pol of external 12V battery (battery charging)
XM10	Connector for handheld terminal (No USB connector!)	
XM11	0V	Connector for shield CAN bus cable (only MCU version 1.2)
	C1-	Control bus (CAN-Bus 1) – Low-Signal
	C1+	Control bus (CAN-Bus 1) – High-Signal
XM12	0V	0V – Power supply
	0V	Connector for shield CAN bus cable
	C2-	Shaft bus (CAN Bus 2) – Low-Signal
	C2+	Shaftbus (CAN Bus 2) – High-Signal
XM13	0V	0V – Power supply for encoder
	B+	Encoder Channel B+; 5V or 10..30V (see Jumper JP4+JP5)
	B-	Encoder Channel B- (inverted signal); 5V or 10..30V (see Jumper JP4+JP5)
	A-	Encoder Channel A- (inverted signal); 5V or 10..30V (see Jumper JP4+JP5)

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Position	Function	
	A+	Encoder Channel A+; 5V or 10..30V (see Jumper JP4+JP5)
	+24A	Battery buffered +24V power supply for encoder
	-B	RS485-Bus (Low-Signal)
XM14	+A	RS485-Bus (High-Signal)
	0V	0V – power supply for RS485-Bus
	0V	0V – power supply (Common for inputs IM1-IM8)
XM15	IM1	MCU Input 1, for thermistor; Input is active if resistance of thermistor < 1.5kΩ. Input may also be used as digital input
	IM2	MCU Input 2, for thermistor; Input is active if resistance of thermistor < 1.5kΩ. Input may also be used as digital input
	IM3	MCU Input 3, Low-aktiv (24V DC)
	IM4	MCU Input 4, Low-aktiv (24V DC)
	IM5	MCU Input 5, Low-aktiv (24V DC)
	IM6	MCU Input 6, Low-aktiv (24V DC)
	IM7	MCU Input 7, Low-aktiv (24V DC)
	IM8	MCU Input 8, Low-aktiv (24V DC)
	0V	0V – power supply (Common for inputs IM1-IM8)
	0V	0V – power supply (Common for inputs IM1-IM8)

Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	<500mA @ 25°C (all relays and inputs active)
Max. input current IM1, IM2:	2mA @ 25°C / Input
Max. input current IM3 to IM8:	10mA @ 25°C / Input
Max. current KM1 to KM8 and KM-CA:	8A/250V AC / Relay
Max. input current of 230V-inputs (Safety circuit, Contactor supervision):	10mA @ 25°C, 230VAC, 50Hz / Input
Mechanical dimensions:	Length: 241mm Width: 190mm Height: ca. 40mm

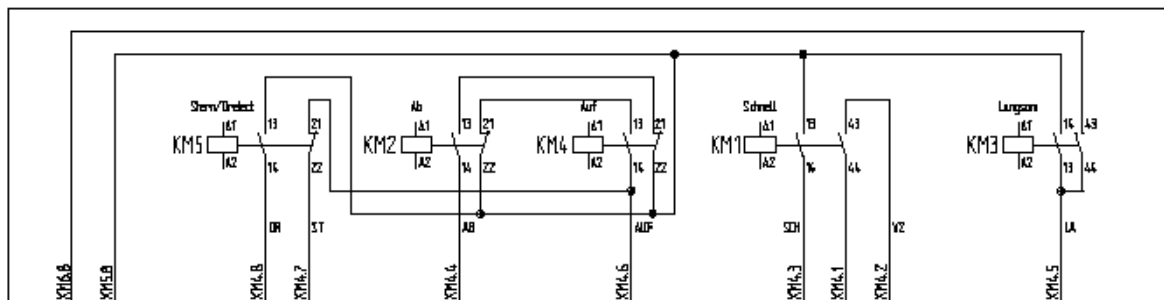
Characteristics and features:

- Highly integrated Infineon – Microcontroller with internal Flash memory
- Modern FRAM Technology for storing events, faults and other data
- Integrated battery charging circuit
- Operation of MCU with battery power supply possible
- battery buffered 24V and 12V power supply output
- Integrated real-time clock
- 2 opto-isolated CAN-Bus systems (control bus, shaft bus)
- 1 opto-isolated RS485 interface,
- 1 RS232 interface
- 6 opto-isolated digital inputs, low active
- 2 opto-isolated inputs for PTC; also usable as digital inputs (low active)
- 4 TÜV-certified, EN81 compliant safety circuit monitoring inputs 110V/230V AC, 50/60Hz (opto-isolated)
- 1 110V/230V AC, 50/60 Hz input (opto-isolated)
- 2 EEPROM memories for parameters (32kByte each; in socket)

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- Wiring of Relay KM1 to KM5 onboard:

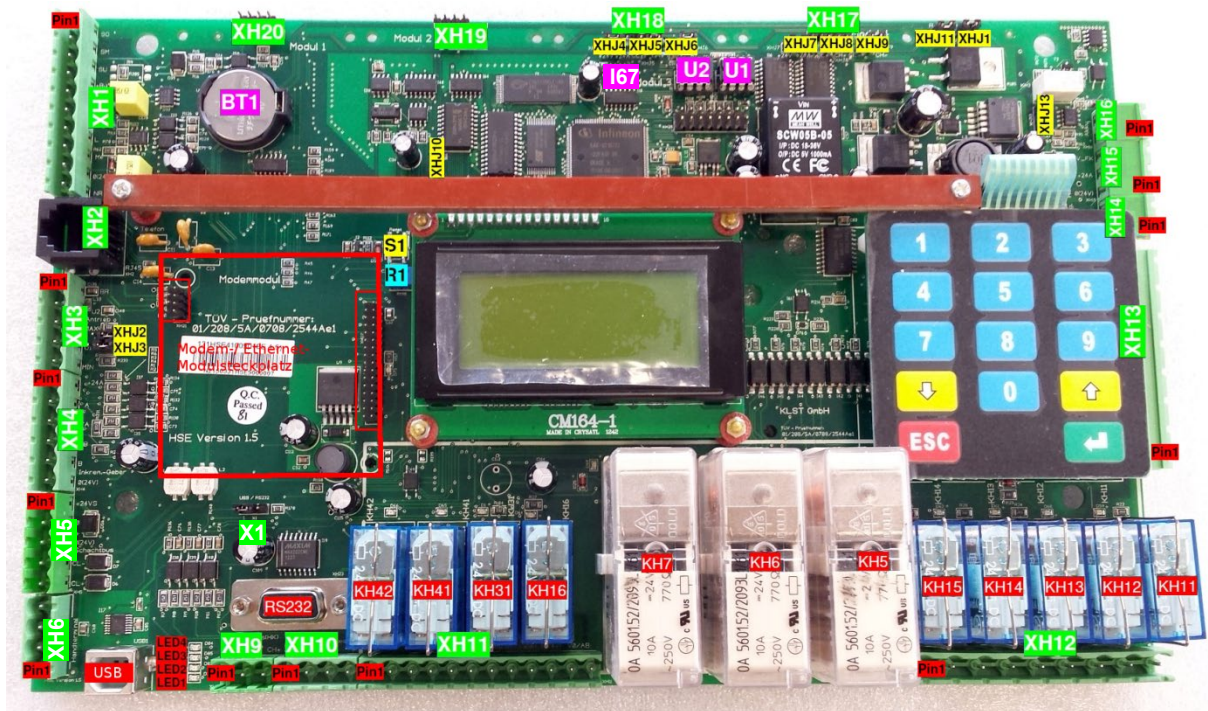


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HSE Hardware-Version 1.5

Position	Function
XHJ1	Jumper CAN bus terminator CAN1 (control bus) → Jumper must be set if HSE is located at the end of the CAN bus cable (control bus).
XHJ11	Jumper CAN bus terminator CAN2 (shaft bus) → Jumper must be set if HSE is located at the end of the CAN bus cable (shaft bus).
XHJ2 XHJ3	Setting for encoder type connected to HSE: - 5V...12V Encoder signals: Set both jumpers - 24V (15...30V) Encoder signals: Remove both jumpers
XHJ10	Jumper for Software download (Boot mode). Remove jumper for normal operation.
XHJ4	Setting the power supply mode for UEA board connected to slot 3 (XHJ18): - Jumper set to the left: normal 24V power supply - Jumper set to the right: battery buffered 24V power supply
XHJ7	Setting the power supply mode for UEA board connected to slot 4 (XHJ17): - Jumper set to the left: normal 24V power supply - Jumper set to the right: battery buffered 24V power supply
XHJ5 XHJ6	Selecting the CAN bus for UEA board connected to slot 3 (XHJ18): - Both Jumpers set to the left: UEA is connected to shaft bus (CAN2) - Both Jumpers set to the right: UEA is connected to control bus (CAN1)
XHJ8 XHJ9	Selecting the CAN bus for UEA board connected to slot 4 (XHJ17): - Both Jumpers set to the left: UEA is connected to shaft bus (CAN2) - Both Jumpers set to the right: UEA is connected to control bus (CAN1)
XHJ13	Jumper set to the top: HSE is supplied by battery power (continue working if power supply is off)
X1	Jumper for selecting USB interface (jumper to the left) or RS232 interface (jumper to the right (only hardware version 1.5))
BT1	Battery for real time clock RTC of HSE
R1	Potentiometer (variable resistor) for display contrast
S1	Reset button
U1	EEPROM for actual parameter set

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Position	Function	
U2	Backup-EEPROM	
I67	Temperature sensor (only hardware version 1.5)	
LED1	Status LED for 5V controller power supply	
LED2	LED "Software is running"	
LED3	Fault LED (lift controller fault)	
LED4	Maintenance LED (Maintenance necessary)	
RS232	Serial interface	
USB	USB interface to PC (only hardware version 1.5)	
XH1	SGO	Not used
	SGM	Input door zone switch SGM
	SGU	Not used
	+Bu	Battery buffered 24V power supply with integrated series resistor (2kΩ) for connecting an LED as flush signal
	SGM	Door zone switch SGM (pin for connecting a flush signal)
	+24A	Battery buffered 24V power supply
	L	Not used
	M	Not used
	0(24V)	0V – power supply
	NR	Alarm call input (low aktiv); directly connected to alarm relay KH31
XH2	Connector for telephone or Ethernet cable (depending on used module)	
XH3	BR	Input E1, Low active (24V DC); Function free programmable; mainly used for connection of brake supervision contact
	U2	Input E2, for connecting PTC (motor temperature); Input is set if value of PTC < 1.5kΩ. Function free programmable; Input can be used as digital input.
	MAX	Input E3, Low active (24V DC); Function free programmable; mainly used for connection of max. pressure contact.
	U1	Input E4, for connecting PTC (motor temperature); Input is set if value of PTC < 1.5kΩ. Function free programmable; Input can be used as digital input.
	MIN	Input E5, Low active (24V DC); Function free programmable; mainly used for connection of min. pressure contact.
XH4	+24A	Battery buffered 24V power supply for encoder
	A	Encoder Channel A; 5...12V or 15..30V (siehe Jumper XHJ2+3)
	/A	Encoder Channel /A (inverted); 5...12V or 15..30V (see Jumper XHJ2+3)
	/B	Encoder Channel /B (inverted); 5...12V or 15..30V (see Jumper XHJ2+3)
	B	Encoder Channel B; 5...12V or 15..30V (siehe Jumper XHJ2+3)
	0(24V)	0V – power supply for encoder
XH5	+24VS	0V – power supply for shaft bus; decoupled by diode for power supply in lift groups
	0(24V)	0V – power supply for shaft bus
	0(24V)	0V – power supply for shield CAN bus cable (shaft bus)
	CL-	Shaft bus (CAN Bus 2) – Low-Signal
	CL+	Shaft bus (CAN Bus 2) – High-Signal
XH6	CH-	Connector for handheld terminal (Control bus Low-Signal)
	CH+	Connector for handheld terminal (Control bus High-Signal)
	0(24V)	Connector for handheld terminal (0V power supply)
	+24A	Connector for handheld terminal (battery buffered 24V power supply)
XH9	0(24V)	0V – power supply for shield CAN bus cable (control bus)
	CH-	Control bus (CAN Bus 1) – Low-Signal
	CH+	Control bus (CAN Bus 1) – High-Signal
XH10	0(24V)	0V – power supply for emergency recall operation
	EIN	Input E6, Low-active (24V DC); Function free programmable; for Emergency recall operation "On"
	AUF	Input E7, Low-active (24V DC); Function free programmable; for Emergency recall operation "Up"

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Position	Function	
	AB	Input E8, Low-active (24V DC); Function free programmable; for Emergency recall operation "Down"
XH11	2Ö 2C 2S	Output relay KH42 (HSE Output 8), function free programmable; 1 changeover contact (C: common, Ö: N.C. contact, S: N.O. contact)
	1Ö 1C 1S	Output relay KH41 (HSE Output 7), function free programmable; 1 changeover contact (C: common, Ö: N.C. contact, S: N.O. contact)
	Notruf	Alarm call relay KH31, N.O. contact
	+HU	Alarm call relay KH31, N.O. contact; contact already onboard connected to battery buffered 24V power supply, mainly for connection of alarm horn
	0(24V)	0V – power supply for alarm horn
	V0/AB	Output relay KH16 (HSE Output 6), function free programmable; 1 N.O. contact
XH12	OT	Safety circuit for door zone bypass for moving with open doors (input to onboard safety unit)
	DR	Relay KH15 (HSE Output 5): N.O. contact; Default: Delta contactor (Hydraulic lifts); Brake contactor (Rope lifts)
	ST	Relay KH15 (HSE Output 5): N.C. contact; Default: Star contactor (Hydraulic lifts)
	AUF	Relay KH14 (HSE Output 4): N.O. contact; Default: Upwards contactor
	LGS	Relay KH13 (HSE Output 3): N.O. contact; Default: Main contactor (Running contactor or slow speed contactor) Note: For lifts with safety unit for moving with open doors the relay KH13 must always be used as running contactor even if nothing is connected to KH13, because by a second contact of KH13 the door zone bypass will be enabled.
	AB	Relay KH12 (HSE Output 2): N.O. contact; Default: Downwards contactor
	SCH	Relay KH11 (HSE Output 1): N.O. contact; Default: Fast contactor
	V2* V2	Relay KM1 (MCU Output 1): Additional, potential free N.O. contact
XH13	SK4*	Connection for end of safety circuit to switch contactors (onboard connected to KH11-KH15)
	N_SK	Neutral safety circuit (Output to connecting neutral to contactors)
	SK4	State input safety line shaft doors (HSE Input 12), for 110V to 230V AC
	SK3	State input safety line car doors (HSE Input 11), for 110V to 230V AC
	SK2	State input safety line revolving shaft doors (HSE Input 10), for 110V to 230V AC
	SK1	State input primary safety line (HSE Input 9), for 110V to 230V AC
	N	Neutral safety circuit (Input)
	SAK	Input for contactor supervision (HSE Input 13), for 110V to 230V AC
XH14	0(24V)	0V – power supply input
	+24V	+24V – Power supply input for HSE
XH15	0(24V)	0V – power supply to trailing cable
	+24A	Battery buffered 24V power supply (to trailing cable); I _{max.} = 1.0A (electronic fuse on HSE)
	+24V_FK	24V – Power supply (to trailing cable); I _{max.} = 1.8A (electronic fuse on HSE). If larger power is necessary the trailing cable should be connected directly to the 24V power supply unit.
XH16	Akku+	Positive pol of external 12V battery (battery charging) Pluspol Notstromakku 12V
	Akku-	Negative pol of external 12V battery
XH17	Modul 4	Slot 4 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XHJ7/XHJ8/XHJ9 above
XH18	Modul 3	Slot 3 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XHJ4/XHJ5/XHJ6 above

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Position	Function	
XH19	Modul 2	Slot 2 for connecting a UEA to power supply and CAN bus (shaft bus)
XH20	Modul 1	Slot 1 for connecting a UEA to power supply and CAN bus (shaft bus)

Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	<500mA @ 25°C (all relays and inputs active)
Max. input current E2/E4:	2mA @ 25°C / Input
Max. input current E1/3/5/6/7/8:	10mA @ 25°C / Input
Max. current KH11-KH16; KH41-KH42:	8A/250V AC / Relay
Max. current +24VS (Shaft bus, XH5.1)	3A
Max. input current of 230V-inputs (Safety circuit, Contactor supervision):	10mA @ 25°C, 230VAC, 50Hz / Input
Mechanical dimensions:	Length: 292mm Width: 183mm Height: ca. 40mm

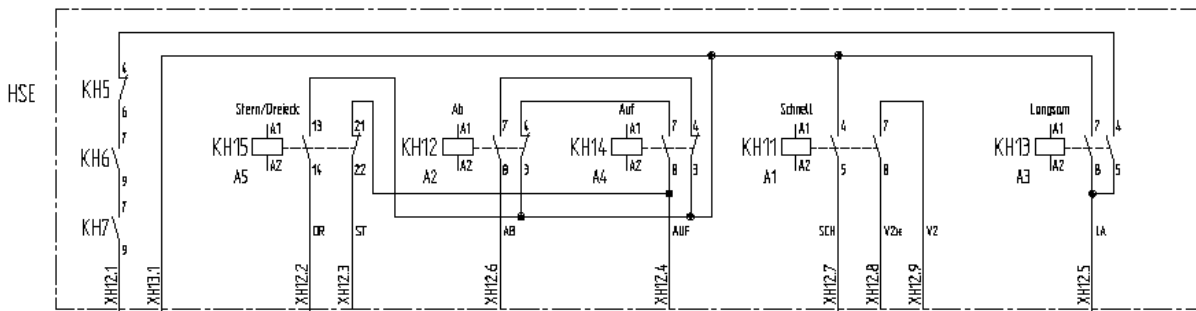
Characteristics and features:

- Highly integrated Infineon – Microcontroller with internal Flash memory
- Modern FRAM Technology for storing events, faults and other data
- Integrated battery charging circuit
- Operation of HSE with battery power supply possible
- battery buffered 24V power supply output
- Integrated real-time clock
- 2 opto-isolated CAN-Bus systems (control bus, shaft bus)
- 1 USB interface (only hardware version 1.5)
- 1 RS232 interface
- 6 opto-isolated digital inputs, low active
- 2 opto-isolated inputs for PTC; also usable as digital inputs (low active)
- 4 TÜV-certified, EN81 compliant safety circuit monitoring inputs 110V/230V AC, 50/60Hz (opto-isolated)
- 1 input 110V/230V AC, 50/60 Hz (opto-isolated)
- 2 EEPROM memories for parameters (32kByte each; in socket)
- 4-layer PCB with internal power layers
- JTAG interface for software update
- Software update by RS232 / USB / Ethernet / Modem / GSM possible (only hardware version 1.5)
- 8 freely programmable Relays
- integrated alarm call relay
- various LED status indicators
- Keypad with 14 keys
- LCD – Display 4 lines / 16 characters
- Interface for incremental encoder
- onboard-connector for modem module / Ethernet module / GSM module
- Integrated temperature sensor (only hardware version 1.5)

Wiring of Relay KH11 to KH15 onboard:

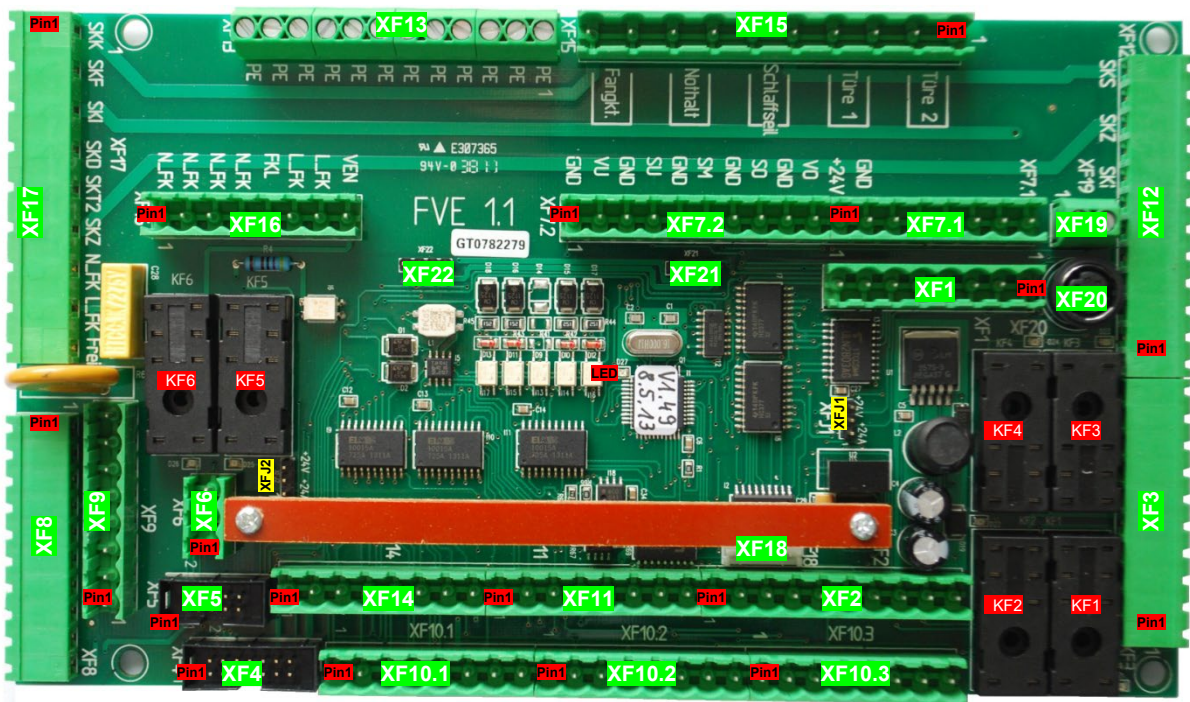
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Important note: When replacing the main board HSE or replacing relays only relays with 2 changeover contacts may be used!

Appendix 1.3 Module FVE 1.1 / FVE 2.1

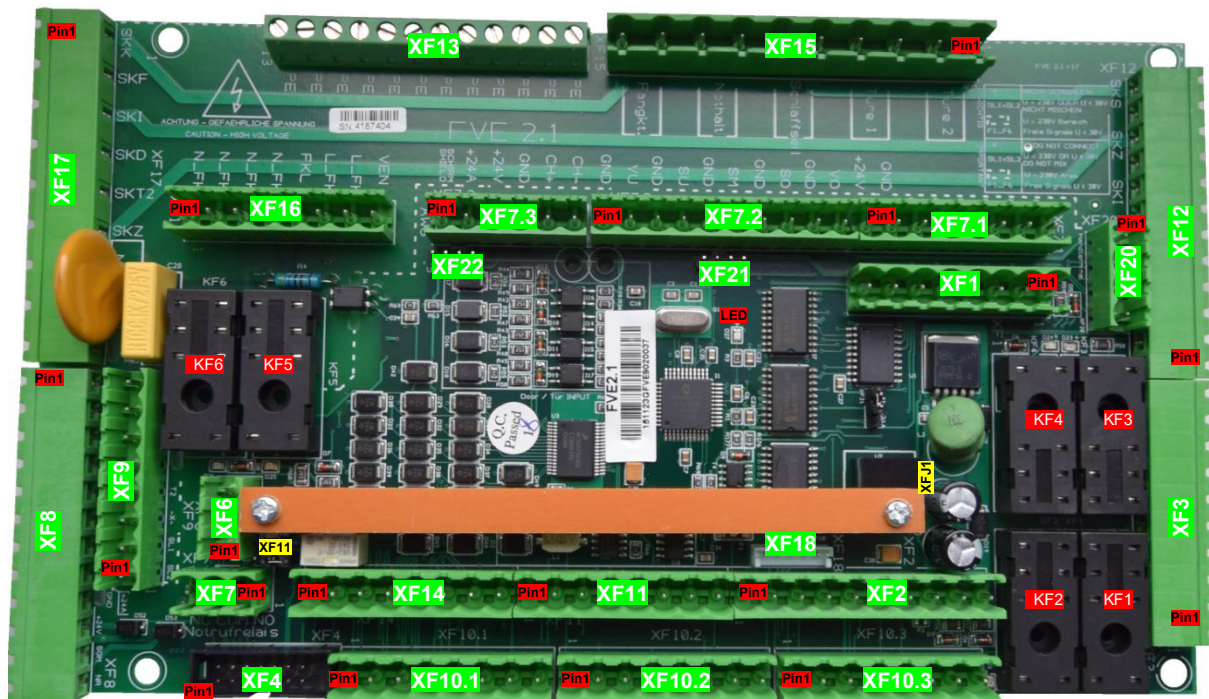


FVE Hardware-Version 1.1

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FVE Hardware-Version 2.1

Position	Terminal no., Description		Function
XFJ1	Setting the power supply mode for UEA board connected to right slot (XF21):		<ul style="list-style-type: none"> - Jumper set to the top: normal 24V power supply - Jumper set to the bottom: battery buffered 24V power supply
XFJ2	Setting the power supply mode for UEA board connected to left slot (XF22):		<ul style="list-style-type: none"> - Jumper set to the top: normal 24V power supply - Jumper set to the bottom: battery buffered 24V power supply
XF1	1	Res6	Free connectors for additional trailing cable wires; onboard connected to XF7.1.Res6-1
	2	Res5	
	3	Res4	
	4	Res3	
	5	Res2	
	6	Res1	
XF2	7	M	Connector for Intercom - microphone (to trailing cable)
	8	L	Connector for Intercom - loudspeaker (to trailing cable)
	1	L	Connector for Intercom - loudspeaker
	2	M	Connector for Intercom - microphone
	3	NL	Emergency light in car operation panel COP (FVE output A7)
	4	NR	Alarm call in car operation panel COP
	5	+24A	Battery buffered +24V power supply for car operation panel COP (e.g. Intercom, emergency light)
	6	+24V	+24V power supply for car operation panel COP
	7	0(24V)	0V – power supply for car operation panel COP
	8	CH-	Control bus (CAN Bus 1) – Low-Signal for car operation panel COP
XF3	9	CH+	Control bus (CAN Bus 1) – High-Signal for car operation panel COP
	10	0(24V)	0V – power supply for shield of CAN bus cable to car operation panel COP
	1	0(24V)	0V – power supply as common for door signals
XF3	2	KF1.C	Door relay KF1 (Output 1 FVE), N.O. contact, free programmable, default:
	3	KF1.S	Door open relay door 1

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Position	Terminal no., Description	Function
	4 KF2.C	Door relay KF2 (Output 2 FVE), N.O. contact, free programmable, default:
	5 KF2.S	Door close relay door 1
	6 KF3.C	Door relay KF3 (Output 3 FVE), N.O. contact, free programmable, default:
	7 KF3.S	Door open relay door 2
	8 KF4.C	Door relay KF4 (Output 4 FVE), N.O. contact, free programmable, default:
	9 KF4.S	Door close relay door 2
	10 +24V	24V power supply, mainly used for external door relays or door controller
XF4	1 NR	Alarm call car operation panel COP (for flat cable connection of COP)
	2 EAF10	7 Inputs/Outputs E10-E16 and A10-A16 Low active, mainly for car operation panel COP (for flat cable connection of COP) Note: Inputs/outputs are also available on connector XF11
	3 EAF11	
	4 EAF12	
	5 EAF13	
	6 EAF14	
	7 EAF15	
	8 EAF16	
	9 0(24V)	0V – power supply for car operation panel COP (for flat cable connection of COP)
	10 +24V	+24V power supply for car operation panel COP (for flat cable connection of COP)
	11 NL	Emergency light in car operation panel COP (FVE output A7, for flat cable connection of COP)
	12 +24A	Battery buffered +24V power supply for car operation panel COP (for flat cable connection of COP)
	13 M	Intercom microphone (for flat cable connection of COP)
	14 L	Intercom loudspeaker (for flat cable connection of COP)
XF5 Nur FVE1.1	1 +24A	Battery buffered 24V power supply for Position unit KLST GmbH (flat cable)
	2 SM	Door zone switch SGM of Position unit KLST GmbH (flat cable)
	3 SU	Inputs E25, E24, E26, E27 (low active), for door zone switches SGU and SGO and for prelimit switches VO and VU (Position unit KLST GmbH over flat cable)
	4 SO	
	5 VO	
	6 VU	
	7 0(24V)	0V power supply for Position unit KLST GmbH (flat cable)
	8 0(24V)	
	9 +24V	24V power supply for Position unit KLST GmbH (flat cable)
	10 +24V	
XF6	1 CH+	Control bus (CAN Bus 1) – High signal trailing cable
	2 CH-	Control bus (CAN Bus 1) – Low signal trailing cable
	3 0(24V)	0V – power supply for shield of CAN bus cable (trailing cable)
XF7 Only FVE2.1	1 NO	Alarm relay - N.O. contact
	2 COM	Alarm relay - Common
	3 NC	Alarm relay - N.C. contact
XF7.1	1 +24V	+24V power supply, for additional components
	2 0(24V)	0V – power supply
	3 Res1	Free connectors for additional trailing cable wires; onboard connected to XF1.Res1-6
	4 Res2	
	5 Res3	
	6 Res4	
	7 Res5	
	8 Res6	
XF7.2	1 0(24V)	Input E27 and 0V (Common) for lower prelimit switch VU
	2 VU	
	3 0(24V)	Input E25 and 0V (Common) for lower doorzone switch SGU
	4 SU	

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Position	Terminal no., Description		Function
	5	0(24V)	Input and 0V (Common) for doorzone switch SGM
	6	SM	Onboard connected to trailing cable (XF8.9 - version 1.1; XF8.11 - version 2.1)
	7	0(24V)	Input E24 and 0V (Common) for upper doorzone switch SGO
	8	SO	
	9	0(24V)	Input E26 and 0V (Common) for upper prelimit switch VO
	10	VO	
XF7.3 Nur FVE2.1	1	CH-	Control bus (CAN Bus 1) – Low signal for absolute position encoder
	2	CH+	Control bus (CAN Bus 1) – High signal for absolute position encoder
	3	0(24V)	0V – power supply for absolute position encoder
	4	+24V	+24V – power supply for absolute position encoder
	5	+24A	Battery buffered +24V – power supply for absolute position encoder
	6	0(24V)	0V – power supply for shield CAN bus cable position encoder
XF8	1.1	2.1	Important! Different connector size for FVE version 1.1 and version 2.1
	1	1	T1
	2	2	T2
	3	3	T3
		4	-
	4	5	SL1
	5	6	SL2
		7	-
	6	8	+24A
	7	9	0(24V)
	8	10	+24V
	9	11	SM
XF9	10	12	NR
	1	SL2	Shaft light push on top of car
	2	SL1	
	3	Res	Free connector, onboard connected to XF17.9
	4	T2	230V-N for 2. door controller (connected to XF9.2)
	5	T1	230V-L for 2. door controller (connected to XF9.1)
	6	T3	Door motor 400V-L3
	7	T2	Door motor 400V-L2 or 230V-N (Door controller)
XF10.1	8	T1	Door motor 400V-L1 or 230V-L (Door controller)
	1	0(24V)	Input E1 and Common (0V), low side switching, free programmable, for door open switch door 1
	2	E1	
	3	0(24V)	Input E2 and Common (0V), low side switching, free programmable, for door closed switch door 1
	4	E2	
	5	0(24V)	Input E3 and Common (0V), low side switching, free programmable, for door reverse switch door 1 (mechanical obstacle)
	6	E3	
	7	0(24V)	Input E4 and Common (0V), low side switching, free programmable, for light screen door 1
XF10.2	8	E4	
	1	0(24V)	Input E5 and Common (0V), low side switching, free programmable, for door open switch door 2
	2	E5	
	3	0(24V)	Input E6 and Common (0V), low side switching, free programmable, for door closed switch door 2
	4	E6	
	5	0(24V)	Input E7 and Common (0V), low side switching, free programmable, for door reverse switch door 2 (mechanical obstacle)
	6	E7	
	7	0(24V)	Input E8 and Common (0V), low side switching, free programmable, for light screen door 2
XF10.3	8	E8	
	1	NR	Alarm call, e.g. for alarm push on top of car or for alarm horn or external alarm relay
	2	NL	Emergency light (e.g. in cabin roof); FVE output A7

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Position	Terminal no., Description		Function
	3	+24A	Battery buffered +24V power supply, e.g. for alarm horn, external alarm relay, emergency light in cabin roof
	4	M	Intercom system - microphone (e.g. for additional Intercom unit on top of car
	5	L	Intercom system - loudspeaker (e.g. for additional Intercom unit on top of car
	6	0(24V)	0V – power supply
	7	0(24V)	Input E17 and Common (0V)
	8	EF17	
XF11	1	EAF9	8 Inputs / Outputs E9 to E16 / A9 to A16, free programmable, low active
	2	EAF10	
	3	EAF11	
	4	EAF12	
	5	EAF13	
	6	EAF14	
	7	EAF15	
	8	EAF16	
XF12	1	0(24V)	0V – power supply for inspection inputs
	2	IS	Input E21 (Inspection fast)
	3	TT	Input E22 (2. contact of emergency stop push Inspection)
	4	IU	Input E19 (Inspection upwards)
	5	ID	Input E20 (Inspection downwards)
	6	IE	Input E18 (Inspection on)
	7	Frei	
	8	SKl	Safety circuit (behind Inspection switch)
	9	Frei	
	10	SKZ	Safety circuit (behind Inspection switch for door zone bypass)
	11	Frei	
	12	SKS	Safety circuit (before Inspection switch)
XF13		PE	Connector for PE (earth) on top of car
XF14	1	0(24V)	0V – power supply
	2	0(24V)	
	3	0(24V)	
	4	0(24V)	
	5	+24V	+24V – power supply
	6	+24V	
	7	+24V	
	8	+24A	Battery buffered +24V – power supply
XF15	1	SKT2	Safety circuit car door 2
	2		
	3	SKT1	Safety circuit car door 1
	4		
	5	SKS	Safety circuit, e.g. slack rope switch
	6		
	7	SKN	Safety circuit, e.g. emergency stop in car operation panel COP
	8		
	9	SKF	Safety circuit safety gear contact Note: All safety switches connected here will be bypassed by emergency recall operation
	10		
XF16	1	N-FK	Neutral car light power supply
	2	N-FK	
	3	N-FK	
	4	N-FK	
	5	FKL	Car light; switched by relay KF5 (output A5)
	6	L FK	Car light power, monitoring of car light (input E28, 110V / 230V AC)

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Position	Terminal no., Description		Function
	7	L_FK	
	8	VEN	Car ventilator, switched by relay KF6 (output A6)
XF17	1	SKK	Trailing cable, safety circuit to car
	2	SKF	Trailing cable, safety circuit behind safety gear
	3	SKI	Trailing cable, safety circuit behind inspection
	4	SKD	Trailing cable, safety circuit behind revolving door
	5	SKT	Trailing cable, safety circuit behind car door
	6	SKZ	Trailing cable, safety circuit behind inspection for door zone bypass
	7	N_FK	Trailing cable, neutral of car light power supply
	8	L_FL	Trailing cable, car light power supply, monitored by input E28 (110V / 230V AC)
	9	Res.	Trailing cable, free wire, onboard connected to XF9.3
XF18	Connector for Software download		
XF19 Only FVE1.1	1	+24V	Connector for additional inspection relay; onboard connected to XF12.6
	2	IE	
XF20 Only FVE1.1	1	Frei	Mini-DIN connector for handheld terminal (CAN-Bus, battery buffered 24V power supply)
	2	Frei	
	3	C-	
	4	0(24V)	
	5	C+	
	6	+24A	
XF20 Only FVE2.1	1	+24A	Connector for handheld terminal (CAN-Bus, battery buffered 24V power supply)
	2	0(24V)	
	3	C+	
	4	C-	
XF21	Modul 1		Slot 1 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XFJ1
XF22	Modul 2		Slot 1 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XFJ2
LED			LED "Software is running"

Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	<200mA @ 25°C (all relays and in-/outputs active)
Max. input current 24V inputs:	10mA @ 25°C / Input
Max. current KF1 to KF6:	8A/250V AC / Relay
Max. output current A9-16	500mA @ 25°C / Output
Max. input current 230V input (car light):	10mA @ 25°C, 230VAC, 50Hz
Mechanical dimensions:	Length: 225mm Width: 130mm Height: ca. 40mm

Characteristics and features:

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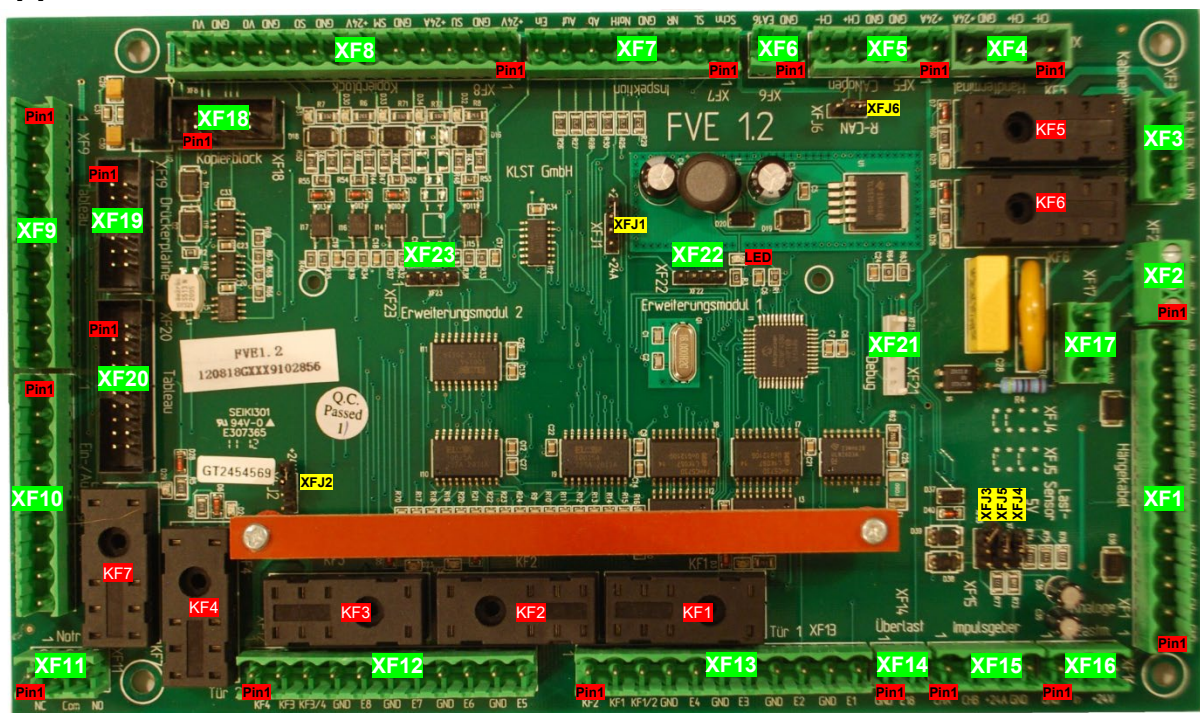
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The module FVE is designed as an intelligent distribution board for use on the car roof or in the car operation panel COP. Therefore several distribution terminals are located on the FVE, which means no additional terminals are required normally on top of car car or in the car operation panel COP.

- PIC18-Microcontroller with integrated Flash memory (32kByte), RAM (1536 Byte) and EEPROM (256 Byte)
- integrated CAN bus controller
- CAN interface with high speed driver according to ISO11898 with galvanic isolation
- Supervision input for car light power (110V / 230V AC, 50 / 60 Hz), galvanic isolated
- Relay for switching off car light
- Relay for car ventilator
- ICSP interface for In-Circuit programming (Software download)
- 8 Inputs and 8 Outputs, always 1 input and 1 output connected together onboard (lowside active)
- 18 free programmable digital inputs (lowside active)
- 4 free programmable relays
- 4-layer PCB with internal power layers
- integrated emergency light output (max. 800 mA)
- integrated alarm relay with 1 changeover contact (only Hardware version 2.1)
- connector for handheld terminal (hardware version 1.1: Mini-DIN connector, Adapter cable necessary)

Appendix 1.4 Module FVE 1.2



Position	Terminal no. Description	Function
XFJ1		Setting the power supply mode for UEA board connected to right slot (XF22): <ul style="list-style-type: none"> - Jumper set to the top: normal 24V power supply - Jumper set to the bottom: battery buffered 24V power supply
XFJ2		Setting the power supply mode for UEA board connected to left slot (XF23): <ul style="list-style-type: none"> - Jumper set to the top: normal 24V power supply - Jumper set to the bottom: battery buffered 24V power supply
XFJ3		Don't set - for internal use only (PCB test)

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Position	Terminal no. Description		Function
XFJ4 XFJ5	XFJ4	XFJ5	Power level of analog load sensor
			Sensor output 0 5V
			Sensor output 0 8V
			Sensor output 0 12V
			Sensor output 0 16V
XFJ6	Jumper for CAN bus terminator → Jumper must be set if FVE is located at the end of the CAN bus cable.		
XF1	1	0(24V)	0V – power supply for shield CAN bus cable (trailing cable)
	2	CH-	Control bus (CAN Bus 1) – Low signal (trailing cable)
	3	CH+	Control bus (CAN Bus 1) – High signal (trailing cable)
	4	+24A	Battery buffered +24V power supply from trailing cable
	5	M	Intercom microphone from trailing cable
	6	L	Intercom loudspeaker from trailing cable
	7	CHA	Incremental encoder channel A and B on top of car (onboard connected to XF15)
	8	CHB	
	9	GND	0V power supply from trailing cable
	10	+24V	+24V power supply from trailing cable
	11	SM	Door zone switch SGM to trailing cable
	12	NR	Alarm call to trailing cable
XF2	1	Res1	Trailing cable, free wires, onboard connected to XF17.Res1-3
	2	Res2	
	3	Res3	
XF3	1	VEN	Car ventilator, switched by relay KF6 (output A6)
	2	FKL	Car light; switched by relay KF5 (output A5)
	3	N_FK	Car light power, monitoring of car light (input E28, 110V / 230V AC)
	4	L_FK	
XF4	1	+24A	Connector for handheld terminal (CAN-Bus, battery buffered 24V power supply)
	2	0(24V)	Connector for handheld terminal (0V)
	3	CH+	Connector for handheld terminal (CAN bus high signal)
	4	CH-	Connector for handheld terminal (CAN bus low signal)
XF5	1	+24A	Battery buffered +24V – power supply for absolute position encoder
	2	GND	0V – power supply for absolute position encoder
	3	GND	0V – power supply for shield CAN bus cable position encoder
	4	CH+	Control bus (CAN Bus 1) – High signal for absolute position encoder
	5	CH-	Control bus (CAN Bus 1) – Low signal for absolute position encoder
XF6	1	GND	Input E16 / output A16 and 0V (Common), free programmable, default: full load contact
	2	EA16	
XF7	1	Schn	Input E22, free programmable, default: Inspection fast
	2	SL	Input E17, free programmable, default: shaft light push top of car
	3	NR	Alarm call push top of car
	4	GND	0V – power supply for inspection inputs
	5	Noth.	Input E23, free programmable, default: 2. contact of emergency stop push Inspection
	6	Ab	Input E21, free programmable, default: Inspection downwards
	7	Auf	Input E20, free programmable, default: Inspection upwards
	8	Ein	Input E22, free programmable, default: Inspection on
XF8	1	+24V	Input E25 and 24V power supply, free programmable, default: lower door zone switch SGU
	2	GND	
	3	SU	
	4	+24A	Input and battery buffered +24V power supply for door zone switch SGM
	5	GND	
	6	SM	

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Position	Terminal no. Description	Function
	7 +24V	Input E24 and 24V power supply, free programmable, default: upper door zone switch SGO
	8 GND	
	9 SO	
	10 GND	Input E26 and 0V power supply, free programmable, default: upper prelimit switch VO
	11 VO	
	12 GND	Input E27 and 0V power supply, free programmable, default: lower prelimit switch VO
	13 VU	
XF9	1 NR	Alarm call input from car operation panel COP
	2 GND	
	3 NL	Emergency light output A7
	4 +24A	
	5 L	Connection for Intercom in car operation panel COP (Microphone, Loudspeaker, battery buffered +24V power supply)
	6 M	
	7 +24A	
	8 CH+	Control bus (CAN Bus 1) – High signal for car operation panel COP
	9 CH-	Control bus (CAN Bus 1) – Low signal for car operation panel COP
	10 GND	0V - connector for cable shield to car operation panel COP
XF10	1 EAF9	7 Inputs / Outputs E9 to E15 / A9 to A15, free programmable, low active
	2 EAF10	
	3 EAF11	
	4 EAF12	
	5 EAF13	
	6 EAF14	
	7 EAF15	
	8 GND	0V power supply for Inputs E9-E15
	9 +24V	+24V power supply for Outputs A9-A15
XF11	1 NC	Potential free changeover contact of alarm call relay KF7
	2 COM	
	3 NO	
XF12	1 KF4.S	Relay KF4 (A4), N.O. contact, free programmable, default: Door close relay door 2
	2 KF3.S	Relay KF3 (A3), N.O. contact, free programmable, default: Door open relay door 2
	3 KF3/4	Common for N.O. contact relays KF3 and KF4
	4 GND	Input E8 and 0V power supply, free programmable, default: Light screen door 2
	5 EF8	
	6 GND	Input E7 and 0V power supply, free programmable, default: Reverse switch door 2 (mechanical obstacle)
	7 EF7	
	8 GND	Input E6 and 0V power supply, free programmable, default: Door closed limit switch door 2
	9 EF6	
	10 GND	Input E5 and 0V power supply, free programmable, default: Door opened limit switch door 2
	11 EF5	
XF13	1 KF2.S	Relay KF2 (A2), N.O. contact, free programmable, default: Door close relay door 1
	2 KF1.S	Relay KF1 (A1), N.O. contact, free programmable, default: Door open relay door 1
	3 KF1/2	Common for N.O. contact relays KF1 and KF2
	4 GND	Input E4 and 0V power supply, free programmable, default: Light screen door 1
	5 EF4	
	6 GND	Input E3 and 0V power supply, free programmable, default: Reverse switch door 1 (mechanical obstacle)
	7 EF3	
	8 GND	Input E2 and 0V power supply, free programmable, default: Door closed limit switch door 1
	9 EF2	

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Position	Terminal no.	Description	Function
	10	GND	Input E1 and 0V power supply, free programmable, default: Door opened limit switch door 1
	11	EF1	
XF14	1	GND	Input E18 and 0V power supply, free programmable, default: Overload signal
	2	EF18	
XF15	1	CHA	Connectors for incremental encoder channel A and B (direct connected to XF1.7+8)
	2	CHB	
	3	+24A	Battery buffered +24V power supply for incremental encoder
	4	GND	0V power supply for incremental encoder
XF16	1	GND	Connectors for analog load sensor and power supply +24V, sensor signal see Jumper XFJ4+5 above
	2	In	
	3	+24V	
XF17	1	Res1	Free connectors for additional trailing cable wires; onboard connected to XF17.Res1-3
	2	Res2	
	3	Res3	
XF18	1	+24A	Battery buffered 24V power supply for Position unit KLST GmbH (flat cable)
	2	SM	Door zone switch SGM of Position unit KLST GmbH (flat cable)
	3	SU	Inputs E25, E24, E26, E27 (low active), for door zone switches SGU and SGO and for prelimit switches VO and VU (Position unit KLST GmbH over flat cable)
	4	SO	
	5	VO	
	6	VU	
	7	0(24V)	0V power supply for Position unit KLST GmbH (flat cable)
	8	0(24V)	
	9	+24V	24V power supply for Position unit KLST GmbH (flat cable)
	10	+24V	
XF19	1	NR	Alarm call car operation panel COP (for flat cable connection of COP)
	2	EAF10	7 Inputs/Outputs E10-E16 and A10-A16 Low active, mainly for car operation panel COP (for flat cable connection of COP) Note: Inputs/outputs are also available on connector XF11
	3	EAF11	
	4	EAF12	
	5	EAF13	
	6	EAF14	
	7	EAF15	
	8	EAF16	
	9	GND	0V – power supply for car operation panel COP (for flat cable connection of COP)
	10	+24V	+24V power supply for car operation panel COP (for flat cable connection of COP)
	11	NL	Emergency light in car operation panel COP (FVE output A7, for flat cable connection of COP)
	12	+24A	Battery buffered +24V power supply for car operation panel COP (for flat cable connection of COP)
	13	M	Intercom microphone (for flat cable connection of COP)
	14	L	Intercom loudspeaker (for flat cable connection of COP)
XF20	1	NR	Alarm call car operation panel COP, flat cable to TVE
	2	EAF9	8 Inputs/Outputs E9-E16 and A9-A16 Low active, mainly for car operation panel COP (flat cable to TVE)
	3	EAF10	
	4	EAF11	
	5	EAF12	
	6	EAF13	
	7	EAF14	
	8	EAF15	
	9	EAF16	
	10	+24A	Battery buffered +24V power supply, flat cable to TVE
	11	+24V	+24V power supply, flat cable to TVE

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Position	Terminal no. Description	Function
	12 GND	0V power supply, flat cable to TVE
	13 +24V	+24V power supply, flat cable to TVE
	14 NL	Emergency light car operation panel COP (Output A7), flat cable to TVE
	15 +24A	Battery buffered +24V power supply, flat cable to TVE
	16 M	Intercom microphone, flat cable to TVE
	17 L	Intercom loudspeaker, flat cable to TVE
	18 CH+	Control bus (CAN Bus 1) – High signal, flat cable to TVE
	19 CH-	Control bus (CAN Bus 1) – Low signal, flat cable to TVE
	20 GND	0V power supply, flat cable to TVE
XF21	Connector for Software download	
XF22	Modul 1	Slot 1 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XFJ1
XF23	Modul 2	Slot 1 for connecting a UEA to power supply and CAN bus For configuration see description of Jumper XFJ2
LED		LED "Software is running"

Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	<200mA @ 25°C (all relays and in-/outputs active)
Max. input current 24V inputs:	10mA @ 25°C / Input
Max. current KF1 to KF7:	8A/250V AC / Relay
Max. output current A9-16	500mA @ 25°C / Output
Max. input current 230V input (car light):	10mA @ 25°C, 230VAC, 50Hz
Mechanical dimensions:	Length: 230mm Width: 135mm Height: ca. 40mm

Characteristics and features:

The module FVE is designed as an intelligent distribution board for use on the car roof or in the car operation panel COP. However, in opposite to FVE version 1.1 and 2.1, there are no connectors for safety circuit, earth connection, power supply etc. onboard.

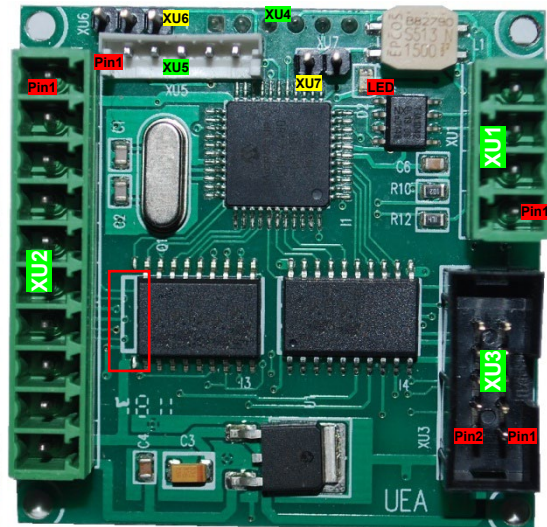
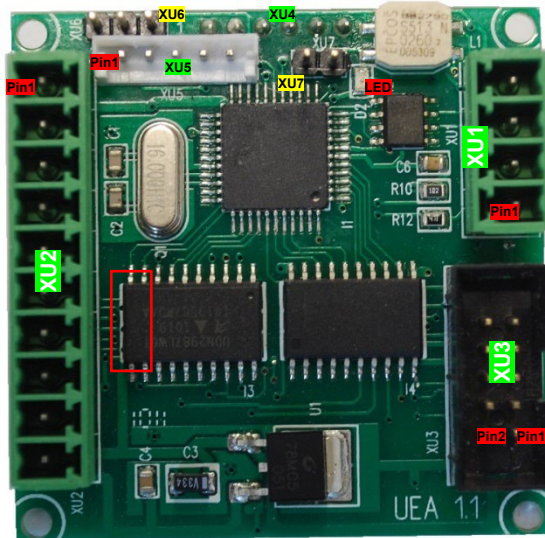
- PIC18-Microcontroller with integrated Flash memory (32kByte), RAM (1536 Byte) and EEPROM (256 Byte)
- integrated CAN bus controller
- CAN interface with high speed driver according to ISO11898 with galvanic isolation
- Supervision input for car light power (110V / 230V AC, 50 / 60 Hz), galvanic isolated
- Relay for switching off car light
- Relay for car ventilator
- ICSP interface for In-Circuit programming (Software download)
- 8 Inputs and 8 Outputs, always 1 input and 1 output connected together onboard (lowside active)
- 18 free programmable digital inputs (lowside active)
- 4 free programmable relays
- integrated alarm call relay (potential free changeover contact)
- integrated emergency light output (max. 800 mA)
- 4-layer PCB with internal power layers

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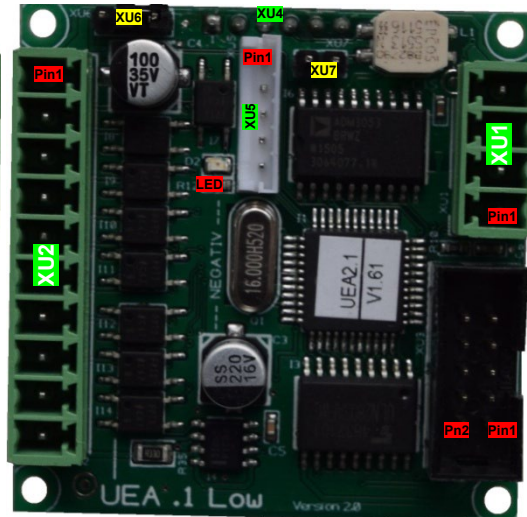
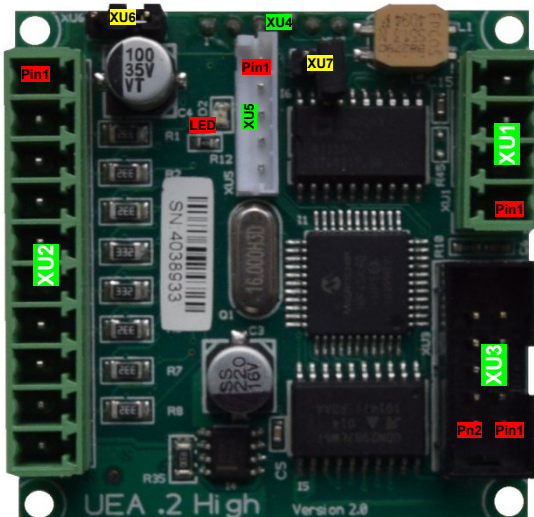
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- connector for handheld terminal

Appendix 1.5 Module UEA



Difference between UEA.1 ↔ UEA.2: The circuit I3 of UEA.1 has two pins less, so that a white frame from the PCB layout can be seen left of the circuit I3 (see red frame in the pictures).



Position	Pin	Function
XU1	1	+24V +24V Power supply input
	2	0(24V) 0V Power supply input
	3	CAN+ CAN-Bus – High signal
	4	CAN- CAN-Bus – Low signal
XU2	1	0(24V) 0V Power supply for inputs / outputs

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	2	D1	8 inputs / outputs E1-E8 and A1-A8, low active (UEA.1) or high active (UEA.2), free programmable. Connector XU2 is in parallel to XU3 (same inputs/outputs)
	3	D2	
	4	D3	
	5	D4	
	6	D5	
	7	D6	
	8	D7	
	9	D8	
	10	+24V	+24V Power supply for inputs / outputs
XU3	1	D1	8 inputs / outputs E1-E8 and A1-A8, low active (UEA.1) or high active (UEA.2), free programmable. Connector XU3 is in parallel to XU2 (same inputs/outputs)
	2	D2	
	3	D3	
	4	D4	
	5	D5	
	6	D6	
	7	D7	
	8	D8	
	9	0(24V)	0V Power supply for inputs / outputs
	10	+24V	+24V Power supply for inputs / outputs
XU4	Connector for plugging UEA on HSE, FVE or TVE		
	1	Pin1	Not used (closed to protect against incorrect connection)
	2	+24V	+24V Power supply input
	3	0(24V)	0V Power supply input
	4	CAN+	CAN-Bus – High signal
	5	CAN-	CAN-Bus – Low signal
	6	Pin6	Not used (closed to protect against incorrect connection)
XU5	Connector for Software download		
XU6	Jumper for setting of node ID:		
	Jumper set to the left (PCB edge): Normal operation Jumper set to the right: Initialization mode (setting of node ID)		
XU7	Jumper for CAN bus terminator		
	→ Jumper must be set if UEA is located at the end of the CAN bus cable.		
LED	LED "Software is running"		

The UEA is a universal module with 8 inputs and 8 outputs and CAN bus connection, which can perform various tasks within the lift controller MLC-8000.
The function is activated by setting the node number.

Functional name	Description
ASE	UEA on control bus as an interface to drive (frequency converter, electronic valve control, ...)
PSE	UEA on control bus for connecting an incremental encoder for positioning; transformation of encoder signals to CAN-bus information. The PSE is usually used if the incremental encoder is mounted on top of car.
TSE1...16	UEA on control bus for connecting car calls, key switches, indicators and so on. Normally used inside car operation panel COP.
ESE1.1 ... ESE64.8	UEA on shaft bus for connecting landing calls, key switches, indicators and so on. Normally used inside landing operation panel LOP or inside main controller box.
PSE2	UEA in connection with double AWG for switching the second door zone signal (for safety unit) on a separate CAN bus. For this function a special software must be used on UEA.

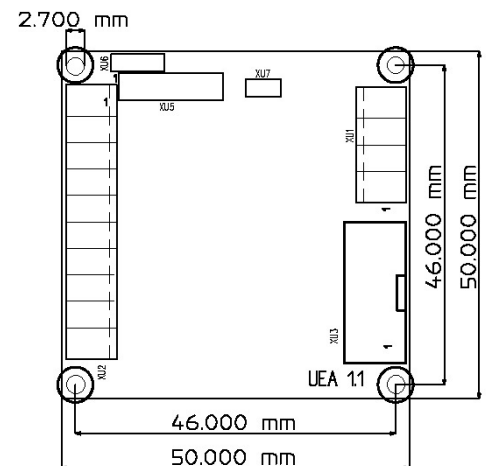
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Simulation	UEA on control bus for lift simulation purposes (test mode, demonstration mode)
Door simulator	Simulation of a CANopen operated door controller (for test purposes). For this function a special software must be used on UEA.

Technical specifications:

Temperature range:	0°C to +60°C
Current in idle mode:	about 35mA @ 25°C
Max. input current D1-8:	10mA @ 25°C / input
Max. output current D1-8 (UEA.1):	500mA @ 25°C / output
Max. output current D1-8 (UEA.2):	350mA @ 25°C / output
Mechanical dimensions:	Length: 50mm Width: 50mm Height: ca. 20mm (without connectors)



Characteristics and features:

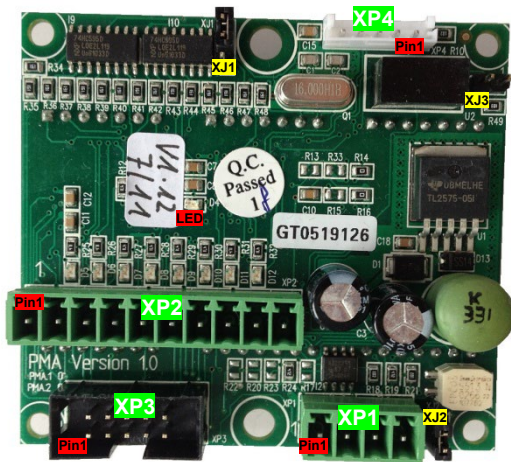
- PIC18 microcontroller with internal Flash (32kByte), RAM (1536 Byte) and EEPROM (256 Byte)
- integrated CAN controller
- CAN interface with high-speed driver according to ISO11898 with galvanic isolation (Hardware version 2.1) or without galvanic isolation (Hardware version 1.1)
- ICSP interface for In-Circuit-Programming (Software download)
- 8 inputs and 8 outputs, always 1 input and 1 output onboard connected
- UEA.1: lowside switching inputs and outputs
- UEA.2: lowside switching inputs and outputs
- Even if always 1 input and 1 output are connected together they may be used for different functions at the same time, because every active output is switched off every 9ms for 3ms (pulsed output) to enable reading of the input in this time.
Example: Input used as car call, output used as level indicator

Appendix 1.6 Module PMA

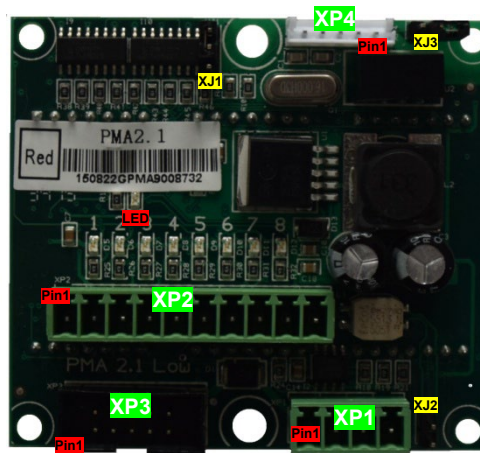
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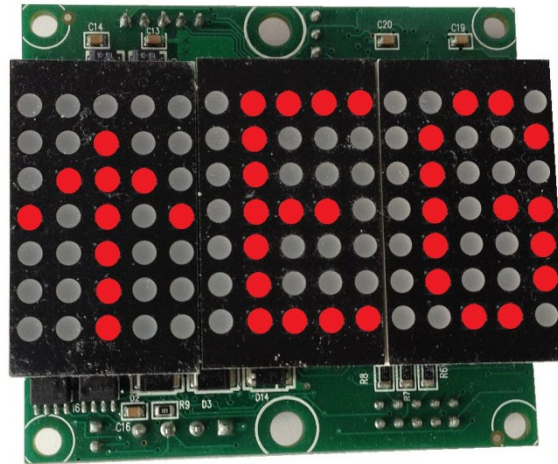
Operating manual V2.0



Hardware Version 1.0



Hardware Version 2.1



Position	Pin	Function
XP1	1	+24V +24V Power supply input
	2	0(24V) 0V Power supply input
	3	CAN+ CAN-Bus – High signal
	4	CAN- CAN-Bus – Low signal
XP2	1	0(24V) 0V Power supply for inputs / outputs
	2	D1 8 inputs / outputs E1-E8 and A1-A8, low active, free programmable.
	3	D2 Connector XP2 is in parallel to XP3 (same inputs/outputs)
	4	D3
	5	D4
	6	D5
	7	D6
	8	D7
	9	D8
	10	+24V +24V Power supply for inputs / outputs

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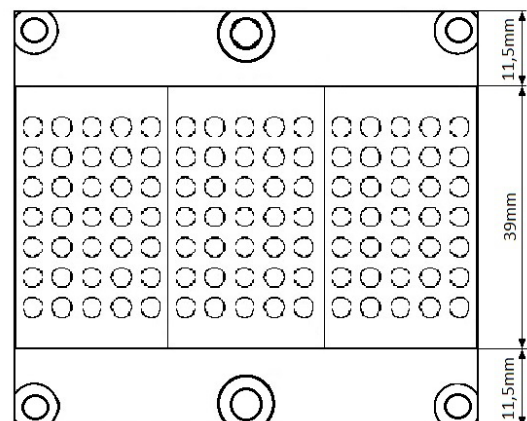
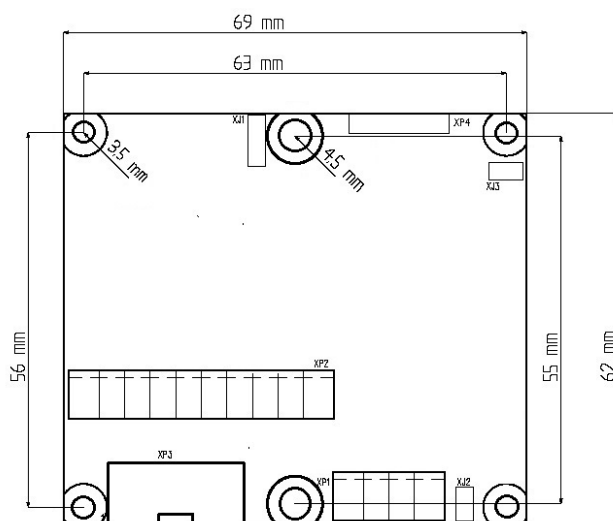
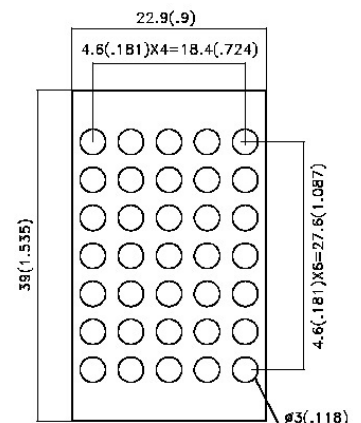
Operating manual V2.0

XP3	1	D1	8 inputs / outputs E1-E8 and A1-A8, low active, free programmable. Connector XP3 is in parallel to XP2 (same inputs/outputs)
	2	D2	
	3	D3	
	4	D4	
	5	D5	
	6	D6	
	7	D7	
	8	D8	
	9	0(24V)	0V Power supply for inputs / outputs
	10	+24V	+24V Power supply for inputs / outputs
XP4	Connector for Software download		
XJ1	Jumper for setting of node ID: Jumper set to the top (PCB edge): Normal operation Jumper set to the bottom: Initialization mode (setting of node ID)		
XJ2	Jumper for CAN bus terminator → Jumper must be set if PMA is located at the end of the CAN bus cable.		
XJ3	Jumper for orientation of PMA: horizontal (Jumper not set) or vertical (Jumper set)		
LED	LED "Software is running"		

Technical specifications:

Temperature range:	0°C to +60°C
Current in idle mode:	ca. 35mA @ 25°C
Max. input current D1-8:	10mA @ 25°C / Input
Max. output current D1-8 (PMA.1):	500mA @ 25°C / Output
Max. output current D1-8 (PMA.2):	350mA @ 25°C / Output

Mechanical dimensions:	Length:	69mm
	Width:	62mm
	Height:	ca. 30mm (without connector)
	Display module:	3 Modules a 39*23mm



Lift controller MLC 8000 Operating manual V2.0

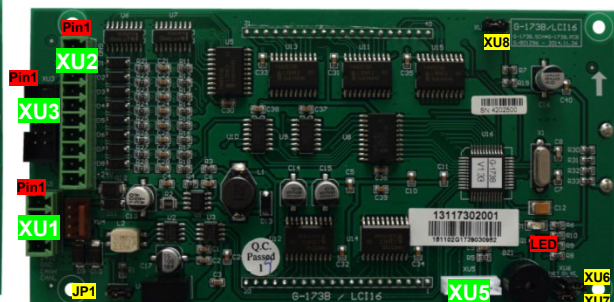
Characteristics and features:

- Position indicator 15*7 dots
- selectable orientation: horizontal or vertical
- Standard colour red, optional in green and blue
- PIC18 microcontroller with internal Flash (32kByte), RAM (1536 Byte) and EEPROM (256 Byte)
- integrated CAN controller
- CAN interface with high-speed driver according to ISO11898 with galvanic isolation
- ICSP interface for In-Circuit-Programming (Software download)
- 8 inputs and 8 outputs, always 1 input and 1 output onboard connected
- PMA.1: lowside switching inputs / outputs
- PMA.2: highside switching inputs / outputs
- Even if always 1 input and 1 output are connected together they may be used for different functions at the same time, because every active output is switched off every 9ms for 3ms (pulsed output) to enable reading of the input in this time.
Example: Input used as car call, output used as level indicator

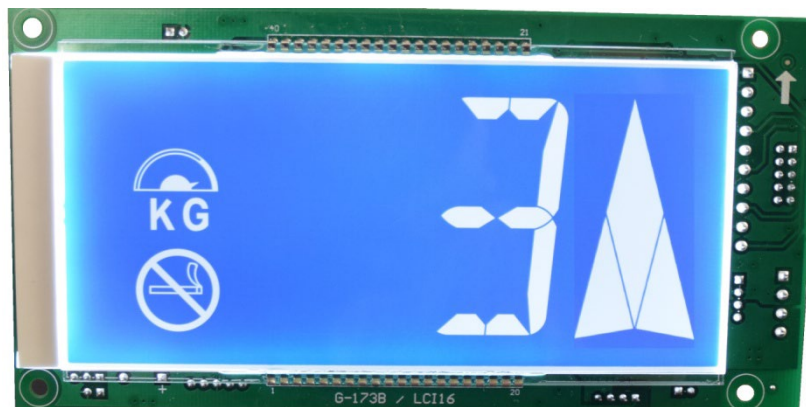
Appendix 1.7 Module LCI16



Hardware Version 1.0 (G-173A)



Hardware Version 2.0 (G-173B)



Position	Pin	Function
XU1	1	+24V +24V Power supply input
	2	0(24V) 0V Power supply input
	3	CAN+ CAN-Bus – High signal
	4	CAN- CAN-Bus – Low signal
XU2	1	0(24V) 0V Power supply for inputs / outputs

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	2	D1	8 inputs / outputs E1-E8 and A1-A8, low active, free programmable. Connector XU2 is in parallel to XU3 (same inputs/outputs)
	3	D2	
	4	D3	
	5	D4	
	6	D5	
	7	D6	
	8	D7	
	9	D8	
	10	+24V	+24V Power supply for inputs / outputs
XU3	1	D1	8 inputs / outputs E1-E8 and A1-A8, low active, free programmable. Connector XU3 is in parallel to XU2 (same inputs/outputs)
	2	D2	
	3	D3	
	4	D4	
	5	D5	
	6	D6	
	7	D7	
	8	D8	
	9	0(24V)	0V Power supply for inputs / outputs
	10	+24V	+24V Power supply for inputs / outputs
XU5	Connector for Software download		
XU6	Jumper for setting of node ID: Jumper not set (Version 1.0) or set to the right (PCB edge) (Version 2.0): Normal operation Jumper set (Version 1.0) or set to the left (Version 2.0): Initialization mode (setting of node ID)		
JP1 bzw. JP5	Jumper for CAN bus terminator (JP5 for Version 1.0, JP1 for Version 2.0) → Jumper must be set if LCI16 is located at the end of the CAN bus cable.		
XU8	Demo mode (Jumper set)		
XU7	Activation of onboard buzzer. The function of the buzzer must be set by parameter in menu "Special parameter" - "Car display".		
LED	LED "Software is running"		

Technical specifications:

Temperature range: 0°C to +60°C

Current in idle mode: ca. 50mA @ 25°C

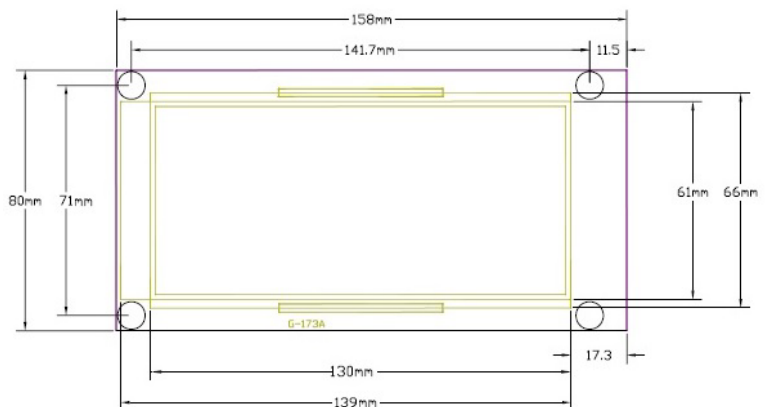
Max. input current D1-8: 10mA @ 25°C / Input

Max. output current D1-8 (LCI16.1): 500mA @ 25°C / Output

Max. output current D1-8 (LCI16.2): 350mA @ 25°C / Output

Mechanical dimensions:

Length: 158mm
Width: 80mm
Height: ca. 30mm (without connector)
Active display: 130*61mm
Character height: 45mm



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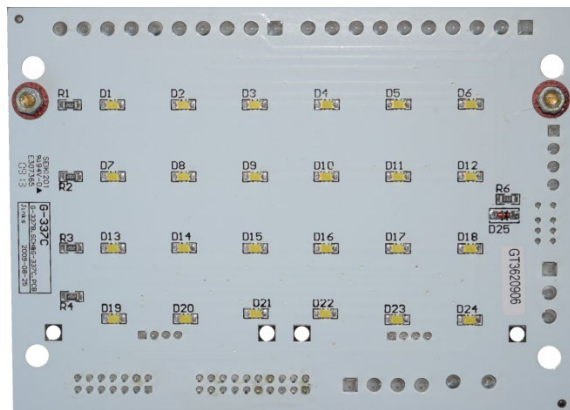
Lift controller MLC 8000

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Characteristics and features:

- Level indicator - blue segmented LCD display 2 characters with 16 segments each
 - Integrated overload display (overload symbol)
 - Integrated buzzer (programmable, for overload, door closing or call acknowledge)
 - Integrated non-smoking symbol (activation by parameter)
 - PIC18 microcontroller with internal Flash (32kByte), RAM (1536 Byte) and EEPROM (256 Byte)
 - integrated CAN controller
 - CAN interface with high-speed driver according to ISO11898 with galvanic isolation
 - ICSP interface for In-Circuit-Programming (Software download)
 - 8 inputs and 8 outputs, always 1 input and 1 output onboard connected
 - LCI16.1: lowside switching inputs / outputs
 - LCI16.2: highside switching inputs / outputs
 - Even if always 1 input and 1 output are connected together they may be used for different functions at the same time, because every active output is switched off every 9ms for 3ms (pulsed output) to enable reading of the input in this time.
- Example: Input used as car call, output used as level indicator

Appendix 1.8 Module TVE



Position	Pin	Function	
XT1	1	L	Connector for loudspeaker of Intercom
	2	M	Connector for microphone of Intercom
	3	+24A	Battery buffered 24V power for use in car operation panel COP (e.g. emergency light, Intercom)
	4		
	5	NL	Emergency light (connected to LEDs)
	6	NR	Alarm call (connected to alarm call relay)
	7	0(24V)	0V power supply for use in car operation panel COP
	8		
	9	+24V	+24V power supply for use in car operation panel COP
	10		
XT2	Interface Connector to FVE Version 1.1 (see FVE description above, connector XF2)		
	1	L	Connector for loudspeaker of Intercom
	2	M	Connector for microphone of Intercom
	3	NL	Emergency light (from emergency light output A7 FVE)
	4	NR	Alarm call
	5	+24A	Battery buffered 24V power supply
	6	+24V	+24V power supply
	7	0(24V)	0V power supply
	8	CH-	CAN bus – Low signal
	9	CH+	CAN bus – High signal

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	10	0(24V)	0V – power for shield of COP cable
XT3	Connector for additional modules in car operation panel COP (e.g. PMA)		
	1	+24V	+24V Power supply
	2	0(24V)	0V Power supply
	3	CH+	CAN-Bus – High signal
	4	CH-	CAN bus – Low signal
XT4	Alarm call relay - potential free contact		
	1	KT1C	Alarm relay common
	2	KT1Ö	N.C. contact
	3	KT1S	N.O. contact
XT5	Connector for handheld terminal		
	1	+24A	Battery buffered 24V power supply
	2	0(24V)	0V Power supply
	3	CH+	CAN-Bus – High signal
	4	CH-	CAN bus – Low signal
XT6	Flat cable connection to FVE Version 1.2 (see description of FVE 1.2, connector XF20)		
	1	NR	Alarm call
	2	EAF9	8 connected inputs / outputs of FVE (E9-E16 and A9-A16 0V switching) Connector 2 (EAF9) is connected with the onboard buzzer of TVE
	3	EAF10	
	4	EAF11	
	5	EAF12	
	6	EAF13	
	7	EAF14	
	8	EAF15	
	9	EAF16	
	10	+24A	Battery buffered 24V power
	11	+24V	+24V power
	12	GND	0V power
	13	+24V	+24V power
	14	NL	Emergency light car operation panel COP (output A7 FVE)
	15	+24A	Battery buffered 24V power
	16	M	Intercom microphone
	17	L	Intercom loudspeaker
	18	CH+	CAN-Bus – High signal
	19	CH-	CAN-Bus – Low signal
	20	GND	0V power
XT7	Flat cable connection to FVE Version 1.1 (Connector XF4) or to connect to car call boards with flat cable connection (Fa. KLST)		
	1	NR	Alarm call car operation panel COP
	2	EAF10	7 connected inputs / outputs of FVE (E10-E16 and A10-A16 0V switching)
	3	EAF11	
	4	EAF12	
	5	EAF13	
	6	EAF14	
	7	EAF15	
	8	EAF16	
	9	0(24V)	0V power
	10	+24V	+24V power
	11	NL	Emergency light car operation panel COP (output A7 FVE)
	12	+24A	Battery buffered 24V power
	13	M	Intercom microphone
	14	L	Intercom loudspeaker
XT8	Slot 1 for connecting a UEA to power supply and CAN bus		
XT9	Slot 1 for connecting a UEA to power supply and CAN bus		
BZ1	Buzzer		

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KT1

Alarm call relay

Characteristics and features:

Distribution board and emergency light for use in car operation panel COP

- 24 white LED for area-wide lighting of emergency light window in car operation panel COP
- electric buzzer for use as overload signal, door close signal and / or car call acknowledgement (set by parameter); if flat cable is used as connection to FVE the buzzer is connected to output AF9 of FVE.
- Alarm call relay with potential-free changeover contact
- Slots for connecting the UEA boards
- Connector for handheld terminal

Technical specifications:

Temperature range: 0°C to +60°C

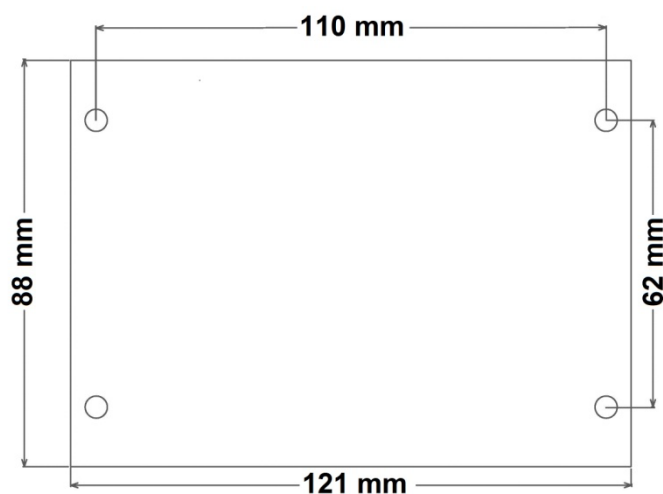
Max. current for LED @ 24V: ca. 100 mA

Max. current alarm call relay: 1 A

Max. voltage alarm call relay: 125V AC / 120 V DC

Mechanical dimensions: see picture

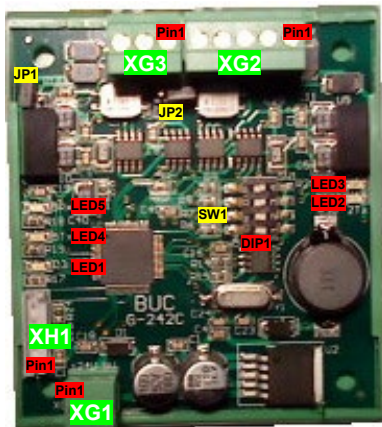
Height: ca. 25mm (without connector)



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Appendix 1.9 Module CBK



Position	Pin	Function			
XG1	1	+24V	+24V Power supply input		
	2	0(24V)	0V Power supply input		
XG2	1	0(24V)	0V Power supply; connector for cable shield		
	2	C2+	CAN bus High signal (CAN bus to HSE)		
	3	C2-	CAN bus Low signal (CAN bus to HSE)		
	4	C2+	See above		
	5	C2-	See above		
XG3	1	0(24V)	0V Power supply; connector for cable shield		
	2	C5+	CAN bus High signal (CAN bus to shaft)		
	3	C5-	CAN bus Low signal (CAN bus to shaft)		
XH1	Connector for Software download				
JP1	Jumper for CAN bus terminator (CAN bus to shaft) → Jumper must be set if CBK is located at the end of the CAN bus cable (shaft bus).				
JP2	Jumper for CAN bus terminator (CAN bus to HSE) → Jumper must be set if CBK is located at the end of the CAN bus cable.				
SW1	DIP switches for setting CBK address				
	DIP4	DIP3	DIP2	DIP1	
	Off	Off	Off	Off	CBK1 (Branch 1)
	Off	Off	Off	On	CBK2 (Branch 2)
	Off	Off	On	Off	CBK3 (Branch 3)
	Off	Off	On	On	CBK4 (Branch 4)
	Off	On	Off	Off	CBK5 (Branch 5)
	Off	On	Off	On	CBK6 (Branch 6)
	Off	On	On	Off	CBK7 (Branch 7)
	Off	On	On	On	CBK8 (Branch 8)
	On	X	X	X	CBK as Amplifier (e.g. on control bus)
LED1	LED “Software is running”				
LED2	Message transmission on CAN-Bus to HSE				
LED3	Message receiving on CAN-Bus to HSE				
LED4	Message transmission on CAN-Bus to shaft				
LED5	Message receiving on CAN-Bus to shaft				

Technical specifications:

Temperature range: 0°C to +60°C

Power supply: 24V DC

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Current consumption: ca. 110mA @ 25°C

Mechanical dimensions: Length: 80mm
Width: 70mm
Height: ca. 35mm (without connectors)

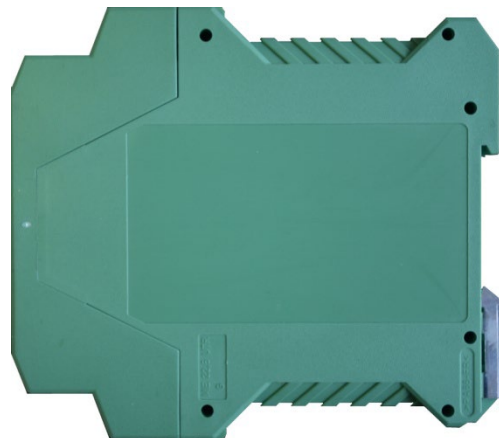
Characteristics and features:

- Physical segmentation and amplification of CAN bus signal
- Extension of possible number of bus nodes on shaft bus up to 512
- PCB in DIN rail housing
- dsPIC33 microcontroller with internal Flash (64kByte) and RAM (16 kByte)
- 2 integrated CAN-Controller
- 2 CAN bus interfaces with high speed driver according to ISO11898 with galvanic isolation
- ICSP interface for In-Circuit-Programming (Software download)

Appendix 1.10 Module SRU



Top view



Side view



Technical specifications:

Main signal output max. 230V AC / 4 A (Connectors S1 and S2)

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Feedback output: 24 V DC low active, max. 1 A (terminal FB)

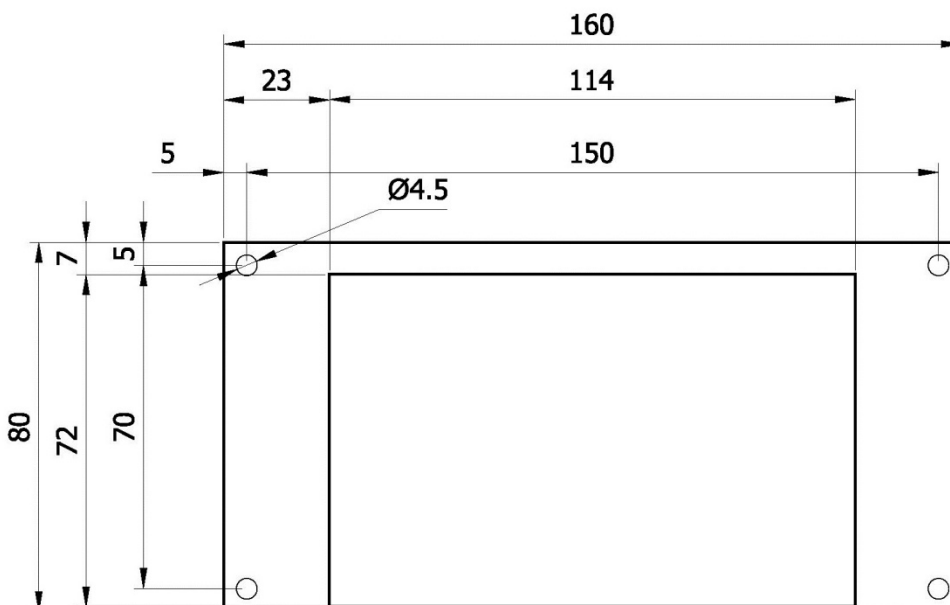
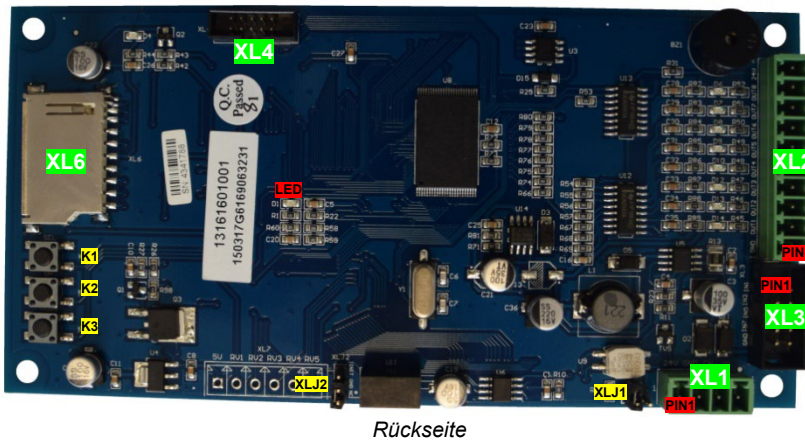
Nominal values: according to EN81-1, Appendix F1.2: 230V AC, 2A

EMC: according to requirements of EN 12015 and EN 12016

Characteristics and features:

- Safety unit for bypassing safety circuit of doors inside door zone (for re-levelling and advanced door opening)
- dual-channel version
- for use with main board MCU of lift controller MLC-8000
- TÜV certified
- for more details refer to TÜV certificat ESD 058-2008-CHI

Appendix 1.11 Module LCD-047



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Design examples

Position	Pin	Function	
XL1	1	+24V	+24V Power supply input
	2	0(24V)	0V Power supply input
	3	CAN+	CAN-Bus – High signal
	4	CAN-	CAN-Bus – Low signal
XL2	1	0(24V)	0V Power supply for inputs / outputs
	2	D1	8 inputs / outputs E1-E8 and A1-A8, low active, free programmable. Connector XL2 is in parallel to XL3 (same inputs/outputs)
	3	D2	
	4	D3	
	5	D4	
	6	D5	
	7	D6	
	8	D7	
	9	D8	
	10	+24V	+24V Power supply for inputs / outputs
XL3	1	D1	8 inputs / outputs E1-E8 and A1-A8, low active, free programmable. Connector XL3 is in parallel to XL2 (same inputs/outputs)
	2	D2	
	3	D3	
	4	D4	
	5	D5	
	6	D6	
	7	D7	
	8	D8	
	9	0(24V)	0V Power supply for inputs / outputs
	10	+24V	+24V Power supply for inputs / outputs
XL4	Connector for Software download		
XL6	SD card slot		
XLJ1	Jumper for CAN bus terminator → Jumper must be set if LCD-047 is located at the end of the CAN bus cable.		
XLJ2	Jumper for setting of node ID: Jumper set to the PCB edge: Normal operation Jumper set to the PCB centre: Initialization mode (setting of node ID)		
K1	Button to active design selection menu: With this menu it is possible to select one of 4 designs saved inside LCD-047. Selection is done with button K2 (cursor up) or button K3 (cursor down), activation by pressing button K1 again.		
K2	Button to activate colour selection menu. With this menu the colour of direction arrows, floor signs and date / time may be set (blue, yellow, black, white, grey, red or green). Additionally it can be selected if the direction arrows should scroll if the lift is moving. Selection of a menu item is done by pressing button K3 (cursor down), changing of selected setting is done by pressing button K1. Activation of settings is done by pressing button K2 again.		
K3	Button to navigate inside menus (cursor down, see above)		
LED	LED "Software is running"		

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Characteristics and features:

- Car level indicator - LCD graphic display with 480*272 Pixel, 24 Bit colour depth
- 4 different configurations (designs) free selectable (saved inside LCD-047)
- horizontal and vertical orientation possible
- Creation of configurations (designs) possible with PC-Software "LCD Style Designer"
- Display for:
 - Car level signs (two digits)
 - Floor pictures (free configurable size)
 - Direction arrows
 - Special functions
 - Overload
 - Date and time
- Downloading of new designs to LCD-047 by SD memory card
- Integrated overload buzzer
- powerful ARM7 32 bit microcontroller
- 128 MByte NAND-Flash memory for designs
- integrated CAN controller
- CAN interface with high-speed driver according to ISO11898 with galvanic isolation
- JTAG interface for In-Circuit-Programming (Software download)
- Energy saving mode (Standby - Backlite off) possible (selectable by lift controller parameter "Energy savings")
- 8 inputs and 8 outputs, always 1 input and 1 output onboard connected (lowside switching)
- Even if always 1 input and 1 output are connected together they may be used for different functions at the same time, because every active output is switched off every 9ms for 3ms (pulsed output) to enable reading of the input in this time.
Example: Input used as car call, output used as level indicator

Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	ca. 120mA @ 25°C (all inputs and outputs off)
Current consumption in Standby (Display off):	ca. 65mA @ 25°C
Max. input current D1-8:	10mA @ 25°C / Input
Max. output current D1-8:	500mA @ 25°C / Output
Mechanical dimensions:	Length: 160mm Width: 80mm Height: ca. 35mm (with connectors)
Viewing area LCD:	Size: 4,7 Zoll Width: 114mm Height: 72mm
LCD resolution	480 * 272 Pixel, 24Bit colour depth RGB Pixel size 0,216*0,216mm
Backlight	10 * LED

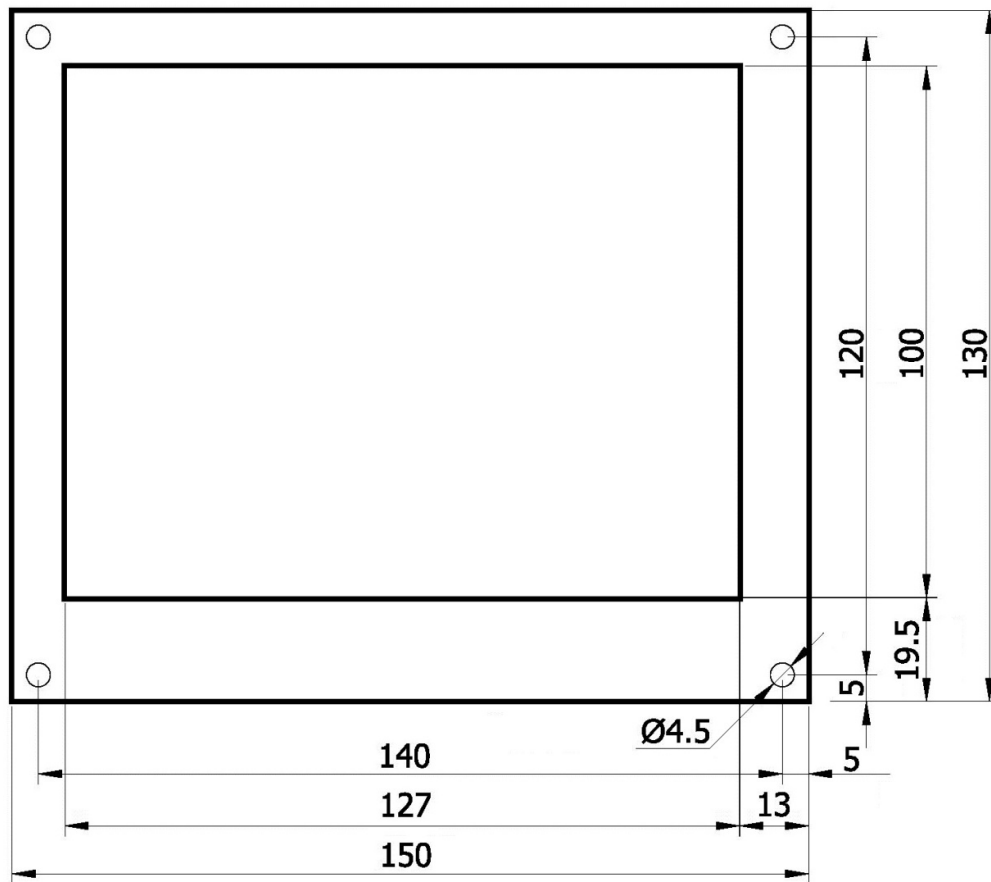
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Appendix 1.12 Module LCD-057





Position	Pin	Function
XL1	1	+24V +24V Power supply input
	2	0(24V) 0V Power supply input
	3	CAN+ CAN-Bus – High signal
	4	CAN- CAN-Bus – Low signal
XL2	1	0(24V) 0V Power supply for inputs / outputs
	2	D1 8 inputs / outputs E1-E8 and A1-A8, low active, free programmable.
	3	D2 Connector XL2 is in parallel to XL3 (same inputs/outputs)
	4	D3
	5	D4
	6	D5
	7	D6
	8	D7
	9	D8
	10	+24V +24V Power supply for inputs / outputs
XL3	1	D1 8 inputs / outputs E1-E8 and A1-A8, low active, free programmable.
	2	D2 Connector XL3 is in parallel to XL2 (same inputs/outputs)
	3	D3
	4	D4
	5	D5
	6	D6
	7	D7
	8	D8
	9	0(24V) 0V Power supply for inputs / outputs
	10	+24V +24V Power supply for inputs / outputs

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XL4	1	KT1C	Alarm relay common
	2	KT1O	N.C. contact
	3	KT1S	N.O. contact
XL5	1	+24A	Connector for handheld terminal (battery buffered 24V power supply)
	2	0(24V)	Connector for handheld terminal (0V power supply)
	3	CH+	Connector for handheld terminal (CAN bus high signal)
	4	CH-	Connector for handheld terminal (CAN bus high signal)
XL6	Flat cable connection to FVE Version 1.2 (see description of FVE 1.2, connector XF20)		
	1	NR	Alarm call
	2	EAF9	8 connected inputs / outputs of FVE (E9-E16 and A9-A16 0V switching) Connector 2 (EAF9) is connected with the onboard buzzer of LCD-057
	3	EAF10	
	4	EAF11	
	5	EAF12	
	6	EAF13	
	7	EAF14	
	8	EAF15	
	9	EAF16	
	10	+24A	Battery buffered 24V power
	11	+24V	+24V power
	12	GND	0V power
	13	+24V	+24V power
	14	NL	Emergency light car operation panel COP (from output A7 FVE)
	15	+24A	Battery buffered 24V power
	16	M	Intercom microphone
	17	L	Intercom loudspeaker
	18	CH+	CAN-Bus – High signal
	19	CH-	CAN-Bus – Low signal
	20	GND	0V power
XL7	Flat cable connection to FVE Version 1.1 (Connector XF4) or to connect to car call boards with flat cable connection (Fa. KLST)		
	1	NR	Alarm call car operation panel COP
	2	EAF10	7 connected inputs / outputs of FVE (E10-E16 and A10-A16 0V switching)
	3	EAF11	
	4	EAF12	
	5	EAF13	
	6	EAF14	
	7	EAF15	
	8	EAF16	
	9	GND	0V power
	10	+24V	+24V power
	11	NL	Emergency light car operation panel COP (output A7 FVE)
	12	+24A	Battery buffered 24V power
	13	M	Intercom microphone
	14	L	Intercom loudspeaker
XL8	1	GND	0V power supply
	2	WAIT	Signal from emergency telephone to display "Please wait"
	3	SPEAK	Signal from emergency telephone to display "Please speak"
	4	GND	0V power supply
	5	+24V	+24V power supply
	6	+24A	Battery buffered +24V power supply
	7	NR	Alarm call car operation panel COP
	8	NL	Alarm call car operation panel COP (output A7 of FVE)
	9	M	Intercom microphone
	10	L	Intercom loudspeaker
XL9	Connector for Software download		

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SD1	SD card slot
XLJ1	Jumper for CAN bus terminator → Jumper must be set if LCD-045 is located at the end of the CAN bus cable.
XLJ2	Jumper for setting of node ID: Jumper set to direction of XL9: Normal operation Jumper set to direction of XL4: Initialization mode (setting of node ID)
XLJ3	If Jumper set: LCD-057 is operated by battery buffered +24V power supply
XLJ4	Jumper set to board edge: Buzzer is controlled by LCD-057 microcontroller (Setting of function by "Parameter" - "Special param." - "Car display" - "Buzzer") Jumper set to connector XL4: Buzzer is controlled by output AF9 of FVE (only possible if LCD-057 is connected by 20pole flat cable to connector XL6 of FVE)
K1	Button to active design selection menu: With this menu it is possible to select one of 4 designs saved inside LCD-057. Selection is done with button K2 (cursor up) or button K3 (cursor down), activation by pressing button K1 again.
K2	Button to activate colour selection menu. With this menu the colour of direction arrows, floor signs and date / time may be set (blue, yellow, black, white, grey, red or green). Additionally it can be selected if the direction arrows should scroll if the lift is moving. Selection of a menu item is done by pressing button K3 (cursor down), changing of selected setting is done by pressing button K1. Activation of settings is done by pressing button K2 again.
K3	Button to navigate inside menus (cursor down, see above)
LED	LED "Software is running"

Characteristics and features:

- Car level display - LCD graphic display with 640*480 Pixeln, 24 Bit colour depth
- replaced Emergency light board TVE by additional connectors
- integrated emergency light function (emergency light picture free configurable)
- integrated alarm relay (1 changeover contact)
- 2 inputs (lowside switching) to connect to emergency telephone for displaying the information "Please wait" and "Please speak" (pictures free configurable)
- integrated connector for handheld terminal
- 4 different configurations (designs) free selectable (saved inside LCD-047)
- horizontal and vertical orientation possible
- Creation of configurations (designs) possible with PC-Software "LCD Style Designer"
- Display for:
 - Car level signs (two digits)
 - Floor pictures (free configurable size)
 - Direction arrows
 - Special functions
 - Overload
 - Date and time
- Downloading of new designs to LCD-047 by SD memory card
- Integrated overload buzzer
- powerful ARM7 32 bit microcontroller
- 128 MByte NAND-Flash memory for designs
- integrated CAN controller
- CAN interface with high-speed driver according to ISO11898 with galvanic isolation
- JTAG interface for In-Circuit-Programming (Software download)
- Energy saving mode (Standby - Backlite off) possible (selectable by lift controller parameter "Energy savings")
- 8 inputs and 8 outputs, always 1 input and 1 output onboard connected (lowside switching)
- Even if always 1 input and 1 output are connected together they may be used for different functions at the same time, because every active output is switched off every 9ms for 3ms (pulsed output) to enable reading of the input in this time.
Example: Input used as car call, output used as level indicator

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Technical specifications:

Temperature range:	0°C to +60°C
Max. power consumption by 24V:	ca. 230mA @ 25°C (all inputs and outputs off)
Current consumption in Standby (Display off):	ca. 120mA @ 25°C
Max. input current D1-8:	10mA @ 25°C / Input
Max. output current D1-8:	500mA @ 25°C / Output
Mechanical dimensions:	Length: 150mm Width: 130mm Height: ca. 35mm (with connectors)
LCD resolution	480 * 272 Pixel, 24Bit colour depth RGB Pixel size 0,216*0,216mm
Backlight	10 * LED
Viewing area LCD:	Size: 5,6 Zoll Width: 112mm Height: 84mm
LCD resolution	640 * 480 Pixel, 24 Bit colour depth RGB Pixel size 0,0588*0,1764mm
Backlight	LED

Appendix 1.13 Handheld terminal

Pin	Description	Function
1	+24V	+24V Power supply input
2	0(24V)	0V Power supply input
3	C+	CAN-Bus – High signal
4	C-	CAN-Bus – Low signal

Characteristics and features:

- Service tool for lift controller MLC-8000
- can be connected to any connector on control bus (CAN bus 1) or shaft bus (CAN bus 2)
- Complete control of HSE and lift controller from any place
- handheld terminal connectors are available by default on HSE, FVE, TVE and LCD-057
- Plug and unplug while power is on even if lift is running
- LCD display 16*4 characters with backlight
- CAN bus data rate switchable between 125 kBaud (default) and 250 kBaud by pressing key '0' directly after power on (actual value is displayed on LCD of handheld terminal)

Technical specifications:



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Temperature range:	0°C to +60°C	
Max. power consumption by 24V:	ca. 70mA @ 25°C	
Mechanical dimensions:	Width:	90mm
	Length:	200mm
	Height:	35mm
Cable length:	2m	



In order to connect the handheld terminal to FVE hardware version 1.1 an adapter cable with Mini DIN connector is required.