



# Installation Manual

## "bp408" System

- ▶ General Instructions
- ▶ Safety Instructions
- ▶ Commissioning
- ▶ EC-Type Examination



## GERMANY

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## WORLDWIDE



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Steuerungssysteme  
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# 1 General

## 1.1 Thank You

### Dear Customer!

Thank you for showing your trust in Böhnke + Partner by purchasing the "bp408". Please take your time to read carefully this Installation Manual and the documentation pertaining to the individual components.

Improper handling can present a high risk of injury. Please observe all the provided information and thereby save on time and the need for questions during commissioning.

The term "manual" refers to the entire documentation that we use to inform our customers about our company and its products in a comprehensive manner. To provide a better overview, this manual has been divided into multiple parts. The "Installation Manual" covers the dangers and risks that may lead to severe injuries and economic damage in case of improper behavior. It also provides the information required to commission the control system.

The Installation Manual is supplied with every control system and is therefore a component of the overall control system documentation.

Should you still have any questions, you can contact us via:

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[info@boehnkepartner.de](mailto:info@boehnkepartner.de)



▲ **Abbildung 1**

Das Steuerungssystem »bp408« ist mit allen modernen Schnittstellen der Aufzugstechnik ausgerüstet.

## 1.2 Intended Purpose

The "bp408" control system is a piece of equipment used for elevator systems.

## 1.3 Documentation References



This manual is not considered exhaustive as regards our full supply capabilities. All the supplied information merely serves the purpose of product description and are not considered assured capabilities in a legal sense. Any claims for damages against us, no matter for which legal reason, are excluded, unless intent or gross negligence can be asserted. No warranty is assumed that the specified circuits or procedures are free of third party property rights. A reprint, even in part, is only allowed with the express permission of Böhnke + Partner and with an exact indication of sources.

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The information in this manual is regularly checked. Required corrections are contained in subsequent editions.

Hazard warnings and other pieces of special information are highlighted in this technical manual in the following manner and provided with a corresponding symbol.



### **CAUTION!**

This indication is used, if an imprecise performance or non-compliance with instructions or procedures can lead to the device being damaged, injuries or even death being incurred.



### **WARNING!**

This indication is used, if an imprecise performance or non-compliance with instructions or procedures can lead to injuries or lethal accidents due to electric current.



### **NOTE!**

This indication is used, if the attention is to be drawn to a special feature or characteristic.

## 2 Safety Instructions

Prior to installation and commissioning of this device, please read the safety and warning instructions carefully and observe all the warning signs fitted to the device. Make sure that the warning signs on the device are in a legible condition and replace missing or damaged signs at once.



### 2.1 Qualified Personnel

In accordance with this documentation and/or the warning instructions on the product itself, qualified personnel refers to such persons that are entrusted with installation, assembly, commissioning, operation and maintenance of the product and that possess the corresponding qualifications, for example:

- ▶ Training and instructions and/or permission to turn circuits and devices on and off, as well as to ground and label them in accordance with the applicable standards of safety engineering.
- ▶ Training and instructions in accordance with the standards of safety engineering regarding maintenance and use of proper safety equipment.
- ▶ First-aid training.

### 2.2 Safety Instructions regarding Controls

#### **CAUTION!**

Excerpt from German "Data sheet on safety measures for the assembly and maintenance of elevator systems" (ZH 1/312; Issue: 10/1983) German Federation of Institutions for Statutory Accident Insurance and Prevention:

#### 3.1) Notification

If a technician is supposed to perform work on an elevator system by himself, he must notify the custodian or other person (for example caretaker, tenant) of his presence.

#### 3.2) Locking of elevator systems

Prior to the beginning of the work on the elevator system, the facility's normal operation must be suspended. Attach the following sign to every shaft access door> "Elevator out of order". Block off open access doors in such a manner that unauthorized persons are not allowed to access the facility.

#### 3.3) External controls

The external controls must be rendered ineffective prior to beginning the work.



#### 3.4) Auxiliary personnel

If a technician conducts working operations that require the presence of a second person, the elevator's custodian or any other instructed person can be enlisted for this purpose.

#### 3.5) Short-circuiting of control lines and switches

When conducting maintenance operations and inspections, the short-circuiting of control lines and switches is prohibited. If the need to short-circuit control lines and switches cannot be avoided during maintenance operations, they may be short-circuited with greatest possible care. Any bypasses must be removed immediately after completion of maintenance operations.

#### 3.6) Switching agreements

Switching agreements based on time and direct calls are not permissible.

#### 3.7) Working on live components

If work has to be performed on live parts in special cases, isolated tools and documents as well as suitable personal safety equipment must be used. Observe the applicable regulations of DIN EN 50110 Parts 1 and 2, I DIN VDE 0105 Part 100 "Operation of electrical installations".

#### 3.8) Elevator operation

Until the working operations have been completed, the elevator system may not be operated by the technician, unless this is required for the performance of this work.

#### 3.9) Presence of the car roof

When driving the car from a top the car roof, turn on the command switch (inspection switch) on the car roof (if available). Only then the shaft door can be closed. If this command switch is not available, a suitable assistant (auxiliary personnel) must be used.

A command and/or switching impulse to move the elevator may only be issued by persons atop the car roof, if all persons there have stepped back into the bounds of the car. Working while the car is moving is prohibited.

No more people than are required to perform the necessary work are permitted atop the car roof.

## 2.3 Requirements regarding Constructors and Operators

### CAUTION!

- ▲ The "bp408" control system has been developed in accordance with the current state of engineering and is safe to operate. The only occasions when hazards can arise are presented if personnel that was improperly instructed (or not at all) uses the devices in an improper fashion or for an unintended purpose.
- ▲ The proper and safe operation of the devices requires proper transportation and storage, installation and assembly as well as careful operation and maintenance.
- ▲ Any mode of operation that adversely affects the safety of the devices has to be refrained from.
- ▲ Arbitrary modifications and changes, which affect the safety of the devices, are not allowed.
- ▲ During operation, the drive units exhibit dangerous and live moving or rotating parts. For this reason, they can cause severe injuries or material damage, for example in case of unauthorized removal of necessary covers or improper maintenance.
- ▲ Only qualified personnel may be tasked with working on the devices. The personnel must keep the supplied operating instructions and all documents pertaining to the product documentation available during working operations at all times and always observe these. Unqualified personnel may not work on the devices or in their vicinity.
- ▲ The operator is responsible for ensuring that the drive unit is placed in a safe condition after device failure, as otherwise personal injuries or property damage may be incurred.



### CAUTION!

Disconnect the devices from the power supply and check that no voltage is present prior to any intervention.





## 3 Product Certifications

### 3.1 EU Type Examination

The bp408 system module contains an electronic retrieval unit for the safety loop and a pilot control system for the driving contactors. The circuit board also contains a safety circuit (SMZ). The safety circuit can be used in the cases specified in the following and derived from EN 81-1/2 and EN 81-20/50:

- ▶ Preparatory measures with opened car and shaft doors
- ▶ Approaches with opened car and shaft doors
- ▶ Fine adjustment with opened car and shaft doors
- ▶ Detection of an unintended car movement with open doors (UCM).

# EC Type-Examination Certificate




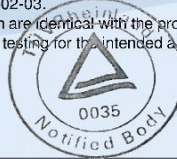
Reg.-Nr./No.: 01/208/5A/6020.00/15

<b>Prüfgegenstand</b> <b>Product tested</b>	Sicherheitsschaltung mit elektronischen Bauelementen; elektronische Abfrageschaltungen Safety circuit with electronic components; electronic monitoring circuits	<b>Zertifikatsinhaber</b> <b>Certificate holder</b>	BÖHNKE + PARTNER GmbH Steuerungssysteme Heinz-Fröling-Str. 12 51429 Bergisch Gladbach Germany
<b>Typbezeichnung</b> <b>Type designation</b>	Teilbereich der Leiterplatte SPL-01 V1 des Systemmoduls bp408 Subarea of the printed circuit board SPL-01 V1 of the system module bp408		
<b>Prüfgrundlagen</b> <b>Codes and standards</b>	Directive 95/16/EC EN 81-20:2014 EN 81-50:2014	EN 81-1:1998 + A3:2009 EN 81-2:1998 + A3:2009	
<b>Bestimmungsgemäße Verwendung</b> <b>Intended application</b>	Einsatz an Personen- und Lastenaufzügen. Sicherheitsschaltung zur Überbrückung der Tür- und Spermittelschalter während des Einfahrens und Nachstellens und zur Erkennung einer unbeabsichtigten Bewegung des Fahrkorbes bei geöffneten Türen. Abfrageschaltungen zur rückwirkungsfreien Überwachung von Schaltzuständen im Sicherheitsstromkreis einer Aufzugsanlage. For use at passenger and goods passenger lifts. Safety circuit for bridging the door switch and the locking element switch during levelling and re-levelling and for the detection of an unintended movement of the lift car with open doors. Electronic monitoring circuits for feedback-free monitoring of the lift installation's safety chain switching status.		
<b>Besondere Bedingungen</b> <b>Specific requirements</b>	Die Hinweise in der zugehörigen Installations- und Betriebsanleitung und der Anlage zu diesem Zertifikat sind zu beachten. The instructions of the associated Installation and Operating Manual and the appendix to this certificate shall be considered.		

Es wird bestätigt, dass das geprüfte Produkt mit den Anforderungen der Richtlinie 95/16/EG über Aufzüge übereinstimmt.  
It is confirmed, that the product under test complies with the requirements for lifts defined in the EC Directive 95/16/EC.

Gültig bis / Valid until 2021-02-03

Der Ausstellung dieses Zertifikates liegt eine Prüfung zugrunde, deren Ergebnisse im Bericht Nr. 968/FSP 1247.00/16 vom 03.02.2016 dokumentiert sind.  
Dieses Zertifikat ist nur gültig für Erzeugnisse, die mit dem Prüfgegenstand übereinstimmen. Es wird ungültig bei jeglicher Änderung der Prüfgrundlagen für den angegebenen Verwendungszweck.  
The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 1247.00/16 dated 2016-02-03.  
This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.



Köln, 2016-02-03

Notified Body for Lifts and their Safety Components, NB 0035

Dipl.-Ing. Volker Sepanski


www.fs-products.com  
www.tuv.com

 **TÜVRheinland®**  
Precisely Right.

bp408 System Module  
Section with SPL-01 circuit board  
Requirements of  
95/16/EC  
EN81-20:2014  
Directive  
EN 81-50:2014  
EN 81-1:1998+A3:2009  
EN 81-2:1998+A3:2009  
Reg. No. 01/208/5A/6020.00/15  
of 2016-02-03



## 3.2 EC Declaration of Conformity

 **Figure 3**  
Declaration of Conformity



### EG - Konformitätserklärung gemäß der Aufzugsrichtlinie 95/16/EG sowie EMV-Richtlinie 204/108/EG

Hiermit erklären wir, dass folgendes bezeichnetes Bauteil:

Baugruppe	Art	Teilbereich der Leiterplatte(n)	Zertifikatsnummer gemäß Aufzugsrichtlinie (95/16/EG)
Systemmodul bp408	S+A	SPL-01	01/208/5A/6020.00/15

Tabellen: vorgeschriebene baumustergeprüfte Baugruppe  
(Erläuterung der Spalte „Art“: A = Abfrageschaltung ; S = Sicherheitsschaltung)

ab Baujahr 2016 den Beschaffenheitsanforderungen entspricht, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Aufzüge (95/16/EG) festgelegt sind. Das Sicherheitsbauteil entspricht den gültigen Richtlinien und Normen:


AufzRl 95/16/EG; Angewandte Norm EN 81-1/81-2:1998+A3:2009  
EMV-Richtlinie 204/108/EG; Angewandte Produktfamiliennormen für Aufzüge, Fahrtreppen und Fahrstühle - Störaussendung EN 12015:2014 und Störfestigkeit EN 12016:2013

Diese Erklärung gilt nur, wenn oben bezeichnete Sicherheitsbauteile fachgerecht in Aufzugsanlagen eingebaut werden. Bei einer unbefugten Änderung unserer Sicherheitsbauteile verliert diese Erklärung ihre Gültigkeit. Die mitgelieferten Betriebsanleitungen müssen beachtet werden!

Die entsprechenden Bauteil- oder Bauartprüfungen wurden durch das Prüflabor des TÜV Rheinland Industrie Service GmbH vorgenommen. Die EG - Baumusterprüfbescheinigungen mit den EG - Zertifikatsnummern wurden von der TÜV Rheinland Zertifizierungsstelle für Aufzüge und deren Sicherheitsbauteile (Kenn-Nr. 0035) der TÜV Rheinland Industrie Service GmbH ausgestellt. Das QS-System nach AufzRl, Anhang VIII wird von der TÜV Rheinland Zertifizierungsstelle für Aufzüge und deren Sicherheitsbauteile (Kenn-Nr. 0035) überwacht.

Diese Erklärung wird verantwortlich für  
**BÖHNKE + PARTNER GMBH**  
**STEUERUNGSSYSTEME**  
**Heinz-Fröling-Str. 12**  
**51429 Bergisch Gladbach**

im Namen der Werksleitung durch Uwe Wiemer abgegeben.  
Bergisch Gladbach, den 07.03.2016

  
Uwe Wiemer, (Werksleiter)



## 4 Standards

### REFERENCE TO OTHER REGULATIONS AND RISKS

- The procedural instructions and circuit excerpts portrayed in the documentation have to be interpreted correspondingly. Adaptability to the respective application must be verified. Böhnke + Partner does not guarantee suitability.
- To ensure proper functioning of the complete control system, the supplied documentation pertaining to other manufacturers (for example the instruction manual for the inverter) must be observed.
- The bp408 control system may only be used for information processing in elevator control systems.
- Control systems, assemblies, modules or other devices that were damaged in transit may not be installed or commissioned.
- The assemblies contain electrostatically sensitive components. Discharge your own body prior to touching an electronic component. This can be achieved by touching a conductive and grounded item (for example a bare metal component of the switchgear cabinet) immediately prior to being in contact with the electronic component.



### 4.1 EMC-Guideline

All industrial and electronically controlled machines (PCs, microprocessors, computers, PLC) can be influenced by interference pulses, if no countermeasures are taken. These interference pulses can be generated by both external systems, such as voltage changes from the feed line as well as control impulses of inverter power elements. Böhnke + Partner considers all the usual measures during manufacturing of the control systems. The used components exhibit a low sensitivity to ambient interference pulses.

#### CAUTION!

- Observe the EMC instructions of the manufacturer of the inverter at all times!
- If there are any questions regarding the EMC-Directive, our service team will gladly be at your disposal.
- Also observe the instructions regarding interference suppression measures contained in this manual.



## **4.2 EN 81-20**

Provisions of EN 81-20:

We hereby point out in a precautionary manner that Böhnke + Partner shall not be held responsible or liable for damages that are caused by compliance with the requirements of EN 81-20!

Example: Readjustment for hydraulically operated elevators, in spite of tripped runtime monitoring due to failure of a phase





▲ **Abbildung 4**

Das Steuerungssystem bp408 ist mit allen modernen Schnittstellen der Aufzugstechnik ausgerüstet.

## 5 The "bp408" Control System

### 5.1 Product and Functional Descriptions

The bp408 Control System is an electronic component used to control elevator systems. Different variants are available, comprising safety loop queries for different voltages as well as variants with/without integrated safety circuits.

Basic functions of an elevator control system, such as safety loop queries and safety circuits have been consistently integrated into the bp408 control system.

The bp408 control system is a decentralized micro-processor system with dispersed "intelligence". The decentralized modules are, by default, connected through the CANopen Lift interfaces in accordance with the CiA 417 standard ([www.CANopen-Lift.org](http://www.CANopen-Lift.org)). Other interfaces for older protocols used in elevator construction are also available.

The bp408 control system contains the following modules:

- ▶ the pilot control system,
  - ▶ the safety loop query system,
  - ▶ the safety circuit (also optional),
  - ▶ freely programmable inputs, outputs and relays,
  - ▶ electronically monitored standard inputs and outputs,
- as well as interfaces for:
- ▶ controlling inverters with DCP3, DCP4+ and CANopen Lift (CiA 417) interfaces,
  - ▶ absolute encoders of various manufacturers and using different technologies,
  - ▶ remote data diagnostics using WinMOS®300 via Bluetooth™ or WiFi, Modem (USB) or Ethernet,
  - ▶ building automation via EIS protocol, LONworks standard, Modbus, OPC or Profibus DP.
  - ▶ CANopen Lift components,
  - ▶ LAN for remote diagnostics and monitoring
  - ▶ USB device for connecting a laptop for diagnostics purposes and software updates,
  - ▶ USB host for USB sticks, modems, Bluetooth™ or WiFi adapter

Based on this concentration of functions and the decentralized control concept, small control cabinets can be used. The standard control cabinet for the bp408 control system has a size of 600 x 600 x 300 mm. This means that the bp408 system is predestined for use in elevator systems where there is only little space.

In combination with the remote data monitoring system WinMOS®300 ([www.WinMOS.de](http://www.WinMOS.de)), it is possible to significantly increase the elevator's availability. This system also makes it possible to fully switch to a condition-based maintenance application.

## 5.2 Overview of bp408 Functions

- ▶ Individual controls
- ▶ Group controls for up to 8 elevators without separate group controller
- ▶ 128 floors/stops configurable
- ▶ SFS – automatic control system
- ▶ SFR – automatic control system with call memory ("taxi controls")
- ▶ 1KS – collective single button controls
- ▶ 1KSab – collective single button for downward movement
- ▶ 1KSauf – collective single button for upward movement
- ▶ 2KS – collective dual button controls
- ▶ Collection of operating data: movements, hours, faults, messages
- ▶ Traction elevators: pole-changeable, single-speed, dual-speed, frequency inverter
- ▶ Hydraulic elevator: Star delta and direct startup, valve controls, soft startup, frequency inverter
- ▶ Resistor monitoring for drive motor integrated
- ▶ Safety circuit monitoring integrated (230 VAC standard, 48/110 V AC optional)
- ▶ Main contactor controls 230 VAC integrated
- ▶ Safety circuit (SMZ) integrated
- ▶ Inputs and outputs for all standard requirements integrated
- ▶ Positive switching logic (24 VDC)
- ▶ Outputs protected against overload
- ▶ Diagnosis of inputs and outputs via LCD or laptop
- ▶ Diagnosis and configuration of CANopen Lift components using CANwizard®
- ▶ Operator guidance using laptop with WinMOS®300
- ▶ Operator guidance with 7 buttons and illuminated, graphic LCD
- ▶ On-site parameterization via LCD using mobile phone over Bluetooth™ and/or WiFi/laptop
- ▶ Parameters saved in EEPROM in failsafe manner (2 complete sets of data)
- ▶ Real-time clock integrated
- ▶ Setup menu and service menu separated
- ▶ Code lock separately adjustable
- ▶ Menu interface in German, English, Dutch and Swedish

- ▶ Interfaces for DCP, LAN, USB and CANopen Lift are integrated
- ▶ Optional remote diagnostics via modem (USB) or LAN
- ▶ Different codes possible for floor display (gray, binary, user-specific) direction indicator
- ▶ No-load, full load, overload, useful load in kg
- ▶ Travel direction indication, external bell, door side and direction selection
- ▶ Parking floor, fire department floor, fire floor, emergency power floor, control and waiting floors configurable
  - ▶ Parking programs can be configured using the display
  - ▶ Door tables 1, 2 and 3 are externally switchable
  - ▶ Magnetic floor selector system with 4 and 6 switches
  - ▶ Absolute value floor selector system with AWG-05 or CANopen Lift facilities
- ▶ Close and short stops (only using absolute value encoder) up to 15 mm
- ▶ Selective calls for door sides A, B and C
  - ▶ External priority calls in two stages (low and high priority)
  - ▶ Door controls for sides A, B and C (all door drives)
  - ▶ Various times and functions for doors can be configured
- ▶ Early opening doors and fine adjustment
- ▶ Bolts for door sides A, B and C can be controlled separately (lock switching)
- ▶ Maintenance intervals configurable for movements, hours and dates
- ▶ Fault stack memory with up to 128 entries (fault type with floor and time stamp (date and time) as well as signal image)
  - ▶ Fault list (fault type with floor and quantity)
  - ▶ Message stack memory for up to 128 entries for important messages
- ▶ On-site monitoring possible using laptop
- ▶ Remote diagnostics with WinMOS®300 possible via modem or LAN
- ▶ 4 relays, freely programmable with changeover contact ▶
- Company logo (text) configurable on LCD
- ▶ Floor designations (text) configurable
- ▶ Optional guest controls, zone controls, ramp movement, chemical operation, earthquake operation, manual operation and other special functions possible.
- ▶ Automatic and manual emergency rescue
- ▶ RoHS compliant manufacturing

## 5.3 Decentralized Elevator Controls

The bp408 control system is a decentralized control system, which means that its "intelligence" is distributed among the connected devices and not exclusively provided by a single location. The foundation for the decentralized elevator control system is provided by the CANopen Lift application profile CiA 417 ([www.CANopen-Lift.org](http://www.CANopen-Lift.org)). This internationally standardized application profile allows communication between the individual modules of the elevator group. The connected modules possess a comprehensive functional image and can therefore make a variety of decisions in an autonomous manner. This allows for the creation of open and modular systems that are capable of very complex control tasks.

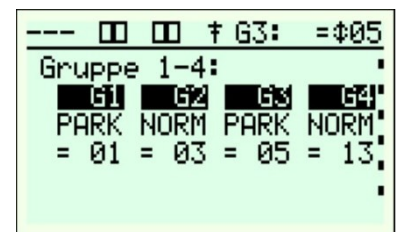
## 5.4 The Group System

Modern group control systems are equipped with high-performance 32 bit processors. These are capable of evaluating a variety of information provided by the elevator group and to make the correct decisions for group operation purposes based on the information thereby provided.

The group control program ensures flawless operation of the elevator system with groups of two to eight elevator facilities. The foundation for this is provided by the CiA 417 application profile based on CANopen Lift. The data and commands of all components are provided on this bus in a standardized manner. Every group system is thereby capable of deciding for itself in which order and using what group member the individual calls should ideally be processed. A superordinate master computer system is not required for group functionalities, but can be used optionally in order to expand the performance capabilities of the group by some special functions, for example load-dependent evacuation of all elevators inside a building in case of emergency power usage or in the event of a fire or the automatic statistic evaluation for the determination of group parameters.

External calls are entered via the bus node, which might be located in the external call panels or inside the control cabinet. These nodes evaluate the incoming signal and provide the call with all information regarding direction, priority, destination, etc. to all group participants at the same time through the CAN bus.

Inside the group control system, the algorithms of the call controllers then decide the order and which elevator should move to the individual destinations based on the configured parameters (for example parking mode, number of parking elevators at main floor,



▲ **Abbildung 5**  
Gruppenstatus im bp408

priority calls per floor, etc.). If a single elevator is no longer part of group operation, for example because it has been switched to inspection mode, this information is also immediately provided to the remaining elevators of the group and can be considered accordingly in the calculations. If multiple elevators can process a call in an equivalently suitable manner, the elevator that has been at a standstill for a longer period of time will process the call. If the standstill periods are also equivalent, then G1 takes precedence over G2

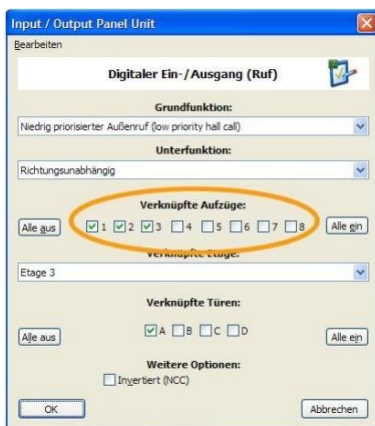
...

Among other aspects, the following conditions are considered by the group algorithm:

- Distance to destination floor
- Opposite direction of movement/call
- Elevator at standstill
- Number of intermediate stops between floors
- Interior call present at destination
- and a few more.

### 5.4.1 Priority calls

When determining priority calls on the bp408 system itself or using a CANopen Lift component, such as CAP-01/02 or CIO-01, it is specified which elevators can process the priority call. The most effective one of the selected elevators (see Figure) will process the call. Two additional options ("collect priority calls" and "multiple priority calls per floor") in the group settings of the service menu allow for additional elevators to be fetched, if an elevator is already located at the floor with the priority call with an ongoing deployment time. These options are, for example, intended for the transportation of beds. A high-priority external call cancels a low-priority external call. Otherwise, the same rules apply for the high-priority external call as for the low-priority external call.



**Figure 6**  
Determination of priority calls

### 5.4.2 Portrayal of Group in WinMOS®300

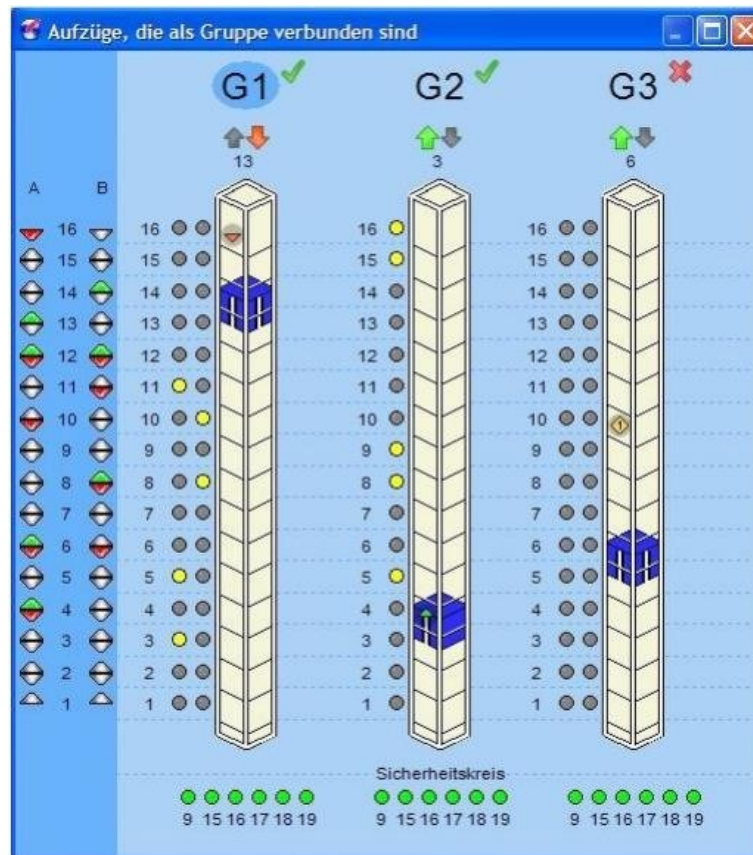
WinMOS®300 offers the option to portray a view based on group data both in "Diagnostics" as well as "Monitoring" modes. The destination currently serviced by the elevator is displayed in the group window of the bp408 inside the elevator shaft. The ETA ("estimated time of arrival") of the call is also dynamically displayed in the window. This indication can change in the next moment, for example if the elevator call situation changes. Priority calls are displayed with a special symbol,

which also indicates whether the call is a low-priority or high-priority call.

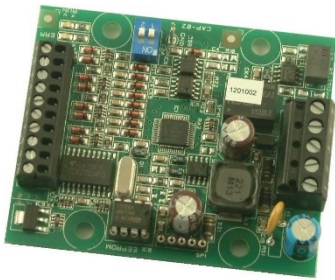
This functionality allows for improved transparency of the group control processes.

► **Figure 7**

Portrayal of dynamic call assignment of a group control system in WinMOS®300 for the bp408 control system







**Figure 8**  
CAP-02A circuit board for connecting external calls to the CANopen Lift bus.

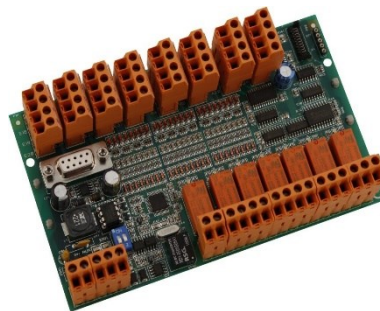
## 5.5 bp408 Modules

The following modules are currently being offered by Böhnke + Partner for the bp408 control system:

- ▶ External panel board CAP-02 (8 I/O)
- ▶ Car electronics CLK-03
- ▶ CAN-Wireless-Interface CWI-01
- ▶ CAN-I/O-Module CIO-01 (32 I/O)
- ▶ CAN-Serial-Interface CSI-01

Other components made by various manufacturers, such as absolute encoders or panels, which comply with the CiA 417 standard, are available and can be used as well.

An overview of available CANopen Lift components and their descriptions are available on the internet, for example on [www.CANopen-Lift.org](http://www.CANopen-Lift.org).



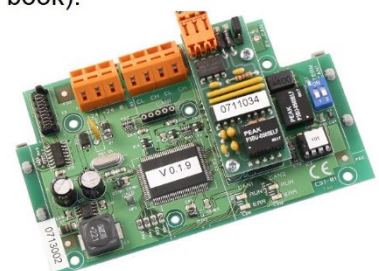
**Figure 9**  
CLK-03 circuit board for connecting the car electronics to the CANopen Lift bus.



**Abbildung 10**  
Platine CWI-01 zur Fernbedienung der Steuerung (z.B. von der Kabine aus) über ein mobiles Gerät (Handy, Tablet, Notebook).



**Abbildung 11**  
Platine CIO-01 zum Anschluss von 32 Eingängen/Ausgängen oder Rufen.



**Abbildung 12**  
Platine CSI-01 zum Einsatz als Repeater oder Bridge



## 5.6 bp408 Variants

This installation manual refers to all variants of the bp408 control system in accordance with the following listing. The following abbreviations apply:

SMZ = Safety circuit

Article No.	Variant
382-408-010-aac	bp408 with SMZ

## 5.7 Short Description of bp408

### 5.7.1 Top view



▲ **Figure 13:**  
Top view of bp408

	<b>Description</b>
<b>A</b>	USB-B port Connection for a PC for diagnostics and/or software update
<b>B</b>	USB-A port Usable for analog USB modems, USB sticks, Böpa Bluetooth or Böpa-WiFi-Adapter
<b>C</b>	LAN interface Ethernet 10/100 Mbit for monitoring systems
<b>D</b>	Terminals for freely programmable relays
<b>E</b>	24 VDC terminal, resistor inputs
<b>F</b>	Terminals for freely programmable inputs, special inputs
<b>G</b>	Display
<b>H</b>	Keyboard
<b>I</b>	CAN 1 + CAN2: interfaces for communication with all components
<b>J</b>	RS-485: Communication with inverter via DCP-protocol, energy meter
<b>K</b>	RS-232: remote data transmission, interface for monitoring
<b>L</b>	8 freely programmable inputs
<b>M</b>	8 freely programmable outputs
<b>N</b>	16 freely programmable inputs/outputs
<b>O</b>	Terminal for pilot relay
<b>P</b>	Terminal for safety circuit query
<b>Q</b>	Terminal for zone switch input

## 5.7.2 bp408 Control Panel and LCD

The condition of the elevator can be determined using the graphic LC and the control panel. It is also possible to change the parameters of the control system and the connected CANopen Lift devices.

### 5.7.2.1 Default view

After turning on the system and in normal operating mode, when no special menu is opened, the display shows a default view. This view provides the user with a quick overview regarding the current condition of the elevator and provides individually configurable information.

The following information is provided on the LCD by default:

- the elevator status bar
- the safety circuit status bar
- the "B+P" logo (or a customer-specific logo)
- optionally Board or cabinet temperature,
- condition of the internal buffer battery
- the current system time
- and depending on configuration:
  - current faults and/or messages
  - last fault/malfunction that has occurred
  - static information
  - current speed of the elevator

### 5.7.2.2 Elevator status bar

The upper section of the display contains the elevator status bar. This bar is displayed across all menus. The elevator status bar provides the following information:

- Pilot controls (relay K1-K3)
- the A/B/C doors with limit switches and door control signals (light barrier, "open door" button)
- Mode (for example "inspection mode")
- Information on level positioning +/- =/ -
- Direction indicator
- Current floor

### 5.7.2.3 Safety circuit status bar

The safety circuit status bar is located on the right side of the display. This bar is displayed across all menus. The safety circuit status bar shows the status of the safety circuit pertaining to the terminal sequence:



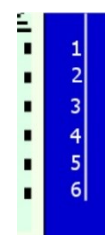
▲ **Abbildung 14**

Display und Tasten des bp408. Hier Darstellung mit zwei Türen A und B.



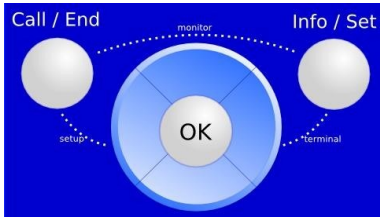
▲ **Figure 15**

The elevator status bar is displayed in all menus.



▲ **Abbildung 16**

Die Sicherheitskreisstatusleiste wird in allen Menüs dargestellt.



▲ **Figure 17**

The buttons of the control panel are used to navigate the menus.



▲ **Abbildung 18**

Das Setupmenü des bp408



▲ **Figure 19**

Entering of setup code

1	→	Passive safety circuit	(Terminal 10)
2	→	Emergency stop	(Terminal 11)
3	→	Shaft door	(Terminal 12)
4	→	Car door A	(Terminal 12A)
5	→	Car door B	(Terminal 12B)
6	→	Bolt	(Terminal 13)

#### 5.7.2.4 Control panel

The control panel is located beneath the display. The control panel consists of 7 buttons, using which you can navigate the different menus, display status information and change parameters. The buttons of the control panel are arranged as a central navigation block with the "Up", "Down", "Left", "Right" and "OK" buttons. The "Call/End" button is located on the left and the "Info/Set" button is located on the right.

### 5.7.3 Setup menu

The setup menu contains basic parameters that cannot be changed in ongoing operation of the facility, such as selection between traction elevator and hydraulic elevator, number of stops and similar aspects.

#### Opening the setup menu:

To enter the setup menu, proceed as follows:

- Make sure that no persons are located inside the elevator or on top of the elevator and that the system can be turned off without presenting any dangers.
- Now hold the left "Call/End" button down and tap the "Left" button briefly

The following message will briefly be displayed: **> Booting setup menu... <**

You have now entered the setup menu. All control functions have now been deactivated! If a setup code has been configured (pin code), please enter the correct code here. The default set by Böhnke + Partner is "5061".

After entering the correct code, you can open the menus and change the parameters. You can leave the setup menu by briefly actuating the "Call/End" button. A restart is performed and the default window of bp408 is displayed again.

## 5.7.4 Service menu

The bp408 service menu can be used to configure parameters and times, which are not safety-relevant and can be changed during ongoing operation, such as door opening times, "BlueMode" energy saving function on/off, etc.

### Opening the service menu:

If the "OK" button is pressed, the display automatically switches to the service menu. If a service code (pin code) is configured, the correct code must be entered. No service code is set by default by Böhnke + Partner. After entering the correct code, all menus of the service menu can be entered and parameters can be changed during ongoing operation. If you would like to lock the controls again after leaving the service menu, press the "Left" button repeatedly until the following prompt appears on the LCD: "Activate service code?"

Confirm with the "OK" button. The following note will appear briefly:

#### Service code activated

and you are then returned to the default starting menu of the bp408.

The service code can be changed at any time using the service menu via >MISCELLANEOUS > ACCESS CODES > SERVICE-CODE.

## 5.7.5 Call menu

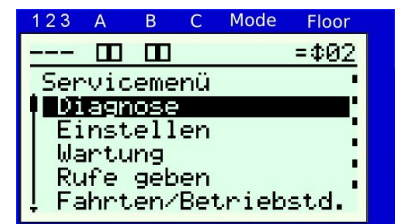
Pressing the call menu takes you directly into the call menu from the service menu. If the call menu is active, this is indicated by a hash symbol in the elevator status bar.

The call menu can be used to issue an interior call to the lowermost or uppermost stop.

By clicking on the "OK" button, the destinations change from *Interior call up/down* to *Next interior call up and/or down*. You can now directly issue an interior call from the current position to the next stop in the upward or downward direction. It is optionally possible to select between *Closing/opening the doors* in the call menu.

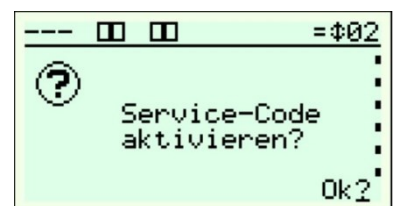
If you would like to issue interior calls or external calls to special floors, you can select the *Issue calls* dialog using the "Left" button. You can select the desired call type here and then issue floor-related and door-related calls.

If you're currently in the call menu, you can activate/deactivate the external controls by clicking on the "Right" button. This point is omitted. If the external controls are deactivated, this is displayed in the message window.



▲ Figure 20

The service menu of bp408



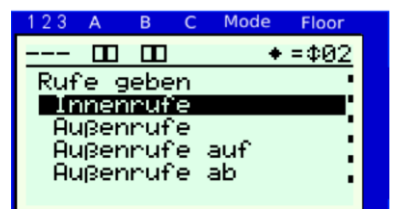
▲ Abbildung 21

Code-Aktivierung



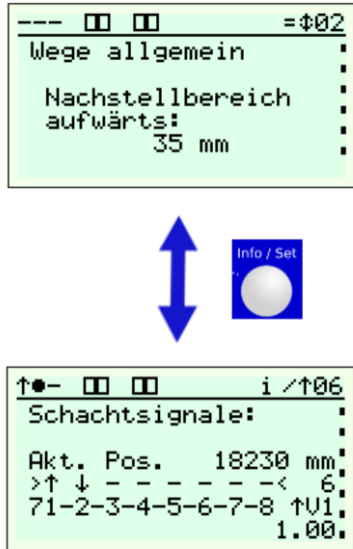
▲ Abbildung 22

Das Rufmenü des bp408 wird durch eine Raute in der Liftstatusleiste signalisiert.

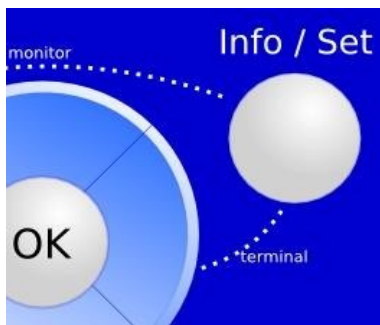


▲ Abbildung 23

Der Dialog 'Rufe geben' ermöglicht das Senden des Aufzugs zu einer spezifischen Etage.



▲ **Abbildung 24**  
Menüwechsel



▲ **Figure 25**  
Switching to the terminal mode is handled by pressing the "Info/Set" and "Right" buttons at the same time.

## 5.7.6 Info menu

The info menu allows you to switch between two menu points by clicking. This makes it possible to change parameters in the service menu or to issue calls and to view the reaction of the system, for example the movement signals, with just a single click. To switch to the info menu, click on the "Info/Set" button. If the info menu is active, this is indicated by an "i" in the elevator status bar. You can now navigate the menu. Another click takes you back to the menu item from where you activated the info menu. You can now switch between both menus with a single click.

## 5.7.7 Terminal mode

The following procedure was specified in the *CANopen Lift (CiA 417)* application profile: a module that is connected to the CAN bus transmits the content of its displays to another device using the bus. This device then displays the content.

This makes it possible to navigate the menu of another device. This procedure was integrated into the bp408 control system and is available in the "Node list" section of the menu and is specifically intended for the frequency inverters in terminal mode.

By pressing the "Info/Set" and the "Right" buttons at the same time, the system switches into the terminal mode and the display of the bp408 shows the menu of the connected frequency inverters. The signals of the "Up", "Down", "Left", "Right", "OK" and "INFO" navigation buttons are now sent to the frequency inverter.

By pressing the "Call/End" button for at least 3 seconds, the terminal mode is terminated and the user is returned to the previous menu item of the bp408.

## 5.7.8 LPCmon Monitoring Program

The program version of the elevator software can be queried and software updates of the system can be performed using the *LPCmon* monitoring program. This process should only be performed by instructed personnel after being prompted to do so by Böhnke+ Partner.



### 5.7.8.1 Start of Monitoring Program

To access the monitoring program of the bp408, first make sure that no persons are currently inside the elevator and no dangerous situation can arise by deactivating the elevator system.

Keep the "Call/End" and "Info/Set" buttons held down at the same time for at least 3 seconds. This starts the monitoring program. All control functions are now deactivated!



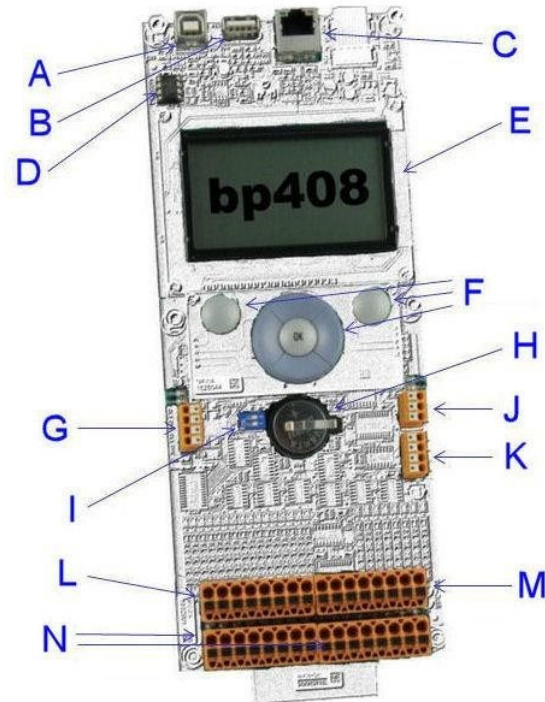
▲ **Figure 26**  
LPCmon Monitoring Program

## 5.7.9 Storage for Program and Parameters

### 5.7.9.1 General

The figure shows the interface and EEPROM positions. The circuit board contains the digital control electronics with the processor, the program memory in flash form, the parameter memory as EEPROM, the real-time clock, the battery, the LCD and the buttons. The interfaces for 2 CAN networks, remote serial data transfer, USB or Ethernet, USB host and USB devices as well as the serial controls for inverters per DCP are also housed by this circuit board. The bp408 also comprises 8 inputs, 8 outputs and 16 calls, which can also be parameterized as inputs or outputs.

The elevator program is stored in the flash memory. The EEPROM stores all elevator-specific parameters, such as the elevator type, stops, doors, times, parking floor, etc. in a fail-safe manner.



▲ **Figure 27**  
Circuit board SPC-01 with a layout of the most important components and interfaces.



	Description for Figure 27
<b>A</b>	USB-B
<b>B</b>	USB-A
<b>C</b>	LAN
<b>D</b>	EEPROM
<b>E</b>	Display
<b>F</b>	Buttons
<b>G</b>	CAN1+2
<b>H</b>	Battery
<b>I</b>	Termination
<b>J</b>	RS-485 (DCP)
<b>K</b>	RS-232 (EDI)
<b>L</b>	Inputs
<b>M</b>	Outputs
<b>N</b>	Inputs/outputs/calls

#### 5.7.9.2 Replacement

When replacing the EEPROM with an EEPROM extraction tool, pull the existing EEPROM straight from its socket. The new EEPROM is pushed vertically into the socket while exerting a slight amount of pressure. Be sure to mind the marking (notch) in order to ensure that the component is inserted the right way!



#### NOTE!

The pins of the EEPROM can bend and break off very quickly. Therefore, be sure to use a suitable extraction tool.



#### CAUTION!

Changing a program and making subsequent changes to the elevator control system without service support by BÖHNKE + PARTNER will void the manufacturer's warranty.

#### 5.7.9.3 Software Updates

A software update is required, if the system is to be provided with additional functions after the fact. The replacement of the EEPROM is only required, if the circuit board has to be replaced and the elevator-specific data must be copied to the new circuit board.

### NOTE!

To secure the current state of an existing system, backup the current software version and the parameter set to a mobile phone or laptop prior to performing a software update. After that, a software update can be performed using the new software and the system then be checked afterwards. The EEPROM parameter set and the existing elevator program can be backed up using the LPCmon monitoring program.



There are multiple ways to perform a software update. You can use a USB stick or perform the update using the USB-B (device) port (with a laptop).

To perform an update using a USB stick, plug the USB stick into the USB-A port of the bp408. After turning on the control system, hold down the "Call/End" and "Info/Set" buttons for at least 3 seconds to start the LPCmon monitoring program. After clicking on OK, you can select the storage medium (USB stick), which contains the new program version, using the *Open file* menu item. Then navigate to the file (for example 78D2508.BIN) on the storage medium, which contains the new program and select it. The software update can now be performed. Follow the instructions on the display.

### NOTE!

The old software version is lost, if a software update is performed! Familiarize yourself with the functional contents of the new version prior to an update and backup the old one, if need be.



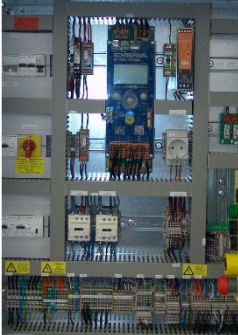
After a successful update, the system must be restarted. For this purpose, press the "Call" button. The system startup and the following system check should now be processed without faults. The display shows the version number of the current program version in the "System Info" section of the service menu.

The program version is designated in accordance with the following key:

- 78 = for the target hardware:
  - 78 - bp408
- D = main version identifier:
  - D - standard main version (no longer modified)
  - S - special version (customer version deviating from the standard)
  - X - intermediate version (will later become "D" version)

- 21 = identifier for the year in which the program was created:
  - 21 - 2011
  - 22 - 2012 etc.
- 01 = serial version number

It is also possible to perform a software update via the USB-B port using the "Fw308" software. For support regarding usage of this program, please contact a service employee of Böhnke + Partner.



**Figure 28**

Standard control cabinet with bp408 and integrated inverter

### 5.7.10 bp408 Control System in Control Cabinet with Inverter

The control cabinet is delivered as a painted sheet steel housing. The wall cabinets are provided with mounting holes or threaded bolts on the back side, where the supplied mounting tabs are screwed in place.

Standing cabinets are mounted on the supplied sockets or on a prepared frame.

Assembly is performed vertically. Existing inlets and outlets for ventilation must be kept free. Please ensure sufficient sound insulation to the building for critical environments. In this case, all contactors and the entire mounting plate inside the cabinet can be supplied in a soundproof manner.

A sound pressure level of approx. 55 db(A) has been measured at a distance of 1 m and a height of 1.6 m from our standard control cabinets equipped with a bp408 control system and with the control cabinet doors closed. This corresponds to a volume that is between a quiet radio [40 db(A)] and a normal conversation [60 db(A)].

The cable entries are provided on the bottom of the control cabinet. Use the correct cable glands. The patch cord duct (optional) for incoming lines and cables can be unscrewed to improve insertion of lines and cables into the cabinet.

Control cabinet:

- Closed (DIN 41488)
- Textured finish in RAL 7032 (pebble gray)
- Mounting plate with cable duct
- Main contactors on SCHWINGMETALL
- Up to IP 54 protection class possible
- Filter protection on request
- Door lock: triangle sash lock or special lock
- Wall mounting
- Cable entry through bottom
- Dimensions:
  - 800x800x300 mm by default
  - 1000 x 1200 x 300 mm controlled (frequency inverter fitted)

#### Safety circuit

- ▶ 230 V AC

#### Inverter

- ▶ Brake (cable) 180 V DC / 4 A ▶
- Bolt (optional) 180 V DC / 4 A
- ▶ Valves (hydraulics) 180 V DC / 4 A

#### Movement contactors

- ▶ Rated current 14 A
- ▶ Power 7,5 kW AC three-phase operation
- ▶ Make Telemecanique (other makes possible)

#### Terminals

- ▶ Weidmüller or WAGO

#### Resistor query

- ▶ integrated into bp408
- ▶ PTC threshold values Normal operation < 2.2 kΩ  
resistor trigger > 2,7 kΩ

#### Control system

- ▶ bp408 system module, 32 bit processor system

#### Safety circuit (integrated)

- ▶ for fine adjustment, early opening doors and detection of uncontrolled car movements with the doors opened

#### Shaft encoding

- ▶ Magnetic switch,
- ▶ Absolute value encoder (AWG),
- ▶ other encoders available on request

#### Inspection box

- ▶ Metal housing
- ▶ Control elements integrated into inspection box

#### Documentation

- ▶ Circuit diagram (can be copied in DIN A4)
- ▶ Key for operating equipment on circuit diagrams
- ▶ Parts list for control system and terminal assignment plan
- ▶ Description of central unit with programming overview

- ▶ Description of general operating instructions
- ▶ TÜV information for bp408 with valid assignment of connections
- ▶ and description of safety circuits

#### Guidelines

- ▶ EN 81, SIA, ÖNORM, DIN, VDE, VBG 4

### 5.7.11 Easy Servicing due to

#### Clear Arrangement

The wiring of cable ducts on the base plate is performed in accordance with industry standards. For incoming lines, a patch cord duct is used to provide maneuvering space. All terminals of the processor are routed to a separate terminal block that is located at the bottom of the control cabinet. The control system is mounted on a galvanized mounting plate. The sizes and dimensions specified here apply to a standardized layout for elevator systems with eight or more external call locations and with main drive outputs of up to 15 kW. Higher outputs can be delivered on request.

### 5.7.12 Standard Equipment

#### Layout

The bp408 control system is supplied in a condition ready for installation. The electronics unit consists of an I/O board and computer circuit board, which are safely screwed to one another and electrically connected. All signals are processed via pluggable terminals or standardized plug connections.

#### Dimensions

W x H x D 100 x 315 x 80 mm

#### Pilot control

Interface relays for controlling the main contactors

#### Safety circuit monitoring

230 VAC electronic (TÜV approved)

#### Resistor monitoring

Monitors all common temperature sensors

#### System controls

Main processor 32 bit microprocessor (ARM)

## **LCD (integrated)**

graphical, 128x64 pixels, illuminated  
as maintenance and diagnostics display and as an aid for parameterization

## **Counter for movements and operating hours**

integrated as standard (including pre-warning threshold for cable replacement)

## **Controls**

7 command and programming buttons (Call/End, Info/Set, Up, Down, Right, Left, OK)  
Functions, times and sequences for the elevators can be freely configured  
Controls can be locked using codes

## **8 inputs**

24 V DC, input current approx. 10 mA

## **8 outputs**

24 V DC, protected against short-circuits, protected against overcurrents  
280 mA, power output of 6 W

## **16 calls**

24 V DC, input current approx. 10 mA or output current of 280 mA,  
power output of 6 W, protected against overcurrents and short-circuits  
Calls can also be freely parameterized as additional inputs or outputs.

## **Relay outputs**

four relays, 230 V AC contact, 1 changeover contact

## **Safety circuit**

for fine adjustment and early opening doors

## **Integrated interfaces**

LAN interface	Ethernet 10/100 MBit for monitoring systems
USB-B port	for connecting a PC for diagnostics purposes and/or software updates
SP3	RS-485 interface for communication with the inverter via DCP protocol
CANopen Lift interfaces	interfaces (CAN High Speed) for communication with all components using the CANopen Lift application profile

	CiA 417
USB-A port	Usable for analog USB modems, USB sticks, Böpa Bluetooth™ or Böpa-WiFi-Adapter
SP1	RS-232 interface, e.g. for monitoring purposes, integrated as standard into the bp408 control system

### 5.7.13 Optional Equipment

#### 5.7.13.1 Uninterruptible Power Supply (UPS)

Böhnke + Partner supplies control systems for the elevator industry. The control system that you have ordered can be optionally equipped with a UPS, which is supposed to contribute to the maintenance of functions in case of power failure.

The compact and high-performance UPS that we're using belongs to the newest generation of UPS devices. High reliability, low operating costs and excellent electrical properties are important advantages of this technology.

The performance of the UPS system has been designed in accordance with the intended use of the system that you have specified. As the UPS system must be operational in the event of an emergency, its operational readiness must be checked regularly.

The operator is responsible for ensuring the constant operational readiness of the UPS. The operator can transfer this responsibility to the company responsible for performing maintenance on the elevator system.



#### **CAUTION!**

Before the UPS is installed or commissioned, please read the operating manual pertaining to the UPS carefully and observe all notes, instructions and safety information during installation and commissioning.

The operating manual must always be stored in the vicinity of the UPS for later use.

All maintenance work may only be performed by qualified and trained specialists.

Do not attempt to maintain or repair the UPS yourself. Opening the housing or removing the covers causes live parts to be exposed.

Touching these parts presents a mortal danger!

Böhnke + Partner does not take responsibility for consequential damages caused by incorrect handling of the UPS. Only the assurances provided by the manufacturer of the supplied UPS shall apply.

## Operational readiness of the UPS system

Böhnke + Partner supplies control systems with integrated UPS and expects the operational installation of components within 4 months.

If the UPS system is not installed immediately, it must be stored at a location where the temperature is between +5°C to +40°C and the relative humidity is constantly below 90%. If the transport container has been removed, the UPS should also be protected against dust.

The UPS system contains tightly closed, maintenance-free lead accumulators, which can be damaged, if they are stored in a discharged condition for longer periods of time or if they are exposed to increased temperatures. That is why the storage time: may not exceed 6 months for +20°C, 3 months for +30°C and 2 months for +35°C without recharging the accumulators. Make sure that no more than 6 months pass between two charges of the accumulators.

### CAUTION!

You must make sure that the UPS is deactivated during the assembly phase. It must also be ensured that the main switch securely deactivates the UPS with its auxiliary contact after actuation of the main switch to the "OFF-position". This ensures that the UPS is only activated in case of power failure.



### OPERATIONAL READINESS OF UPS

As the UPS system must be operational in the event of an emergency, its operational readiness must be checked constantly. A regular examination of operational readiness (support duration) must be performed in intervals of 6-12 months or if there are indications that point to a decrease in operational readiness. Observe all warning elements, display elements and control elements of the UPS carefully.

The operational readiness required to maintain functionalities must be regularly tested in accordance with the instruction manual of the UPS. Strictly abide by these instructions.

A defective UPS system must be replaced by a new one with the same performance characteristics immediately.







### **AVAILABILITY OF UPS**

The availability of the UPS depends on the performance of the accumulators. The service life of the accumulators is heavily influenced by the ambient temperature. The accumulators achieve their longest service life at ambient temperatures between +20°C and +25°C.

In order to ensure the availability for the good of the users, the entire set of accumulators must be replaced by a new one with the same performance characteristics after four years.

When disposing of replaced accumulators, observe the applicable local guidelines.

Should there be problems with the UPS or if you require safety-related information, please contact the manufacturer's address listed in the operating instructions.

## 6 Installation and Assembly

Prior to installation and commissioning of this control system, please read the safety and warning instructions carefully and observe all the warning signs fitted to the device. Make sure that the warning signs on the device are in a legible condition and replace missing or damaged signs at once.

### CAUTION!

Safe operation of the device requires that it is installed and commissioned by qualified personnel in a proper fashion and in accordance with the information and warnings provided by this installation manual. In particular, the general as well as regional assembly and safety guidelines for working on high-voltage systems (such as VDE) as well as the regulations governing proper use of tools and personal safety devices must be observed.

Ensure that a clearance of at least 100 mm is available next to the ventilation openings for unobstructed inlet and outlet of cooling air.

Avoid excessive vibrations and oscillations of the device.



### 6.1 Operating and Storage Conditions

#### CAUTION!

Improper operating or storage conditions can lead to the destruction of the system and to persons being put in danger!

- Storage temperature: -20 °C to 70 °C,
- Operating temperature: 0 °C to 60 °C,
- The ambient temperature of the control cabinet may be between 0 °C and 40 °C. If the operating temperature is below 5 °C, an impairment of visible characters on the LCD is to be expected. If the ambient temperatures are higher, the cabinet must be forcibly cooled (up to 60 °C using fans, above that temperature using cooling units). Existing inlets and outlets for ventilation must be kept free.
- Aggressive media, dust, fog, water or humidity may not enter the module. The control cabinet must therefore at least comply with protection class IP 54.
- Condensation of all components must be avoided!  
Example: formation of condensation water in wet engine rooms after deactivation of the control system



- In case of critical environments, a sufficient noise insulation to the building must also be provided.
- Our system control units are designed for a primary voltage of 230 VAC, 50 Hz.
- When using fault-current circuit breakers in control systems with frequency inverters, mind the fact that these fault-current circuit breakers must be sensitive to universal current. Other fault-current circuit breakers may not be inserted in accordance with DIN VDE 0160, 5.5.3.4.2, as an equal share in fault current may prevent the fault-current circuit breaker from tripping. The maximum permissible tripping current for these selective fault-current circuit breakers that are sensitive to universal current may not exceed a value of  $\Delta_N=0.3$  A.

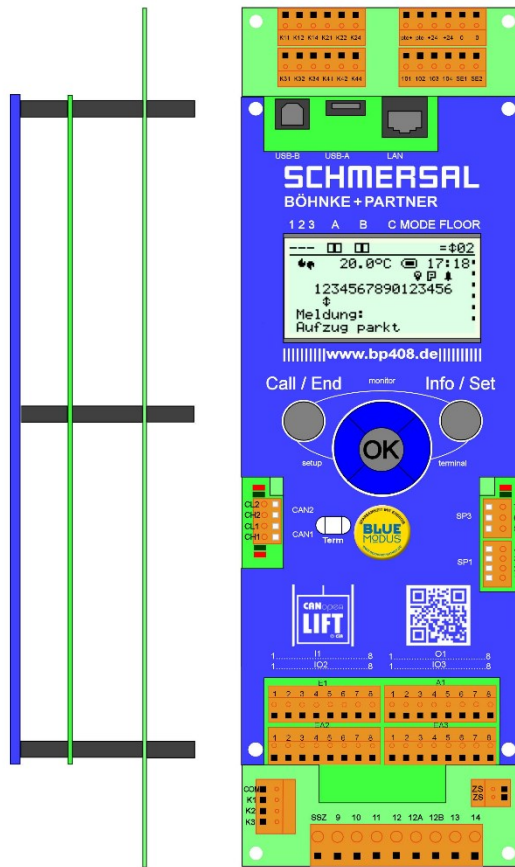
## 6.2 Preparations



### NOTE!

- The entire elevator system has been checked at Böhnke + Partner. The delivery state is documented in the circuit diagrams and the protocol of the setup and service menus.
- The circuit diagrams and technical documents that are unambiguously marked with a certain control number pertain to a specific control system.
- The control system must be connected in accordance with our circuit diagrams.
- The 24 VDC control lines and RS-232, RS-485, USB, CAN, LON data lines as well as Ethernet and telephone lines must be routed separately from the load lines!
- When connecting the control system, make sure that the technical information is observed, according to which the control system has been manufactured pursuant to your order.

## 6.3 A



▲ **Figure 29**

The control systems are delivered in control cabinets for wall mounting, as standing cabinets or inside doorframes.

The bp408 system module is connected to the rear wall of the control cabinet through bolts and M4 screws. The module must be safely mounted on the mechanical mounting points intended for this purpose.

## 6.4 Assembly of Control System

The control systems made by Böhnke + Partner are delivered in control cabinets. Depending on the desired variant, these can be hanging wall cabinets or standing cabinets. Mount the control cabinet as described in the supplied instructions.

## 6.5 Assembly of the Car Terminal Box

The car terminal box is mounted on the car in such a way that the switches for inspection and possibly provided outlets are easily and safely accessible and the trailing cable can be properly introduced.



▲ **Figure 30**

For wall mounting of hanging cabinets, the control cabinets are provided with associated brackets.

## 6.6 Assembly of Absolute Encoder

The absolute encoder provides the position and speed of the car to all bus participants. It can be mounted on the shaft head or on the cabin. A toothed belt creates a slip-free connection to the cabin. It is also possible to mount it on the speed limiter. In this case, the toothed belt can be omitted, but a magnetic switch must be provided for slip correction purposes.

Consult the supplied assembly instructions for more information regarding assembly.

### 6.6.1 Absolute Encoder Mounting Sets

Different mounting sets for different applications are available for mounting the absolute encoder inside the shaft or on the car.

#### Type S 100

AWG-05 with mounting set for shafts with large toothed gear, 10 mm wide, square flanks, conveying height: max. 60 m, speed: max. 4.0 m/s

Art.-No.: 287-051-003

#### Type K 105

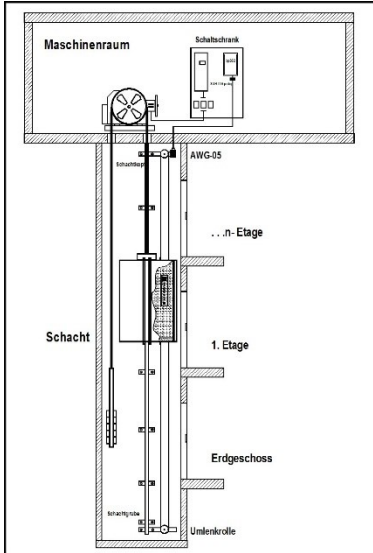
AWG-05 with mounting set for cars with large toothed gear, 10 mm wide, square flanks, conveying height: max. 180 m, speed: max. 4.0 m/s

Art.-No.: 287-051-004

#### Toothed belt

Z 10s - 10 mm, square flanks, black, for S 100, K 105

Art.-No.: 3020-130-100



**Figure 31**

The absolute encoder is driven by a toothed belt in a slip-free manner.



## 6.6.2 Assembly inside Shaft

The AWG is mounted on the guide rail inside the shaft. It is driven by a toothed belt, which is connected to the car by a return pulley in a slip-free manner.

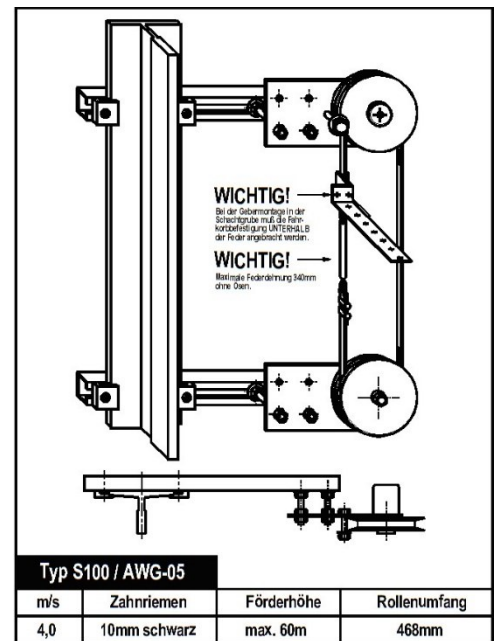
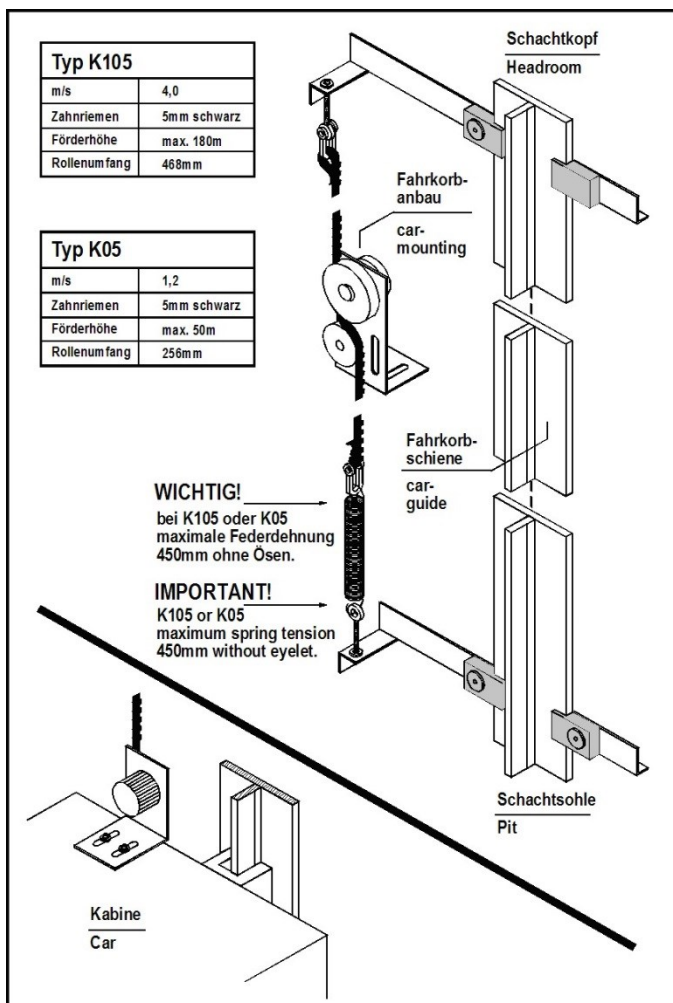


Figure 32

Mounting sets for assembly inside shaft (Type S 100).

## 6.6.3 Assembly on Car



One variant of the aforementioned assembly installs the absolute encoder on the car instead. In this case, a toothed belt, which is stretched from the shaft head to the shaft pit, drives the AWG. The advantage of requiring less toothed belt is countered by the disadvantage that the toothed belt generates a rolling noise on the toothed lock washer with higher speeds. This can be effectively reduced using a special coating of the toothed lock washer.



▲ **Figure 33**

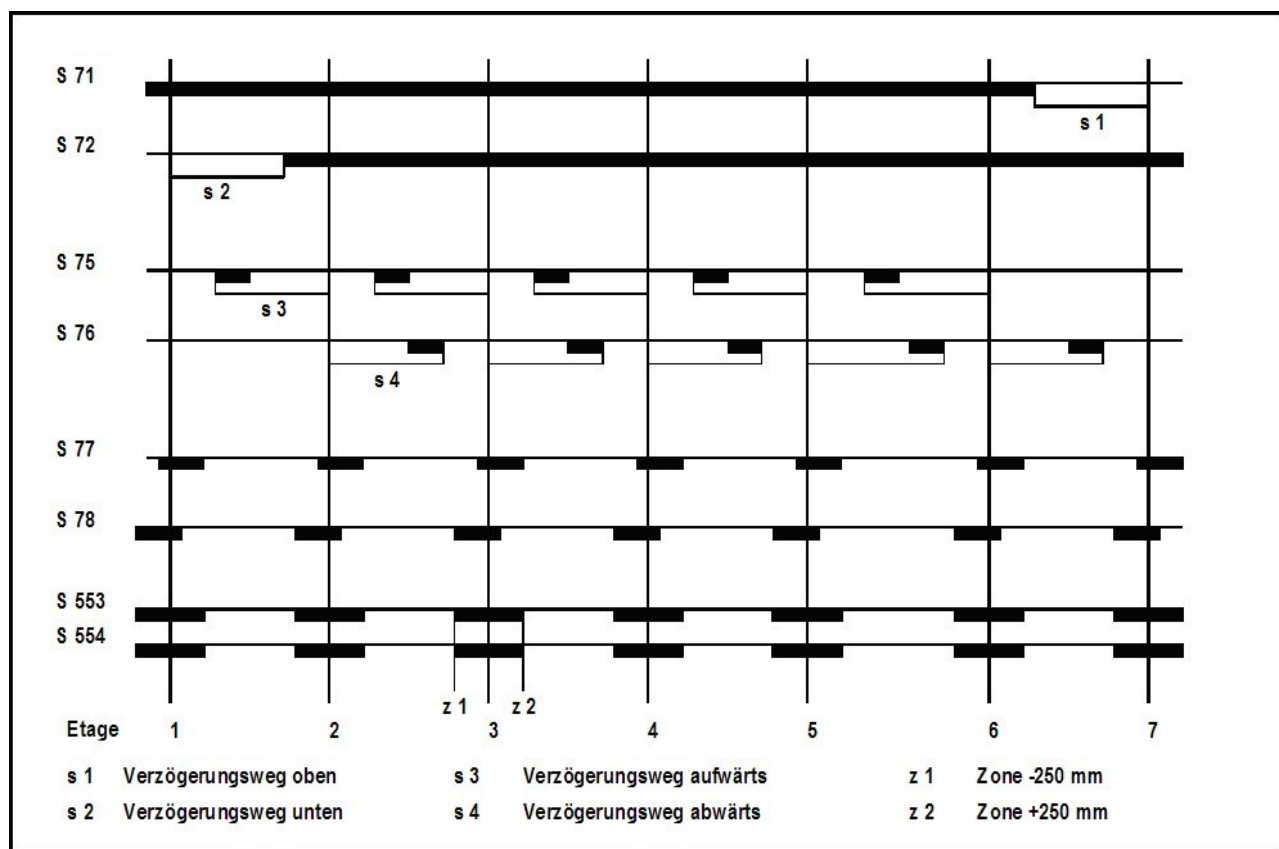
Mounting sets for assembly on car.

## 6.7 Assembly of Magnetic Switches

If magnetic switches have to be used, then these must be fitted to the car in such a manner that they pass the magnets while traversing the shaft at a distance of approx. 5 mm.

### Definition of switches:

S71	Top correction switch	Normally
S72	Bottom correction switch	Normally
S73	Fine adjustment switch up	Normally
S74	Fine adjustment switch down	Normally
S75	Pulse generator up	Normally
S76	Pulse generator down	Normally
S77	Level switch up	Normally
S78	Level switch down	Normally
S553	Zone switch "A"	Normally



▲ **Figure 34**

Example for an impulse diagram with magnetic switches.

# 7 Electrical Connection

## 7.1 Preparations

Prior to installation and commissioning of this device, please read the safety and warning instructions carefully and observe all the warning signs fitted to the device. Make sure that the warning signs on the device are in a legible condition and replace missing or damaged signs at once.

### **CAUTION! DANGEROUS VOLTAGE!**

- Make sure that you do not work on live components/devices! Switch off the system (in accordance with the circuit diagram).
- Before commencing any work on the elevator control system, make sure that no voltage > 50 VAC is present.
- Plug connections may not be made as long as the corresponding devices are not turned off.
- Handling rules pertaining to sensitive electronic circuit boards must be applied (protection against electrostatic charging)!
- Prior to connecting supply voltage, check whether the information on the control system's type plate correspond to the connection values.
- The general installation guidelines must be observed during electrical installation. These include:
  1. VDE 0100 Regulations on the erection of high-voltage systems with rated voltages of up to 1000 V.
  2. DIN EN 60204-1 (VDE 0113) Regulations on electrical equipment of processing and manipulation machines.
  3. DIN EN 50178 (VDE 0160) Electronic equipment for use in power installations
  4. The legal accident prevention guidelines, such as BGV A2.
- If the elevator control system or associated components are used in special application areas (for example areas with potentially explosive atmospheres), the standards and guidelines applicable in that case must also be observed.
- If the control system comprises an uninterruptible power supply (USV), turning off the main switch does not suffice in order to de-energize the installation. The UPS must be separately deactivated.



## 7.2 Interference Suppression Measures and Instructions

All industrial and electronically controlled machines (PCs, microprocessors, computers, PLC) can be influenced by interference pulses, if no countermeasures are taken. These interference pulses can be generated by both external systems, such as voltage changes from the feed line as well as control impulses of inverter power elements. Böhnke + Partner considers all the usual measures during manufacturing of the control systems. The used components exhibit a low sensitivity to ambient interference pulses. The control systems were developed for operation in industrial environments, where high values of electromagnetic interference are to be expected. Generally, a proper installation ensures a safe and undisturbed operation. Should there be complications in spite of the performed measures, the information provided in the following may prove as useful. In particular, grounding the reference potential of the installation (0 V) on the control system, as described below, can be effective.



### NOTE!

- The entire elevator control system was examined at Böhnke + Partner. The delivery state is documented in the circuit diagrams and the protocol of the basic and service menus.
- The circuit diagrams and technical documents that are unambiguously marked with a certain control number pertain to a specific control system.
- The control system must be connected in accordance with our circuit diagrams.
- The control lines and bus lines must be routed in a spatially separate manner from the load lines.
- When connecting the control system, make sure that the technical information is observed, according to which the control system has been manufactured pursuant to your order.
- Observe the EMC instructions of the manufacturer of the inverter at all times!
- If there are any questions regarding the EMC-Directive, our service team will gladly be at your disposal.
- Also observe the instructions regarding cable shielding (chapter 7.3)

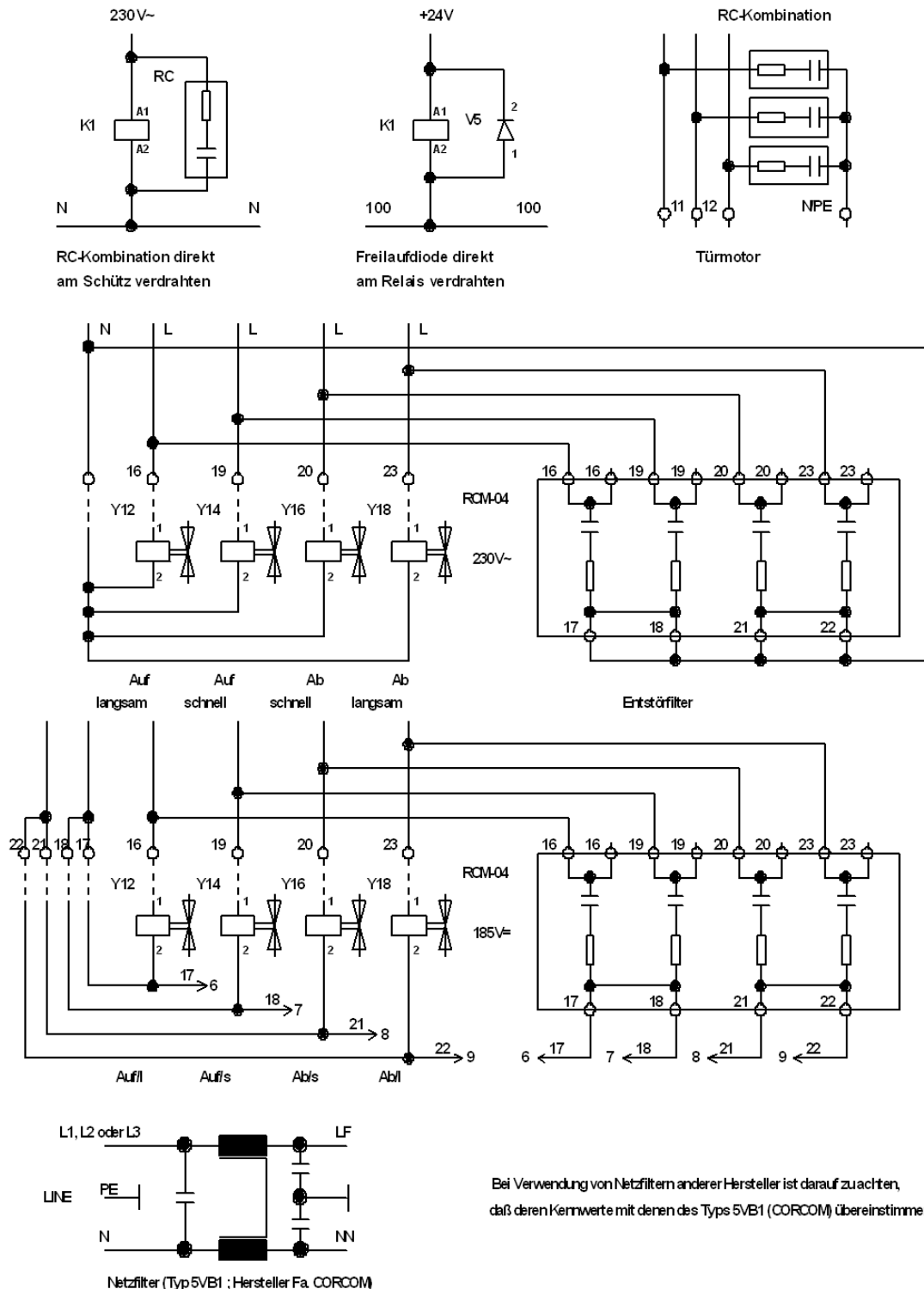
The following measures must be considered:

- The bp408 control system is exclusively used for information processing of an elevator system. All control signals are processed by the positive switching logic or via the CAN bus. The safety guidelines of DIN EN 81 are not limited by the electronic information processing.
- The control system has been constructed, built and examined in accordance with DIN EN 81 and the VDE guidelines. The applicable regulations governing commissioning of electronic control devices and operating equipment must be observed by you. The locally applicable lightning protection measures are a prerequisite for operation.
- The circuit diagrams and technical documents that are unambiguously marked with a certain control number pertain to a specific control system.
- Regarding all third-party devices, the assembly and installation instructions of these third-party manufacturers must be followed to the letter.
- Regarding compliance with EMC Guidelines, a suitable, single-phase mains filter must be wired to the 230 VAC control circuit with the connected signal circuit.
- The control lines should be routed as far away from the load lines as possible and using separate wiring ducts. For line crossings, an angle of 90° should be maintained, if possible.
- Control units must always be connected to chokes, filters and shielded lines in accordance with the assembly and installation instructions of the manufacturer.
- Make sure that all devices in the cabinet are properly grounded by short grounding lines with a large cross section that are connected to a joint grounding point or grounding rail. It is especially important that every control unit connected to an inverter (for example a tachometer) is connected to the same grounding point with a short line of large cross section as the inverter is itself. Flat lines (for example metal brackets) are preferred, because they exhibit a lower impedance for higher frequencies.
- For load connections between the drive unit and inverter and/or the control system, use shielded or reinforced cables and ground the shielding/reinforcement on both ends.
- Data connections (group, EDI, printer connection, etc.) are generally made using shielded lines. The shielding of the data lines should be grounded on one side.
- Mounting plates consist of galvanized steel plates in order to produce large-scale mass connections to all control components.
- The use of interference-free components leads to an increased insensitivity to environmental influences.

- The car must be grounded by a green/yellow line, which is also routed through the traveling cable.
- The free traveling cable cores should be grounded on one end at the control cabinet.
- The components used in the control systems correspond to the guidelines of DIN EN 81 as well as VDE 0100 / 0101 / 0551 / 0660 and BGV A2. The control cabinets correspond to the VDE 0660 / Part 500 installation standard.
- The main and auxiliary contactors used in the control system comply with DIN EN 81, Part 1, 13.2 as well as VDE 0660 to at least Device Class D3.
- Voltage fluctuations within the tolerance range (+10 %, -20 %) of the energy supply companies (EVU) are permissible.
- Faults that are caused by improper increases in voltage cannot lead to claims for damages against the manufacturer.
- If the operator installs additional coils (inductances) on his own accord, it is of great importance that these are interference suppressed as well.
- For DC-powered inductances, such as in contactors, relays, braking magnets, locking magnets and hydraulic valves, a diode (1000V/1A) must always be fitted in an antiparallel fashion and as close as possible to the coil itself. (Free-wheeling diode at Böhnke + Partner)
- For AC -powered contactors, relays, braking magnets, locking magnets and hydraulic valves, an RC combination matched to the coil type must always be fitted in parallel and as close as possible to the coil itself. (RC combination at Böhnke + Partner is universally usable.)
- For three-phase door drives, braking and locking motors, an RC combination matched to the motor type must always be fitted in parallel and as close as possible to the motor coil itself. The RC combinations are connected to the motor coils in a star formation. (RC combinations at Böhnke + Partner are universally usable.)
- Interference suppression measures must be installed in a practicable manner.

Vorzugsweiser Aufbau der Komponenten im Schaltschrank,  
z.B. mit Kabelkanalverdrahtung

Bitte unterschiedliche Beschaltung für 230V~ und 24V= beachten !



**Figure 35**  
Circuit diagrams for interference suppression measures

## 7.3 Connections for Cable Shielding

To achieve a good electromagnetic compatibility (EMC) of the elevator system, all shielded lines, unless they are assembled as EMC-suitable plug connections, must be connected in accordance with the provided figures.



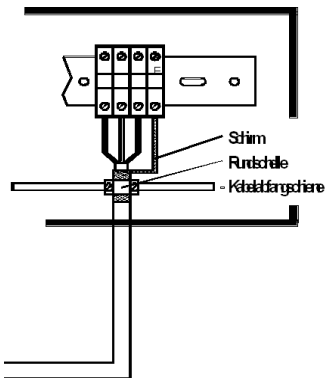
### NOTE!

It does not suffice to simply twist the cable shielding and to clamp the pigtail on the PE potential. In order to achieve good EMC, it is important that these shieldings are always connected over the entire area.

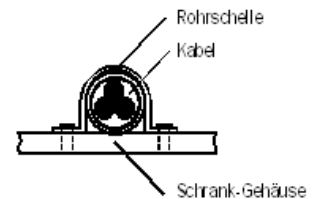
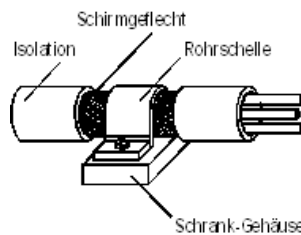
If the operator fits additional shielded lines on his own accord, it is of great importance that these shieldings are also connected as shown in the figures!

Always observe the EMC instructions of the manufacturer of the inverter!

If you have any questions regarding EMC laws, please do not hesitate to contact our service team.



**Figure 36**  
Connection example for shielded lines



**Figure 37**

The shieldings must always be connected to the PE potential across their entire area using a cable and/or pipe clamp.

## 7.4 Designations in Circuit Diagrams

Böhnke + Partner defines the designations for individual components in accordance with functional groups. We have refrained from forcing these designations into a rigid pattern. Using the CAD system for creating our circuit diagrams, we can reach a higher degree of flexibility regarding the designation of circuit diagrams as well as parts lists. Every component is directly designated in the circuit diagrams in relation to functions and the project in question and thereby specific for the customer.



## Meaning of abbreviations for functional groups:

### Power supply:

Main switch	Q1
Main fuse	F1
Control fuse	F2A
UPS secondary fuse	F2U
Shaft light fuse	F3
Joint fuse for shaft and cabin lighting	F36
Cabin light fuse	F6
Safety circuit fuse	F5
FI safety circuit	F51
UPS primary fuse (W+W)	F2B
GSM1 Smoke extraction	F9
Bolt fuse	F48
Brake fuse	F71
Door A/B fuse	F1057
Door A fuse	F105
Door B fuse	F107

### Shaft lighting:

Eltako relay	K3
Button inside shaft	S3S
Button on car	S3KK
Button of control system	S3ST
Button in pit	S3SG

### Fans/heating:

Motor fan fuse	F328
Motor fan relay	K328
Motor of motor fan	M328
Control cabinet heating fuse	F90
Threshold heating fuse	F91
Cooling unit fuse	F92

### Service brake/safety brake/brake test/emergency rescue/ anti-descent protection:

Brake contractors	Q71A1Q71B
Brake testing contactor 1	Q631
Brake testing contactor 2	Q632
Emergency rescue contactor	Q635

Brake monitoring	K254, K255
Transformer brake	T71
Inverter service brake	G71AB
Inverter service brake 1 of 2	G71A
Inverter service brake 2 of 2	G71B
Inverter safety brake	G330
Safety brake relay	K330
Safety brake bypass	S330BY
Safety brake bypass lam.	P330BY
Emergency rescue	S220
Release brake	S692
Anti-descent protection bypass	S260BY
Anti-descent protection relay	K260R
Anti-descent protection bypass	P260BY
Anti-descent protection	P260

Cables/controllers:

Frequency inverter	T20
Choke	R20
Filter	V20
Main contactors	Q11A,Q11B
Synchronous contactor as short-circuit contactor	Q0
2 x synchronous contactors as short-circuit contactor	Q0A, 0B
Auxiliary contactors	K11A,K11B
Braking aid relay (3K31)	K31
Contactor release	K33
Drive release	K34
Drive relay 1	K21
Drive relay 2	K22
Drive relay 3	K23
Drive relay 4	K24
Drive relay 5	K25
Drive relay 6	K26
Drive relay 7	K27
Drive relay 8	K28
STO relay 1	K/STDA
STO relay 2	K/STOB

Fast Start	K/FAST
"BlueMode" B / B+	K118, Q118

Controlled + uncontrolled hydraulics/valves:

Motor	M1
Valves up	Y11A, Y11B
Valves down	Y21A, Y21B
RCM-04	RCY21AB
Choke	R20
Filter	R20
Soft starter	T1ASR
Contactors Soft starter	Q11A, Q11B
Contactors star triangle	Q11A, Q5, Q6
Auxiliary relay up	K11A, K11B, ...
Auxiliary relay down	K21A, K21B, ...
Auxiliary relay up/down	K4FA, K4FB
Up slowly (43)	K43
Valve transformer	T2
Valve rectifier	G2
Drive relay 1	K21
Drive relay 2	K22
Drive relay 3	K23
Drive relay 4	K24
Drive relay 5	K25
Drive relay 6	K26
Drive relay 7	K27
Drive relay 8	K28
Lower button (DSV)	S21AB, S22AB
Resistor	R450Ö, R450M, R450A, R450B, ...
Fuse LRV	F/LRV
Controller board	A/LRV

Emergency unlock:

Safety relay	K50
Release reset	S150
Emergency unlock reset	S50
Safety tripped in cabinet	P50ST
Relay end of safety circuit	K190
Safety lamp on car ready	P50BK
Safety lamp on car tripped	P50AK
Safety lamp on SG ready	P50BSG
Safety lamp on SG tripped	P50ASG

Safety ready relay	K54
Safety not ready relay	K55
Emergency unlock contacts	S50N1, S50N2, □...S50Nn

SK:

Stop retracted under car	50A
Stop extended under car	S50B
Stop retracted under GGG	S50
C Stop extended under GGG	S50D
Emergency end switch for inspection car/S down	S50E
Emergency end switch for inspection car/S up	S50F
Car roof perimeter retracted	S50G
Car roof perimeter extended	S50H
Pre-limit switch for inspection up car/shaft	S50I
Pre-limit switch for inspection down car/shaft	S50J
Telescopic apron	S14I

Safety circuit:

Passive safety circuit	S9.1-S9.x
Catch	S10
Emergency stop circuit on car	S14.2-S14.x
Active safety circuit (11)	S15.2-S15.x
Shaft doors	S16.1-S16.x
Car door A	S17
Car door B	S18
Bolt	S19.1-S19-x
Safety circuit relay end	K19

Remote trigger 1	S20A
Reset for remote trigger 1	S21A

Remote trigger 2	S20B
Reset for remote trigger 2	S21B
Zone in door/cabinet	P47A
Zone in releveing controls	P47B

Releveling controls/inspection

Emergency stop releveling controls	S15.1
Releveling controls on	S102
Releveling controls up	S103
Releveling controls down	S104

Emergency inspection controls	S14.1
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Inspection on Inspection	S401
up Inspection down	S403
Inspection COM	S404
	S401C

Pilot controls/PSU:

Controls/light on/off	S37
Missing phase relay	K54
Mains filter	V1BP

Car/Floor signals:

External calls	S1D-SnD / S1F-SnH
Floor indicator	P81S-P8nS
Out of order	P46
Car here	PIPR-PnPR
Special signals in accordance with function	
Car signals/car panel	S1A-SnA
Car position indicator	P7K
Open/close button	S163, S164, S173, S174
Special signals in accordance with function	

Emergency lighting/emergency call:

Power outlet Control	X65ST
System power outlet	X65KK
Car PSU Emergency	T6
lighting	K36
Light failure relay (6K2)	

Alarm button car Alarm button	S6KK
shaft pit Alarm button car	S6SG
panel Alarm panel Alarm	S6KT
button beneath car Alarm	S6UK
relay in terminal box Alarm	K6KK
relay for control system	K6ST

PSU Control unit	T408
additional PSU	T21
Diode additional PSU	R21

Doors:

Door fuses	F105 / F107
------------	-------------



Power outlets in terminal box	X105/X107
Door control unit	A105/A107

Bolt:

Bolt transformer	T48
Bolt rectifier	G48
Bolt relay	K48
Selective bolt A	K264
Selective bolt B	K265



## 7.5 The Safety Circuit

### NOTE!

When actuated, the safety devices prevent the elevator from starting up and immediately stop the elevator if it is moving.

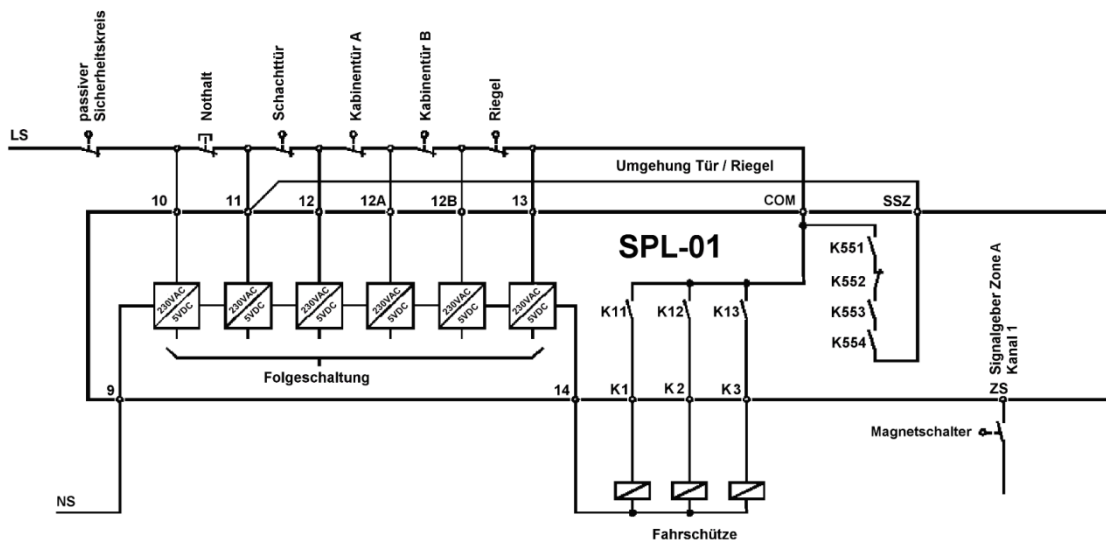
The safety circuit is designed for monitoring the following external signals:

- ▶ Closed position of maintenance and emergency doors,
- ▶ Locking of car doors,
- ▶ Locking of shaft doors,
- ▶ Closed position of shaft doors,
- ▶ Closed position of car doors,
- ▶ Emergency stop for car roof, car and control room,
- ▶ Speed limiter,
- ▶ Buffer contacts,
- ▶ Emergency limit switches at top and bottom,
- ▶ Catch mechanism,
- ▶ Door zone with safety circuit.

The doors and bolts are monitored for approaches with opened doors and fine adjustment within the door zone.

All movement and auxiliary contactors for the safety circuit are designed in accordance with VDE 0660, Device Class O3. The signal voltage for the safety circuit amounts to 220-240 VAC.

The safety circuit works independently from the bp408 control system. In case of a malfunction, the operating voltage of the output module is deactivated for the actuators.

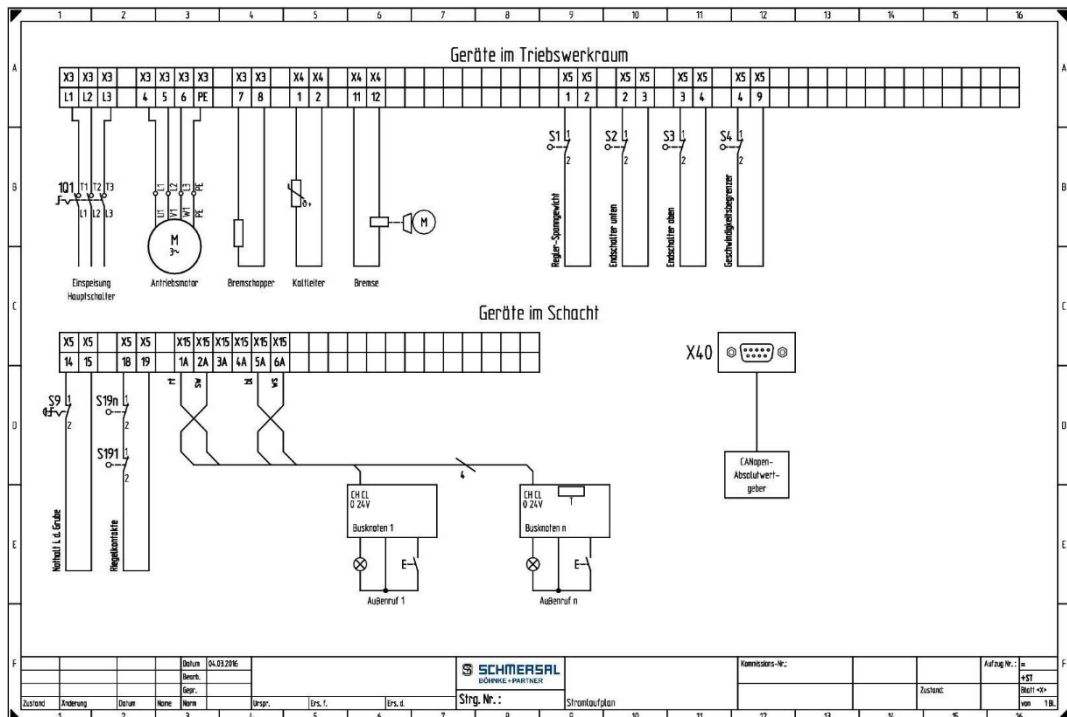


▲ **Abbildung 38**

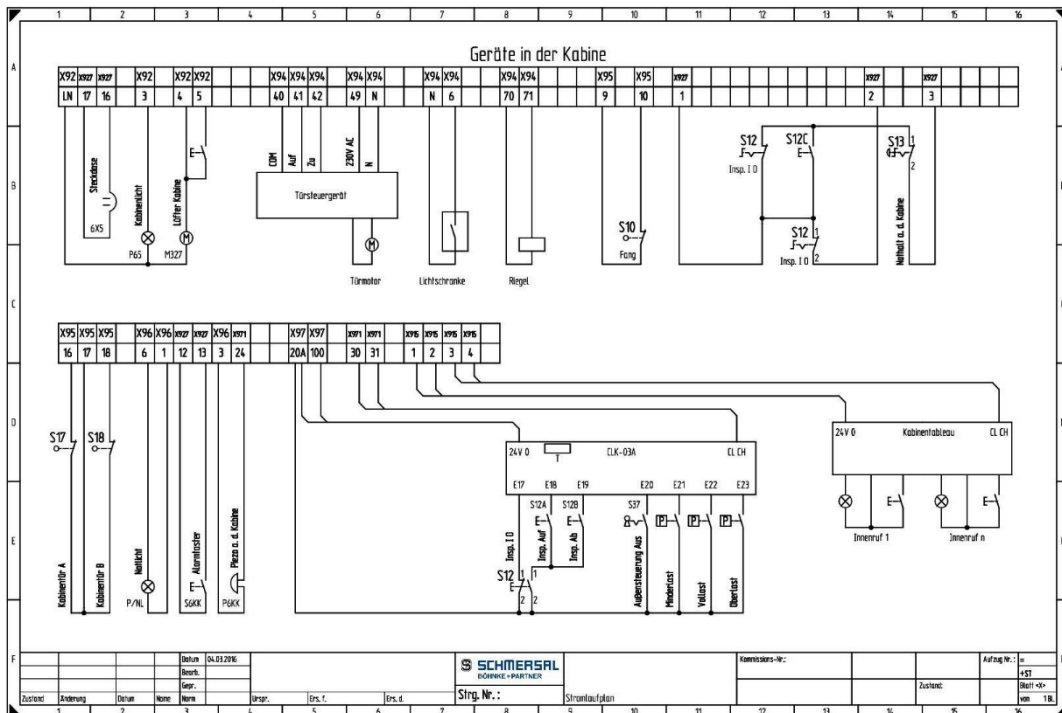
Standardschaltung des Sicherheitskreises am Beispiel des bp408

## 7.6 Connection Example of Cable Controls

**Figure 39**  
Wiring inside  
engine room



**Figure 40**  
Wiring  
Car





Wiring inside engine room



## Wiring of car



## 7.8 Electrical Installation

After mechanical assembly of all components, perform the electrical installation according to the supplied circuit diagrams. Make sure that all contact points are properly connected and the EMC wiring guidelines are maintained.

## 7.9 Bus Connections

With the bp408 control system, the CAN bus is used in accordance with the CiA 417 application profile. This profile also describes the physical parameters of the bus lines as well as the topology. Special guidelines generally apply to the wiring of bus systems.

### 7.9.1 Electrical Bus Medium

The components in accordance with CiA 417 require a two-wire line for communication purposes. From the bus' perspective, the individually connected components are referred to as nodes. The nodes are connected to the bus in parallel. It must be ensured here that the topology of the bus line always forms a line. The CAN high speed standard (ISO11898-2) requires that the bus is terminated at the beginning and end by one resistor (120 Ohms) each. Termination can be handled in different ways. For some nodes, an internal resistor can be activated by an DIL-switch or jumper while a resistor has to be attached to the bus terminals for other nodes. Mind the manuals of all connected nodes regarding exact termination!

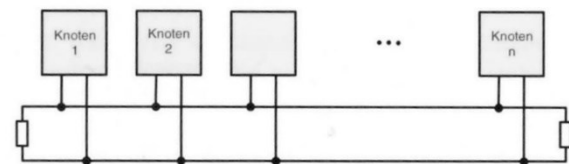
The maximum number of nodes on the bus is limited to 64 by the user driver modules. Should more nodes be required, you have to make use of repeaters or bridges (see further down below). The baud rate of all connected

nodes must also be the same. The bp408 presets baud rate of 250 kBit to the CAN1 and CAN2 interfaces as the network master. All other components made by Böhnke + Partner are equipped with an automatic baud rate detection or are preset to 250 kBit. Regarding the used baud rate, the bus may not exceed a length of 200 m. The sum of stub cables may not exceed a length of more than 3 m.



▲ **Figure 43**

Elevator components that correspond to the CiA 417 application profile may bear this logo.



▲ **Figure 44**

The bus must be terminated by one 120 Ohms resistor at the beginning and end.



## 7.9.2 Cable Colors

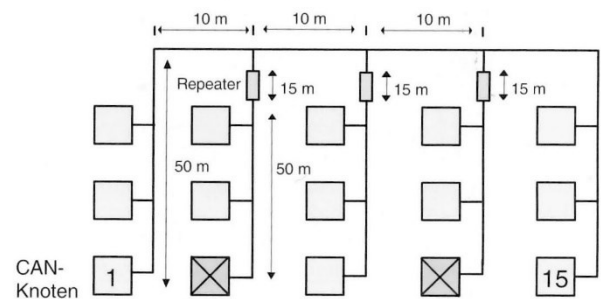
The cable colors for the bus lines are not defined in CANopen Lift. We recommend use of the following colors for bus lines in order to facilitate wiring and troubleshooting:

Signal	Description	Color
CAN_L	CAN-Bus-Signal (dominant low)	Blue
CAN_H	CAN-Bus-Signal (dominant high)	White
GND	External ground	Black
CAN_V+	External voltage supply (+24V)	Red

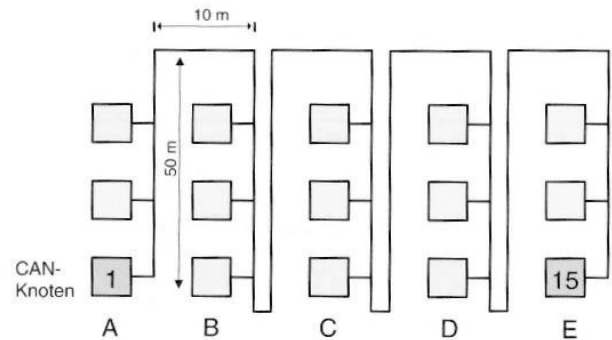
## 7.9.3 Network topology

Bus systems prescribe a topology due to physical laws. A certain line structure is prescribed for the used CAN bus in the CiA 417 specification.

This cable routing specification cannot always be implemented in practice. That is why a connection of additional cords is possible using repeaters. Please note that every partial component behind a repeater constitutes an autonomous bus and must therefore be terminated at the start and end points.



**Figure 45**  
Cords can be connected using repeaters.

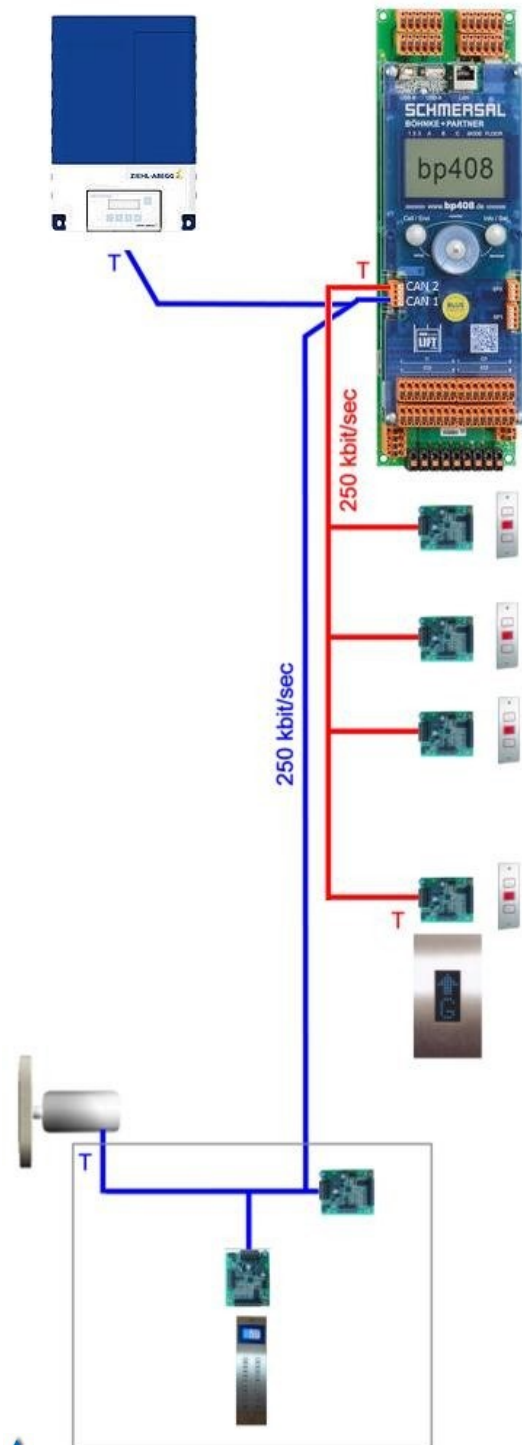


**Figure 46**  
The wiring of all nodes must constitute a line.

## 7.9.4 Examples for a Correct Topology

### 7.9.4.1 Individual Control System

The figure shows an example for maintaining the line structure and termination for an individual control system. The car bus is portrayed in blue and the group bus is portrayed in red. If the stub cable to the inverter is shorter than 3 m, then the termination can also be handled on the bp408. The termination on the car is done either via a connected AWG or a DIP switch (DIP 2 to "ON") on the CLK-03. By default, the group bus is terminated on the shaft end by activating the termination on the DIP switch of the last CAP-01/02 (DIP 2 to "ON").



▲ Figure 47

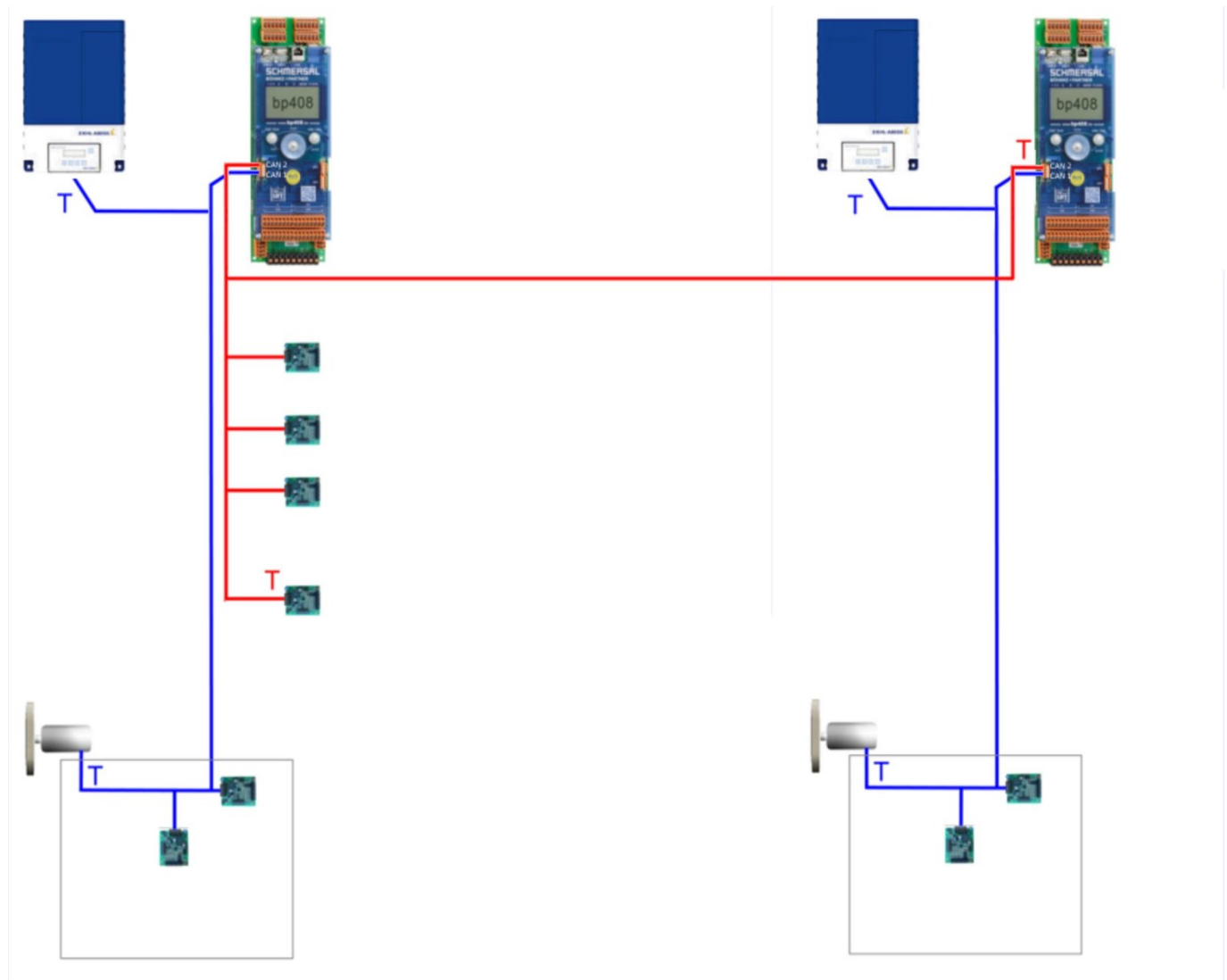
Examples for the topology of an individual control system

#### 7.9.4.2 Groups of Two with One Cord

The figure shows a bus topology for a group of two with a single cord for external calls. The line structure is maintained here as well and the bus is terminated on the ends.

#### NOTE!

Mind the termination during commissioning. In most cases, a single elevator system is commissioned first and the group connection is established later. In this case, the termination must be adapted accordingly (see individual controls).



▲ **Abbildung 48**

Beispiel für die Topologie einer 2er-Gruppe mit nur einem Strang.



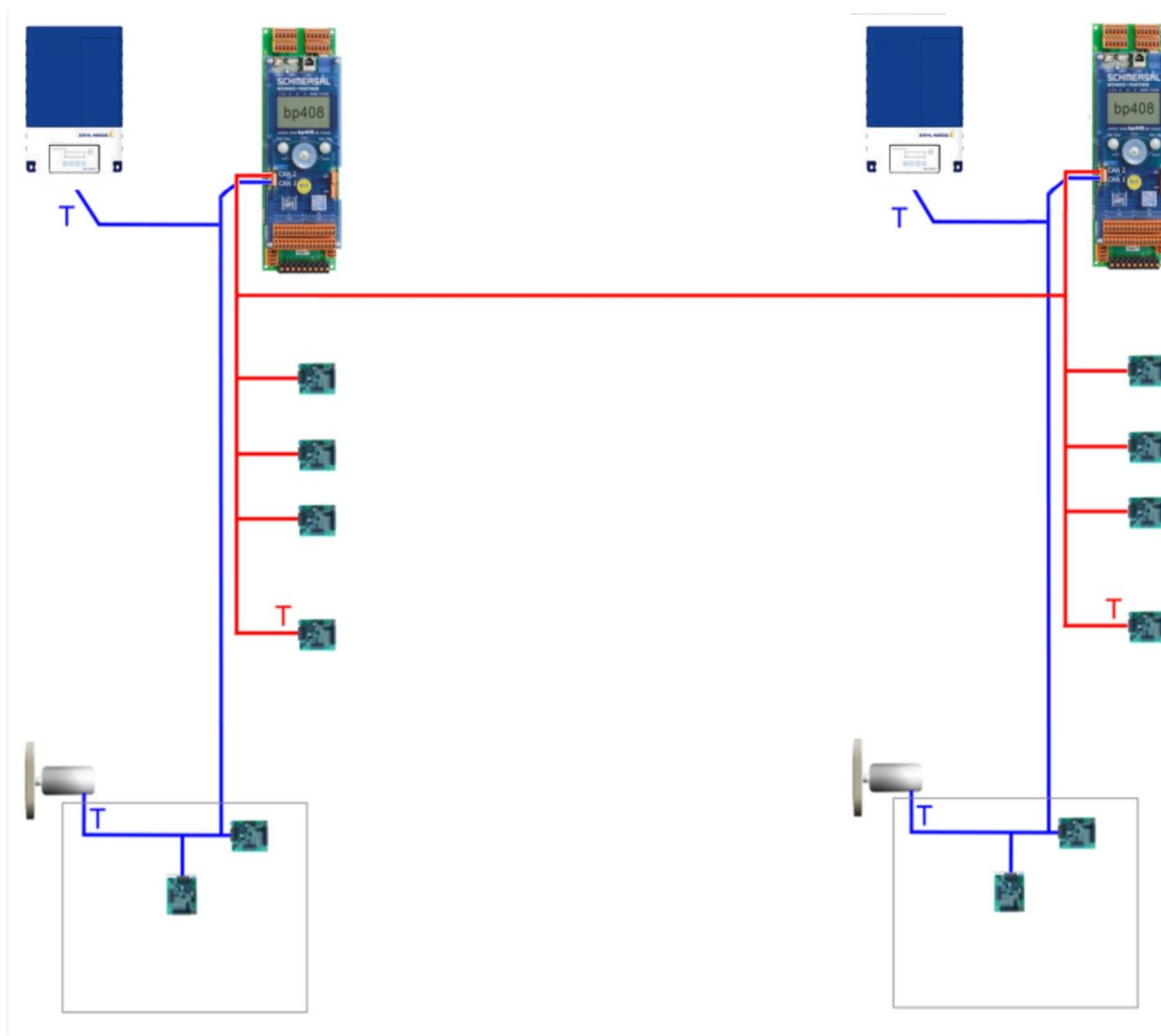
### 7.9.4.3 Groups of Two with Two Cords

The figure shows a bus topology for a group of two with two cords for external calls. The line structure is maintained by a termination on both shaft ends.



#### NOTE!

Mind the termination during commissioning. In most cases, a single elevator system is commissioned first and the group connection is established later. In this case, the termination must be adapted accordingly (see individual controls).



▲ Abbildung 49

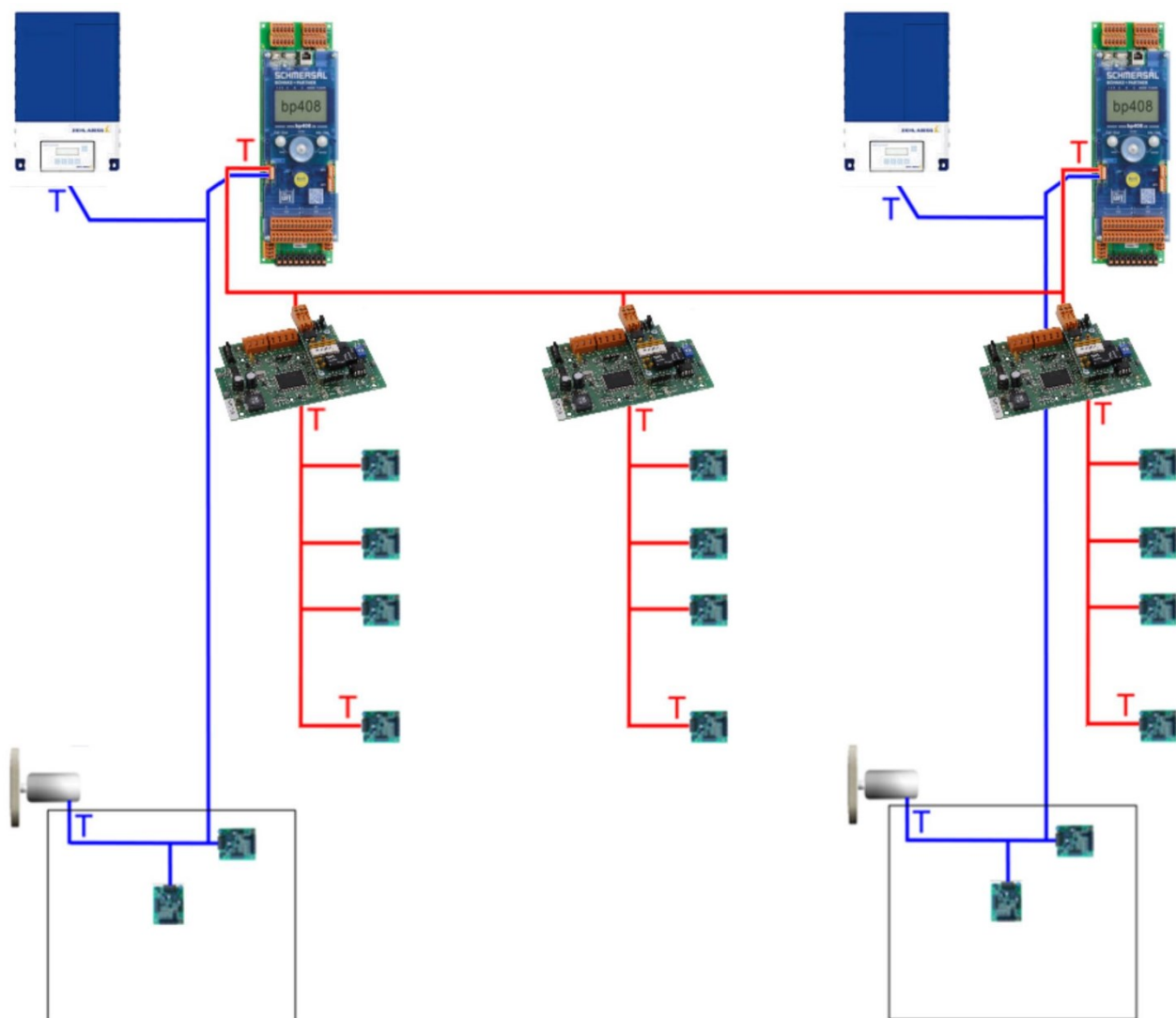
Beispiel für die Topologie einer 2er-Gruppe mit 2 Strängen.

#### 7.9.4.4 Groups of Two with Three Cords

The figure shows a bus topology for a group of two with three cords for external calls. As a line structure can no longer be maintained, bridges are used here instead. Every single cord thereby forms an independent line again. The bus is terminated on the ends.

##### NOTE!

Mind the termination during commissioning. In most cases, a single elevator system is commissioned first and the group connection is established later. In this case, the termination must be adapted accordingly (see individual controls).



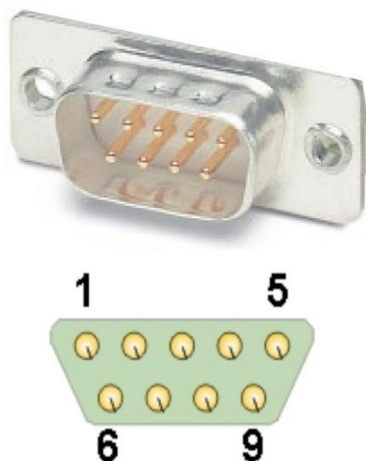
▲ **Abbildung 50**

Beispiel für die Topologie einer 2er-Gruppe mit 3 Strängen.

## 7.9.5 Pin Assignments

The CANopen Lift standard defines the assignments for the most common types of plug connectors. The following plug connectors for elevator components are recommended in the application profile for elevators:

- D-Sub 9-pin
- RJ45
- Open-Style-Connector



**Figure 51**  
D-Sub-Connector 9-pin

### 7.9.5.1 Pin Assignment of 9-Pin D-Sub-Connector

Pin	Signal	Description
1	-	Reserved
2	CAN_L	CAN-Bus-Signal (dominant low)
3	CAN_GND	CAN ground
4	-	Reserved
5	CAN_SHLD	Optional shielding
6	GND	Optional ground (from pin 9)
7	CAN_H	CAN-Bus-Signal (dominant high)
8	-	Reserved
9	CAN_V+	Optional external voltage supply (+24 VDC)



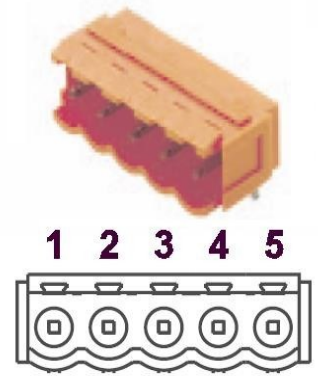
**Figure 52**  
RJ45-Socket

### 7.9.5.2 Pin Assignment of RJ45-Socket

Pin	Signal	Description
1	CAN_H	CAN-Bus-Signal (dominant high)
2	CAN_L	CAN-Bus-Signal (dominant low)
3	CAN_GND	CAN ground
4	-	Reserved
5	-	Reserved
6	CAN_SHLD	Optional shielding
7	GND	Optional ground
8	CAN_V+	Optional external voltage supply (+24 VDC)

### 7.9.5.3 Pin-Assignment of Open Style Connector

Pin	Signal	Description
1	CAN_GND	CAN ground
2	CAN_L	CAN-Bus-Signal (dominant low)
3	CAN_SHLD	Optional shielding
4	CAN_H	CAN-Bus-Signal (dominant high)
5	CAN_V+	Optional external voltage supply (+24 VDC)



▲ **Figure 53**  
Open-Style-Connector 5-pin

## 7.9.6 Node Numbers of CAN Components

Every CANopen Lift component possesses a node number for identification purposes (Node-ID). This number must be unique within a CANopen Lift network. If there are two components with the same ID connected to the bus, these modules can not be contacted.

At Böhnke + Partner, the node numbers (Node-ID) are assigned in accordance with the following scheme and in accordance with the recommendations of SIG-Lift Control ([www.CANopen-Lift.org/wiki/Node-IDs](http://www.CANopen-Lift.org/wiki/Node-IDs)):

### 7.9.6.1 Node Numbers of CAN Components

Node-ID [decimal]	CAN1 Local bus	CAN2 Shaft bus
1	bp408 - Elevator controls	bp408 – Elevator controls G1
2	Drive (frequency inverter)	bp408 – Elevator controls G2
3	Reserved	bp408 – Elevator controls G3
4	Encoder/positioning 1	bp408 – Elevator controls G4
5	Encoder/positioning 2	bp408 – Elevator controls G5
6	Reserved	bp408 – Elevator controls G6
7	Door controls 1 (Door A)	bp408 – Elevator controls G7
8	Door controls 2 (Door B)	bp408 – Elevator controls G8
9	Door controls 3 (Door C)	CDG-01 / CSI-01 – Bridge / Repeater 1
10	CDG-01 – Gateway / CSI-01 - Bridge	Bridge / Repeater 2
11	CIO-01 in control cabinet	Bridge / Repeater 3
12	Inspection box with CLK-03	Bridge / Repeater 4
13	Load measurement	Bridge / Repeater 5
14	Energy meter	Bridge / Repeater 6
15	Reserved	Bridge / Repeater 7
16	CAP-02 / CBK-01 Interior panel node 1	Bridge / Repeater 8
17-20	CAP-02 / CBK-01 Interior panel nodes 2 - 5	
21-84	CAP-02 / CBK-01 / CIO-01 in shaft	
111-118	CAP-02 / CIO-01 in control cabinet	
119	CWI-01	
125	Default Node-ID (preset of a storage component, such as CAP-02, CBK-01 or CIO-01)	
126	Flashupdate BootIDader	
127	CANWizard	

If you obtain your control system from Böhnke + Partner, all node numbers (Node-IDs) will already have been preconfigured.

## **7.10 Flat Line to Car Terminal Box**

The connection of the car terminal box is handled via a flat line of type H05VEA7VH6-F.

Please refer to the wiring diagrams supplied with the control system regarding assignment of the cores.

### **7.10.1 Actuation of Inverter**

There are three options for controlling/actuating an inverter with the bp408. Depending on the chosen inverter, it can be actuated through the CAN bus, the DCP interface or parallel wiring with the RVM-01.

### **7.10.2 Actuation via CAN-Bus**

If an inverter with a CANopen Lift interface in accordance with the CiA 417 application profile is available to you, you should connect the bp408 using the CAN bus. This actuation of the inverter requires the least amount of installation and configuration effort, as the standardized application profile provides a certain plug-and-play capability and excellent diagnostics options.

Connect the inverter to the CAN1 connection of bp408 in accordance with the supplied plans. Consider the information in Chapter 7.9.4 regarding the routing of lines and termination of bus lines.

### **7.10.3 DCP Connection to Inverter**

The DCP interface is used for serial connections between the inverter and control system. This constitutes an RS-485 point-to-point connection.

The DCP interface is located on the right-hand side of the bp408 (see SP3 designation, 3-pin plug connector). The pin assignment is detailed in the following table.

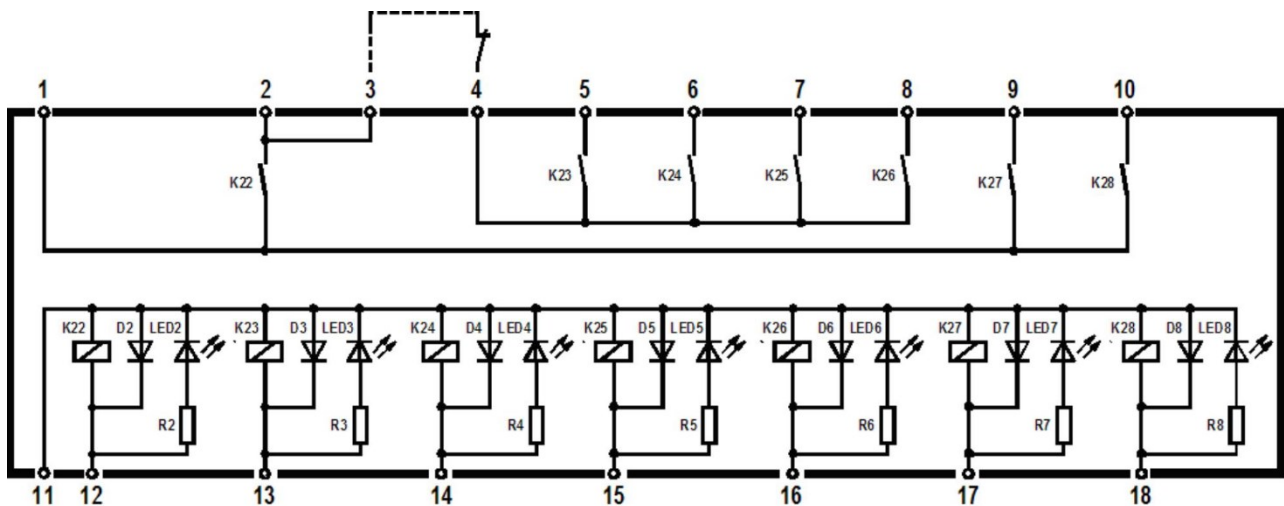
### 7.10.3.1 Pin Assignment of DCP Connector

Pin	Signal	Description
5	COM	Signal ground
6	B	Signal line, RS-485 inverted
7	A	Signal line RS-485

Connect the signal lines to the inverter with the corresponding connecting terminals. The cable must be twisted and shielded. The shield must be placed on the inverter side with one end. Ensure a large area connection in this regard (see Chapter 7.3). The maximum line length for a DCP connection amounts to 600 m.

### 7.10.4 Parallel Wiring with RVM-01

The pilot control module "RVM-01" is used to control all known inverters, which do not have the option of serial control. The control signals for different speeds and movement directions are output via seven relays in a potential-free manner. These are equipped with gold-plated double contacts, in order to ensure reliable switching under all expected conditions.



Klemmenbelegung:

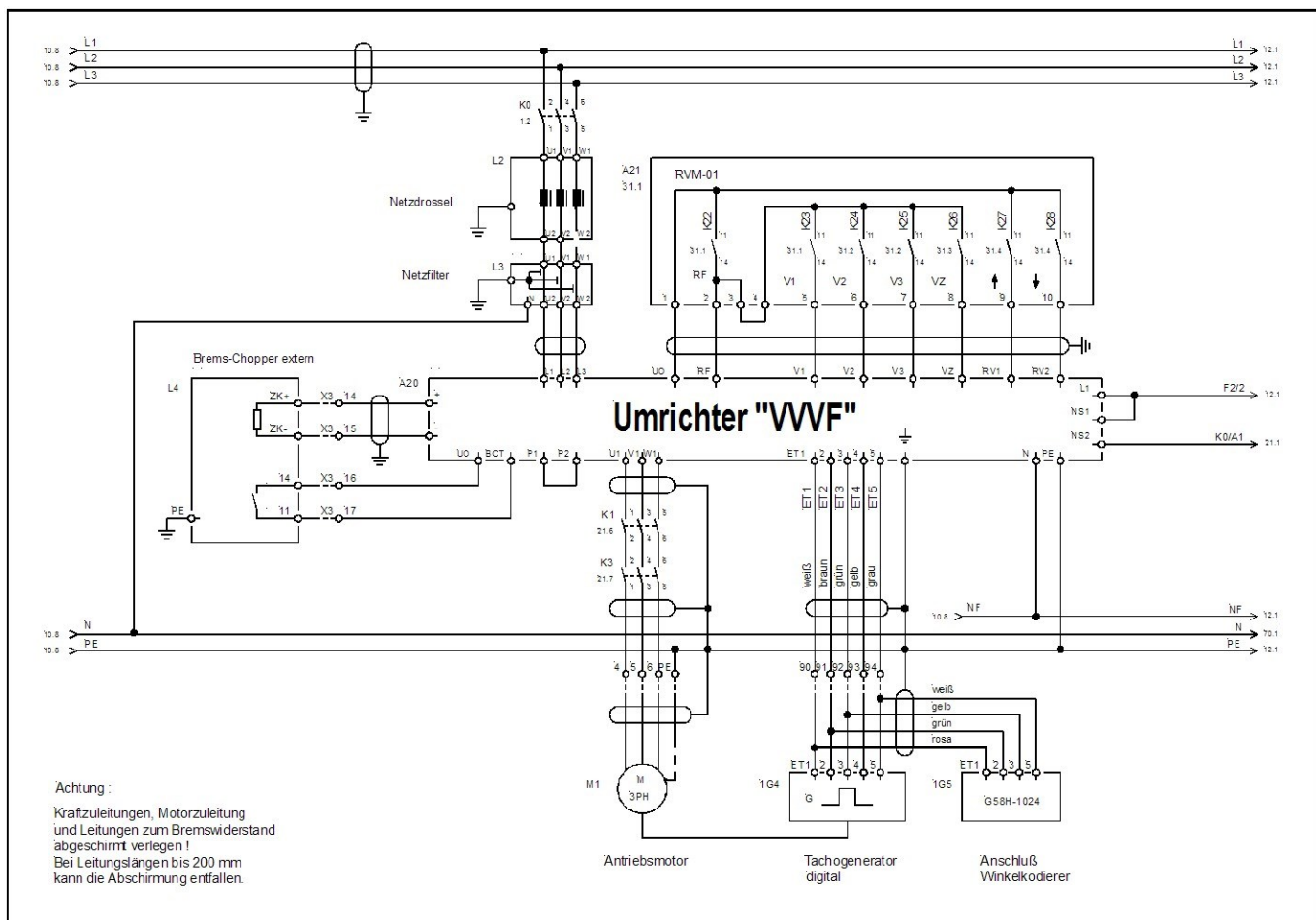
- 1 Bezugspotential der Regelung
- 3/4 Brücke oder, wenn gefordert, Schnellfahrtschalter
- 2/5-18 Belegung je nach Anwendung, bitte Stromlaufpläne beachten !!!

Beispiele: Funktion der Relais beim a) Seilaufzug mit Regelung, b) Hydraulikaufzug mit LRV

- |                      |                      |
|----------------------|----------------------|
| K22 Nachstellen (VN) | K22 Zwischen (V2)    |
| K23 Langsam (V0)     | K23 Zwischen (V3)    |
| K24 Schnell (V2)     | K24 Insp. (VI)       |
| K25 Insp. (VI)       | K25 Schnell Auf (V4) |
| K26 Zwischen (V1)    | K26 Schnell Ab (V4)  |
| K27 Richtung Auf     | K27 Langsam Auf (V0) |
| K28 Richtung Ab      | K28 Langsam Ab (V0)  |

#### ▲ Abbildung 54

Die Schaltung des RVM-01.



**Figure 55**

Example of an inverter control system with the RVM-01.

Control inputs (example)

GND Reference potential

UO Control voltage of inverter

Voltage output for controlling the inputs

RF Controller release, the "RF" input must be actuated during movements.

V0 Approach speed

V1 Positioning speed

V2 Intermediate speed

V3 Movement speed

VR Releveling/inspection speed

VN Fine adjustment speed

RV1 Direction selection 1 UP

RV2 Direction selection 2 DOWN

If the inverter is connected in accordance with  
the switching proposal, the motor will turn

left with input "RV1" activated and right with input "RV2" activated in the factory setting  
(view at drive-side shaft end).

ZE1 Extra speed V\_ZE1

ZE2 Extra speed V\_ZE2

These speeds should preferably be used for inspection movements and releveling controls.

ZE3 Extra speed V\_ZE3

This input can trigger different functions in the inverter. It is configured in the INTERFACES menu. The extra speed V\_ZE3 with the same name is preset at the factory.

BCT Brake chopper temperature This input monitors the temperature switch or fault output of the brake chopper.

## 7.11 Connection of Absolute Encoder (AWG)

The absolute encoder is provided with a 9-pin D-Sub-connector. The pin assignment corresponds to the CANopen Lift standard. The CAN bus is terminated in the AWG-05 CANopen Lift. If the absolute encoder is located on the car, the connection cable can be plugged directly into the socket on the CLK. If the absolute encoder is located in the shaft head, the connection cable can be plugged into the correspondingly labeled absolute encoder socket of the control cabinet.

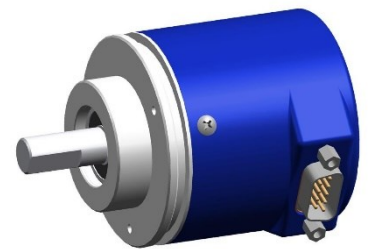
### NOTE!

The bus is generally terminated by position systems of various manufacturers. If the positioning system is mounted and connected on the car, the termination via DIP-switch 2 on CLK-03 must be deactivated in such a case. Notes on terminating the devices are provided in the associated manuals or on the internet at [www.CANopen-Lift.org](http://www.CANopen-Lift.org)

## 7.12 Group Connection

The group connection handles communication between the individual control systems and the transmission of shaft signals. The "CAN" connection serves as the interface for the group connection.

The data lines must be twisted. They are routed from the connection terminals down to the terminal strip of the control system. They are connected to the other group members using a plug connector.



▲ **Figure 56**

The AWG-05 absolute encoder CANopen Lift can be mounted inside the shaft head or on the car.





The cords with the shaft signals are considered as described in the "Topology" chapter. If the shaft signals are conventionally routed to the control system, they are converted to CANopen Lift data using corresponding modules, for example of type CAP-01/02 or CIO-01.

## 7.13 Data Lines for Remote Diagnostics

Remote diagnostics can be handled using various media. Different rules must be observed for each of these.

### 7.13.1 Analog Telephone Line

If an analog telephone connection is available for remote diagnostics, then data transmission is handled using an analog modem. To this end, an analog modem can be connected to the USB-A port of the bp408. This must be a proper hardware modem, not a soft modem. The USB modems supplied by Böhnke + Partner for the bp408 control unit are

"proper" hardware modems. The modem must also utilize the V.250 standard. If multiple systems share the same telephone connection or if an emergency call system is provided, which also uses the analog telephone connection, an emergency call manager must be utilized (see "Connection of Emergency Call System" chapter).

### 7.13.2 Ethernet

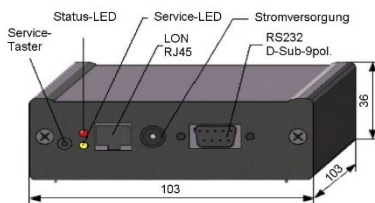
If remote diagnostics are supposed to be carried out using an intranet or the internet, an Ethernet connection is usually available in the machine room. In this case, use the LAN port of the bp408.

### 7.13.3 LON

Connection to a LONworks network, for example in building automation, is handled using the ASBuP interface. The connection is made to an optional SP1 connection of the bp408 and then to the LON network using an RJ45 connector.



**Figure 57**  
56K Hardware USB Modem,  
for example manufactured by  
*LONGSHINE, US Robotics*  
or *MANHATTAN*



**Figure 58**  
The LON interface ASBuP for  
connecting to LONworks  
networks.

## 7.14 Connection of Emergency Call System

Emergency call devices usually require an analog telephone connection. If a separate analog connection is available for the emergency call system, then the system is wired up as described in the instructions for the emergency call system. However, in most cases, the emergency call system has to share the telephone connection with the modem of the control system. In this regard, it must be ensured that the emergency call system is given priority. Some emergency call systems provide an interconnection for remote diagnostics systems, if no emergency call is currently present. If such a connection is not available on the used emergency call system, a so-called emergency call manager must be used. This manager interrupts an existing remote diagnostics connection immediately once an emergency call occurs and provides the emergency call system with access to the telephone connection.

There is no universally valid scheme for connecting an emergency call system. Therefore, please refer to the supplied circuit diagrams and the documentation of the emergency call system.

## 8 Commissioning

### CAUTION!

The control systems of Böhnke + Partner and the drive unit may only be commissioned, if the following requirements are satisfied:

- The control system has been installed and connected in accordance with this instruction manual.
- The operator is aware of how to operate/control the system and is familiar with the setting options (see user manual for bp408).
- Current EMC regulations (electromagnetic compatibility) are satisfied!
- The power circuit, control circuit and safety circuit have been connected and checked in accordance with this description (see checklist).
- During commissioning of the system, the following instructions must also be observed:
  - First Movement with Releveling Controls (Chapter 8.7),
  - First Movement with Inspection (Chapter 8.8),
  - First Movement in Normal Operation (Chapter 8.12) and
  - Configuration of Floor Selector (Chapter 8.11).



### NOTE!

For special variants, the provided supplements must also be considered prior to commissioning.

After completion of commissioning operations, write down the current parameterization on the setup- and service menu printout and/or create a current printout on a storage medium (memory card, USB data storage). The faults and malfunctions generated and saved during commissioning (fault stack/fault list) can be deleted in the "Diagnostics" submenu. If third-party access to the elevator system is allowed (caretaker), access to these menus must be protected using a code for setup and service (at least 4 digits).



### CAUTION!

Prior to every movement, the operator must make sure that neither people nor equipment may be in danger.



The "Technical Instructions" (Chapter 8.3) must be observed during acceptance testing.

## 8.1 Preparations

During on-site commissioning, no additional measuring instruments are required apart from a multimeter. The use of the STM-02 voltage testing module is recommended.

### 8.2 STM-02 Voltage Testing Module

The STM-02 voltage testing module was developed in order to protect the elevator control system from destruction due to overvoltage during installation and repairs.

#### NOTE!

You have to install the voltage system in the control system for monitoring purposes during the commissioning process. After commissioning, it must be removed again and can be used for other operations.



**Figure 59**

View of an STM-02 for protection of the control system from overvoltage

#### 8.2.1 Prior to First Activation

The control circuit must be grounded in accordance with VDE 0100 and EN 81. The "PE" terminal of the control system is therefore always connected to the PSU by a green/yellow line.

#### CAUTION!

Make sure that the elevator system is powered down!

- Only connect the green/yellow protective conductor to the terminal (100) in an unpowered condition. The negative potential of the control circuit may not be connected to the "PE" potential of the control system in no location of the elevator system.
- Therefore, be sure to check the connection of STM-02 to check whether there really is no connection between the "PE" terminal of the control system and the terminal (100) of bp408. Use an ohmmeter or continuity tester.
- If you have checked the previous points, the voltage testing module can be connected as shown in the supplied drawing.

You can then commence the installation or repair operations.



## 8.2.2 Functional Description of STM-02

After correct installation of the STM-02, the 24VDC control circuit is free-of-ground. With the elevator system turned on, an increased voltage in the control circuit does not cause an increased fault current against "PE". Therefore, no components inside the bp408 control system can be destroyed.

### CAUTION!

- An increased voltage in the control circuit is reported by the STM-02 using an LED and a buzzer. In that moment, the control voltage area presents a hazard.
- If the STM-02 reports a fault, you must immediately turn off the installation, find the source for the error/fault and eliminate it.



The fault message is saved by a bistable relay and is available even after deactivation and reactivation of control voltage. Press the reset button on the housing of the STM-02 to restore the device to the initial condition after successful troubleshooting.

### CAUTION!

- After completion of working operations on the bp408 control system, the green/yellow protective conductor must be connected to the terminal (100) again immediately!
- Remove the STM-02 from the control system.



## 8.3 Technical Instructions for Control System

1. The proper and safe operation of the product requires proper transportation and storage, installation and assembly as well as careful operation and maintenance.

2. The control system has been constructed, built and examined in accordance with DIN EN 81 and the VDE guidelines. The applicable regulations governing the commissioning of electric control devices and operating equipment must be observed. The locally applicable lightning protection measures are a prerequisite for operation. The circuit diagrams and technical documents that are unambiguously marked with a certain control number pertain to a specific control system.

3. The bp408 control system is exclusively used for information processing of an elevator system. All control signals

are processed by a positive switching logic. The safety guidelines of DIN EN 81 are not limited by the electronic information processing.

4. The bp408 control system has received an EC type examination certificate from the designated bodies. Chapter 3.1 contains the EC type examination certificate and chapter (missing) contains the declaration of conformity in accordance with the EC directive (95/16/EC), which state that our assembly satisfies regulations.

5. The components used in the control systems comply with DIN EN 81 as well as VDE 0100 / 0101 / 0551 / 0660 and BGV A2. Control cabinets comply with installation standard VDE 0660 Part 500.

6. The main and auxiliary contactors used in the control system comply with DIN EN 81, Part 1, 13.2 as well as VDE 0660 to at least Device Class D3.

7. Voltage fluctuations that are within the tolerance range (+10%, -20%) of the energy supply companies are permitted.

8. Faults that are caused by improper increases in voltage cannot lead to claims for damages against the manufacturer.

9. Special circumstances regarding use of an uninterruptible power system (UPS) must be considered. Prior to commissioning of the connected UPS, read the associated instruction manual. The UPS must ensure the power supply of all required control functions. Regularly check the proper functioning and undisturbed operation of the UPS. Follow the instructions of the device manufacturers.

10. Insulation and short-circuit measurement:

1) Since 01/01/1996, all control systems have been fitted with an attenuation filter. The attenuation filter may be destroyed by an insulation measurement. Prior to the insulation measurement of the safety circuit, the F2A control fuse must be removed.

2) For all control systems where a UPS is fitted, the UPS must be completely disconnected prior to the insulation or short-circuit measurement and the connections be bypassed in the control systems accordingly.

3) Observe the applicable safety regulations during insulation measurements. A danger for people and machinery exists.

11. All relays and contactors fitted to the control system must be interference suppressed (see Chapter 7.2).

12. The motor protection switches, high current trigger, fault current circuit breakers, etc. were preset by us and must be adjusted to the connected operating equipment by you during commissioning.

13. The following wiring guidelines apply in accordance with the corresponding instruction manuals:

Connect line N (N) to terminal NN (9) of the bp408.

Connect line N (F) to terminal NF (14) of the bp408.

14. In accordance with VDE guidelines, the ground line (VDC) must be connected to the protective conductor (PE) of the power supply.

- The terminal (100) (ground) is connected with the PE terminal (protective conductor) of the control system. This makes it possible to detect a ground fault of the signal voltage (+24VDC) immediately.

- Transformers are grounded on one side on the secondary side (for example special voltages of the brake or valves). This makes it possible to detect a ground fault of the secondary voltage immediately.

15. The safety circuit on the query unit of the bp408 is secured with a maximum of 1A.

16. The pulse diagram of the control system must be observed. The pulse flags shown there are not drawn to scale. This is a schematic representation.

17. The arrangement of switch-off points in the level area (level zone) must be precisely maintained.

18. The signals of the pulse generators and level switches can be checked during movement, inspection and releveling movements on the LCD in the "shaft signals" section of the service menu.

19. During maintenance and control operations, it is possible to keep the car door closed at the stops. See "maintenance" service menu on the LCD.

20. The car can be moved to the final stops for examination purposes using the call menu:  
push "up": movement to final stop on top,  
push "down": movement to final stop at bottom.

21. During inspection movements, the terminals E1 (101) or E17 (401) on the bp408 and/or CLK-03 are de-energized (see DIN EN 81, 14.2.1.3):

- all interior and external calls are deleted and blocked,
- the opening of the doors is prevented, there is no autonomous door movement,
- a fast movement is automatically decelerated using the correction switch,
- the movement is terminated at the level switch of the final stop,
- the fine adjustment system is deactivated,
- the return function for hydraulic elevators is not active.
- The releveing controls are not active.

22. During return movements, the terminal E2 (102) on the bp408 is de-energized (see DIN EN 81, 14.2.1.4):

- all interior and external calls are deleted and blocked,
- the opening of the doors is prevented, there is no autonomous door movement,
- a fast movement is automatically decelerated using the correction switch.
- The level switch of the final stop can be traversed during releveing movements!
- See "maintenance" service menu on the LCD.
- the fine adjustment system is deactivated,
- the return function for hydraulic elevators is not effective.

23. If return movement and inspection movement are "turned on at the same time", the car cannot be moved at all.

24. After the external controls have been deactivated using the "external controls off" menu item, all interior and external calls are deleted. External calls are no longer accepted. Interior calls will continue to be accepted.

25. The parking floor remains inactive with external controls deactivated.

26. The failure of light voltage is monitored by the control system. A commenced trip is terminated and the car comes to a stop with the door opened.



A new movement is prevented.

Hydraulic elevators are lowered to the return floor. The inspection or releveling controls remain in operation.

The fine adjustment system remains in operation. (see DIN EN 81, 8.17.3)

27. Motor protection via resistor monitoring (PTC) is performed using PTC thermistors wound into the coils of the three-phase motor. The monitoring switch integrated into the bp408 control system monitors the operating temperature of the motor.

28. The PTC threshold values are monitored and processed by a sequential circuit.

a) Temperature normal            Value < 2.2 kOhm = normal operation

b) Temperature too high        Value > 2.7 kOhm = resistor has tripped, see fault messages

Setting options in setup menu:

Traction elevator

Stops immediately without lock

Stops at the next level switch without lock

Stops immediately with lock

Stops at the next level switch with lock

hydraulic elevator

Stops with return without lock    Stops without return without lock

Stops with return with lock

Stops without return with lock

29. The fault message is entered into the stack memory and fault list if the motor operating temperature is exceeded. If remote monitoring is connected, the fault is immediately reported to the service center.

30. In normal operation (i. e. all safety functions are OK), the return function (to the lowest stop) for hydraulic elevators

a) is automatically initiated after a configured amount of time (max. 15 min.).

b) is immediately performed when the control system is deactivated (for example via "remote off").

c) is performed automatically after deactivating the control system and waiting a configured amount of time (max. 15 min.).

- In all cases [a), b), c)], the descent correction system remains in operation. (see DIN EN 81 Part 2, 14.2.1.5)

- Upon arrival at the lowest stop, the elevator door opens and closes in all of the cases [a), b), c)]. The "open door" button always remains active.
- The car light can be turned off at a stop and with the elevator doors closed, this is freely configurable. The car light is turned on immediately during actual operation.

31. If the upper emergency limit switch is actuated for hydraulic elevators, the elevator is stopped immediately. If the car is released again due to subsequent descent, all normal functions are deactivated and the return to the lowest stop is performed immediately, if the safety circuit is closed. The car remains at the lowest stop after opening and closing the doors and no longer accepts calls. The "open door" button always remains active.

32. The descent correction system remains in operation.  
(see DIN EN 81, Part 2, 14.2.1.5)

33. For hydraulic elevators, the descent correction system is activated upon actuation of the runtime control system and the elevator locks immediately.

34. For hydraulic elevators, the startup control is queried as follows:

- a) Startup control for upward movements causes an automatic return to the lowest stop followed by a lock. Should the runtime control actuate outside the zone in this case, the elevator locks immediately and the descent correction system is not activated as "startup control up" was registered as the first fault.
- b) For "startup control down" the elevator also locks immediately. The descent correction system remains in operation.

35. In overload conditions, the descent correction system for hydraulic elevators still remains in operation.

36. The overload query is only performed at standstill.

37. An overpressure switch is connected to terminal 35 of a hydraulic elevator and queried. It is possible to set overpressure to on and whether or not the elevator is supposed to lock in the setup menu. The circuit diagrams refer to this option.

38. An emergency control system (similar to "only up" releveling controls) can generally be fitted to a hydraulic elevator. If an emergency control system is fitted, then the following switches may be bypassed: Minimum pressure, pipe breakage, bottom emergency limit switch and catch.

**CAUTION!**

Combined catch contacts and slack cable switches as well as all other switches may not be bypassed. The following applies to the emergency "down" circuit:

- a) for an emergency "down" circuit, the bottom emergency limit switch may not be bypassed!
- b) an emergency "down" circuit may not be used in 2:1 installations without slack cable switches!

**CAUTION!**

The operating instructions and the signage on the emergency control system must point to possible risks!

Example: In case of a defective hydraulic hose or a defective hose connection, the oil supply is fed into the shaft!



39. All requirements of the WHG or Federal Water Act must be satisfied by the hydraulic elevator system!

40. Runtime monitoring is a standard feature of all control systems. To check proper functioning, you must proceed as follows (DIN EN 81, Part 1, 12.10 and Part 2, 12.12): Magnetic switch selector

- a) Move car to lowest stop,
- b) disconnect pulse generator on S75 or S77,
- c) issue movement command to uppermost stop,
- d) the car moves past the pulse generators without a clean signal transmission,
- e) after a configured amount of time (max. 45 s), the electronic monitoring device of the control system automatically stops the movement,
- f) the control system is then locked for additional movements (see information on the LCD),
- g) re-connect pulse generator with S75 or S77,
- h) to remove the lock, actuate the call button (Call/End) and confirm with OK. Alternatively, turn the control system off and on again.
- i) The control system is operational again.

#### Absolute encoder selector

- a) Move car to lowest stop,
- b) shorten the runtime control time in accordance with the movement speed in the control system (LCD),
- c) issue movement command to uppermost stop,
- d) the car does not reach the next pulse in the controlled movement time,
- e) after the configured amount of time, the electronic monitoring device of the control system automatically stops the movement,
- f) the control system is then locked for additional movements (see information on the LCD),
- g) set the time for the runtime controls in accordance with the movement speed in the control system (LCD),
- h) to remove the lock, actuate the call button (Call/End) and confirm with OK. Alternatively, turn the control system off and on again.
- i) The control system is operational again.

41. If the runtime monitoring actuates, the descent correction system remains in operation for hydraulically operated elevators.



#### **CAUTION!**

The motor is damaged, if the descent correction system (fine adjustment) remains in operation in case of phase failure (for example due to contact problems at the movement contactors) in spite of an actuation of the runtime monitoring function.



#### **NOTE!**

- 1) The program sequences, times, etc. parameterized in the control system were preset by us in the setup and service menu in accordance with the provided technical data sheets. You must adjust the parameters to the connected equipment and local conditions during commissioning.
- 2) Due diligence obligations for correct parameterization lie with the installation company. Mind the local guidelines stipulated by firefighting experts for fire brigade and fire elevators.
- 3) The setup and service menu can be locked by one 4-digit code number each. The code numbers are used to protect from the inadvertent maladjustment of parameters and must be stored with great care. Only pass your code numbers on to authorized persons.

42. In order to save the individual entries of the elevator system, open the "Save system data parameters" menu item in the "Miscellaneous" section of the setup menu.

43. To conclude the entering of parameters, confirm your changes by pressing "OK" and return to the main view of the display.

## 8.4 Checklist prior to Activation of Control System

### CAUTION!

- Please observe the following points after a new installation or conversions.
- Only proceed, if you've answered every question with "Yes".



Weight compensation between car and counterweight has been performed. Yes ☐

The mechanical brake has been adjusted. Yes ☐

The car is located at sufficient distance to the end switches (at least 1 m). Yes ☐

A supply voltage of 3 x 400VAC is available. Yes ☐

The buffers are mounted and operational. Yes ☐

The speed limiter and catch mechanism are mounted and operational. Yes ☐

The safety circuit contacts of shaft and car have been mounted and connected. Yes ☐

Have you observed and applied the safety information in the "Safety Instructions" chapter? Yes ☐

A control system made by Böhnke + Partner includes the following: Yes ☐

- Circuit diagrams with unambiguous allocation through the control number (for example 93401)
- Parts lists,
- EC type examination certificate and declarations of conformity for the bp408 system module,
- Terminal plans,
- Basic settings,
- Terminal assignment plans and general instructions on the bp408 control system.

Are these documents all complete?

Have you observed the circuit diagrams belonging to the control system? Yes ☐

Have you observed and applied the interference suppression measures in the "Interference Suppression" chapter? Yes ☐

Was the correct connection and the firm seating of all terminals verified? Yes ☐

Is the main switch turned off? Yes ☐

- Is the voltage testing module STM-02 connected (see chapter 8.2)? Yes ☐
- Check the voltage supply! Have L1, L2, L3, N and PE been connected correctly (right-hand side revolving field)? Yes ☐
- Has the wire cross-section been chosen in accordance with the power consumption of the elevator system? Yes ☐
- If a load break switch is available, have permissible fuse links been inserted? Yes ☐
- Is the automatic circuit breaker F2A for the control voltage turned off? Yes ☐
- Is the automatic circuit breaker F2 for the safety circuit turned off? Yes ☐
- 
- Have the supply lines been secured properly? Yes ☐
- If a high-speed excitation system for the brakes is available, have the safety switches been activated? Yes ☐
- The motor protection switches, overcurrent releases, fault current circuit breakers (RCD), phase guards, etc. can only be preset by Böhnke + Partner and must be adjusted by you to the connected operating equipment during commissioning. Have you performed these adjustments? Yes ☐
- Have all protective conductors been connected correctly? Yes ☐
- Have you observed all anti-suppression measures and EMC instructions of the inverter manufacturer? Yes ☐
- Have you observed all commissioning instructions for the control system and drive unit? Yes ☐
- Is the releveing control system activated? Yes ☐
- If you have answered all of these questions with a "Yes", then you may turn on the mains voltage in accordance with the following chapters.

## 8.5 Connection of Mains Voltage

- If you have answered every question of the "Checklist prior to Activation of Control System" with a "Yes", you may connect the mains voltage. Then check the items of the following checklist.
- Is the main switch turned on? Yes ☐
- Is the releveing control system activated? Yes ☐
- Is the automatic circuit breaker F2A for the control voltage turned on? Yes ☐
- Is the automatic circuit breaker F2 for the safety circuit turned on? Yes ☐
- 
- Has no protective organ been tripped? Yes ☐
- Does the voltage testing module STM-02 not output an acoustic or Yes ☐

visual warning signal?

Does the LCD not report any voltage problems on the bp408 system module? Yes ☐

Is the voltage on the PSU between the L and N terminals equal to 230VAC? Yes ☐

Is the voltage on the PSU in the control cabinet terminal +24 against terminal 0 = 24VDC? Are the car panels and the CLK supplied with 24V? Yes ☐

The LCD lighting is not flashing? (This would mean that the system is locked!) Yes ☐

Is the colon of the time display in the LCD of the bp408 flashing? Yes ☐

Is the car lighting voltage applied to X92.N and X92.3 = 230 VAC? Yes ☐

Are the LED(s) for the 5V and 24V power indicator on the external PSU illuminated, if available? Yes ☐

Is the RHS symbol displayed in the bp408 display (releveling controls active)? Yes ☐

If you have answered all of these questions with a "Yes", then you can continue with checking the control system and drive unit parameters.

## 8.6 Examination of Control System and Drive

### Unit Parameters

After the mains voltage has been activated properly and no clear errors have been found, the configured parameters of the control system and the drive unit are checked.

Regarding examination of the drive unit, please refer to its commissioning documentation.

A printout of all parameters configured by Böhnke + Partner is supplied with the control system documentation. Check whether these match the circumstances on site. If required, the parameters must be adjusted accordingly using the display of the bp408 (see user manual for bp408).

### 8.6.1 Examination of Bus Lines

The diagnostics LEDs provide a first indication of the CAN bus functioning.

These are located next to the display at the corresponding plug connector. An "error" LED in red and a "run" LED in green are provided on the circuit board for every bus connection. These LEDs show current faults and operating conditions of the respective bus. The following

table indicates the condition of the LEDs and the meaning of the different indications. During system startup, both LEDs are active for a short time.

Meaning of red CAN-ERROR-LED	
Condition	Meaning
Off	CAN bus: no faults or interface deactivated
1 pulse	CAN bus: Warning
2 pulses	CAN bus: Fault/malfunction
On	CAN bus: Bus off (out of order, automatic reset after approx. 10 s)
Flashing	Node-ID fault: duplicate Node-ID in network

### Meaning of green CAN-RUN-LED Examination of termination

As described in the "Bus Connections" chapter, the bus must be terminated at the ends. Check whether the car bus and the group bus are terminated on both ends.

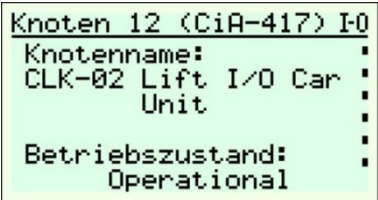


**NOTE!**  
The bus is generally terminated by position systems of various manufacturers. In such a case, the termination on the CLK- 03 must be deactivated using the DIP-switch. Notes on terminating the devices are provided in the associated manuals or on the internet at [www.CANopen-Lift.org](http://www.CANopen-Lift.org)

## 8.6.2 Examination of CAN Parameters

To check the CAN parameters in the control system, enter the setup information screen or the setup menu of the control system. Via PARAMETERS → TERMINALS → TERMINALS CAN1 / 2 you are provided with a listing of all connected CAN devices. Check whether all devices that are used as part of your system are available and activated. As the CAN devices are preconfigured when you receive the control system from us, no additional parameterization is required at this point. If you're assembling a control system from OEM components, you can optionally receive a USB-CAN adapter for PC as well as the CANwizard® software for the parameterization of CAN devices. A configuration of input and output terminals is, however, also possible using the control display. More information on CANwizard® and the configuration of devices is provided in the CANwizard manual and the [www.CANwizard.de](http://www.CANwizard.de) website.

If all devices have signed on correctly, you can perform your first movement with the releveling control system.



▲ Abbildung 60



▲ **Figure 61**  
Example for a USB-to-CAN adapter made by lxxat for configuration of CAN components.





### 8.6.3 Examination of DCP Connection

If the inverter is actuated by a DCP connection, the following items must be checked.

- ▶ Has the unit been wired in accordance with the wiring diagram
- ▶ has the correct drive/inverter type been set in the bp408,
- ▶ has the DCP connection in the bp408 and inverter been activated,
- ▶ has the same protocol (DCP3/DCP4+) been selected for both devices (control and drive unit),
- ▶ is no fault currently applicable.

### 8.7 First Movement with Releveling Controls

The releveling controls are used to move the elevator for assembly and maintenance purposes.

#### **CAUTION!**

Observe the safety instructions in the "Safety Instructions" chapter  
For your own safety, the switches for the releveling control system, inspection and emergency stop, as well as the "up" and "down" buttons must have been wired to the safety power circuit as defined by the circuit diagram.

The emergency stop, door and bolt contacts may not be bypassed!  
This ensures that an interruption of an emergency stop, door or bolt contact in the safety circuit leads to an immediate stopping of the elevator.  
If the releveling switch is set to "on", the terminals X5.15 and X12.102 must be de-energized while the X7.101 terminal must be live.

The correction switches S71 and S72 must be fitted to the correct delay point at the last stop and switch securely.

The contacts of the safety circuit must be closed if the releveling controls "up" or "down" button is actuated or be bypassed by the releveling controls "on" switch.

The movement commands are controlled and checked by the bp408 control system.

If a safety light barrier is available, the X7.51 terminal (Door B: X7.56) must be live.





The command location (releveling switch) is located in the control cabinet door in the machine room or the external control platform.

**NOTE!**

During the first movement with the releveling controls, check in **DIAGNOSTICS > SIGNALS > SHAFT SIGNALS** whether the indicated speed matches the speed indicated by the inverter. If not, check the conversion factors of both systems.



**NOTE!**

Activating the inspection controls cancels the releveling controls.

For Böhnke + Partner control systems, the inspection controls are given priority, even if with the inspection controls activated and the releveling controls turned on and vice versa no movements of the car and door drives are possible any more.

The releveling controls generally works similar to the inspection control system. However, the following safety devices are bypassed:

- ▶ Speed limiter,
- ▶ buffer contacts,
- ▶ emergency limit switches,
- ▶ catch mechanism and
- ▶ low pressure switches for hydraulic elevators.

The car can be moved out of the end switches, if the inspection controls are turned off and the releveling controls turned on.

By activating the releveling controls, all calls are deleted and the command generators for interior calls, external calls and for superordinate control systems are turned off.

If the control system is not equipped with an absolute encoder, a correction movement is required after switching back to normal operation. Issue a call for this purpose.

## 8.8 First Movement with Inspection

The inspection controls are used to move the elevator for assembly and maintenance purposes.

**CAUTION!**

Observe the safety instructions in the chapter 2.

For your own safety, the switches for the releveling control system, inspection and emergency stop, as well as the "up" and "down" buttons must have been wired to the safety power circuit as defined by the circuit diagram.

The emergency stop, door and bolt contacts may not be bypassed!

This ensures that an interruption of an emergency stop, door or bolt contact in the safety circuit leads to an immediate stopping of the elevator.

With the inspection switch turned on, the terminals X5.15, X7.101 and X12.102 must be de-energized.

The correction switches S71 and S72 must be fitted to the correct delay point at the final stop and switch securely.

All contacts of the safety circuit must be closed when actuating the inspection "up" or "down" buttons.

The movement commands are controlled and checked by the bp408 control system. All devices of the safety circuit remain effective. A contact interruption in the safety circuit leads to an immediate stopping of the elevator. If a safety light barrier is available, the contact X7.53 (Door B: X7.56) must be live.

The inspection controls are located on the roof of the car. By activating the inspection controls, any autonomous door movements are prevented and the elevator is locked for automatic operation. Moving the car and door drives is only possible if both buttons of the inspection controls are pressed at the same time (dead man's switch) and the releveling controls are turned off or not available. Additionally, an emergency stop can be issued by actuating an emergency stop switch, which only returns to the original position via rotary release. Traversing the final stops is prevented by the limit switches.

## NOTE!

Activating the inspection controls cancels the releveling controls.

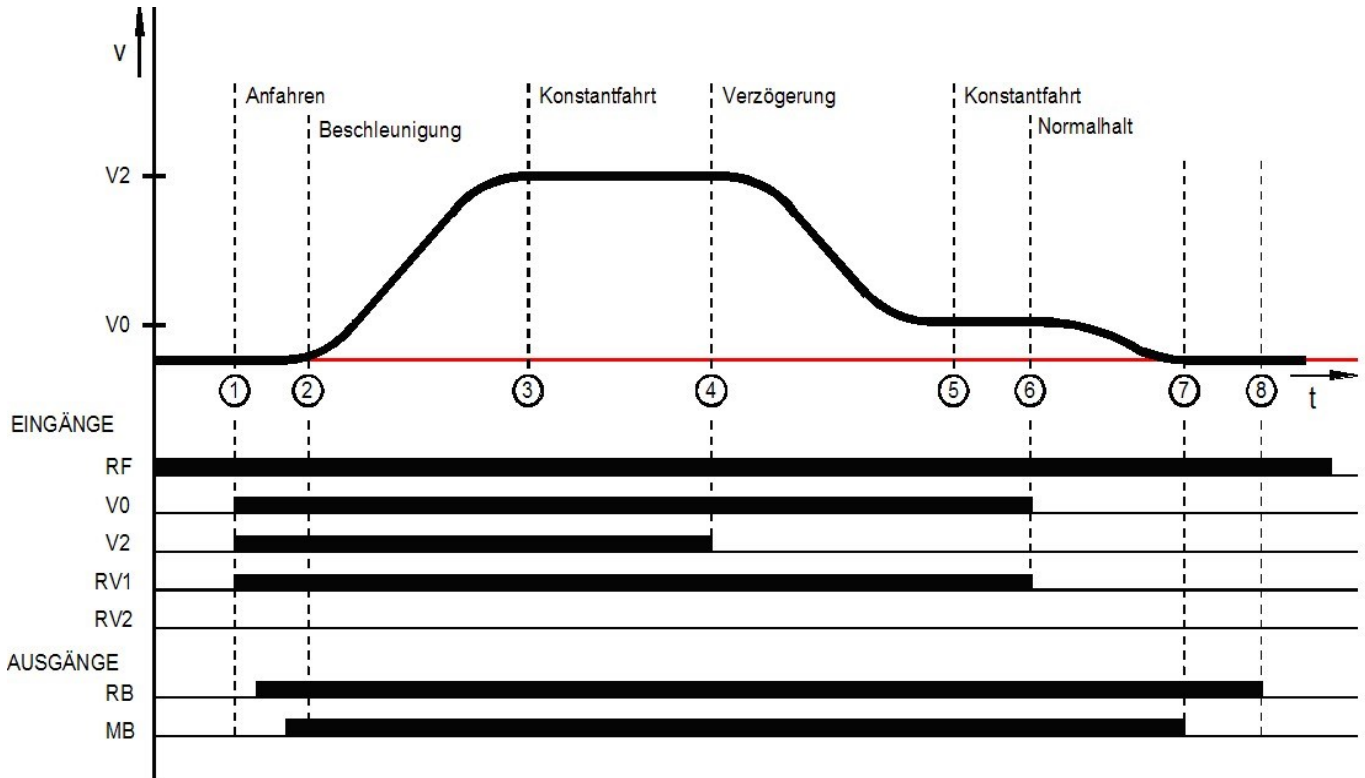
For Böhnke + Partner control systems, the inspection controls are given priority even if no movements of the car and door drive are possible with the inspection controls and releveling controls activated and vice versa.

By activating the inspection controls, all calls are deleted and the command generators for interior calls, external calls and for superordinate control systems are turned off.

All devices of the safety circuit remain effective. If the elevator system is switched back to normal operation, a correction movement for the floor counter can be triggered after a single call. For control systems with absolute encoders, no correction movement is necessary.



## 8.9 Controlled Movement Sequence at Two Speeds (Overview)



**Figure 62**

Controlling an inverter with RVM-01 during normal movement

After activating the main contactors and issuance of RF release by the control system, the inverter receives the signal for his approach together with the actuation of direction and V2 speed. The inverter maintains the drive unit at a standstill with an RPM of  $n=0$  and issues the MB signal to release the electromagnetic brake to the control system (1 to 2) via terminal 31. After activating the brake on the control system via the relay, the drive unit accelerates until the prescribed speed is reached (2 to 3). This is followed by a movement with a constant speed (3 to 4) until the actuation of speed  $V2=0$  is lifted. The drive unit decelerates to the positioning speed V0 (4 to 5). After a short movement route, no additional speed is actuated any more (5 to 6), the drive unit continues to decelerate (6 to 7). After the drive unit has come to a stop, the inverter applies the electromagnetic parking brake MB (7 to 8). The main contactors are deactivated with the RF signal after a time delay.



### NOTE!

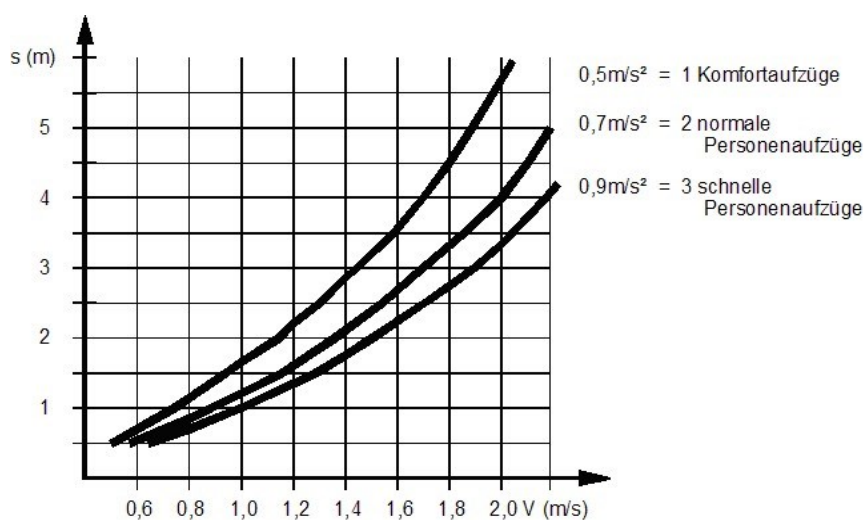
- The electromagnetic parking brake must be turned on and off via the MB relay without delay. This ensures that the inverter can start up and stop without jerking.
- The main contactors to the motor must be turned on and off with the RB relay without delay. This ensures that start up and stopping without jerking is possible.
- If a malfunction causes the collective warning relay to drop off on the inverter, the control system must ensure that the mechanical brake and the main contactors to the motor must be turned off immediately. The collective warning message output of the inverter is connected with terminal 34 of the control system.
- The mains contactor of the inverter must be used to open or close the mains contactor of the control system immediately. This ensure that the brake chopper is monitored for overtemperature conditions and allows for the inverter to be disconnected from the mains, if required.

## 8.9.1 Shut-Off Points at High

### Speeds

The braking distance can be taken from the diagram. The stated values only apply to a case where the factory settings for the fillet remain unchanged. It is also assumed that the control system transfers the shut-off points to the inverter without delay.

The values stated here are reference values and should be adapted to actual conditions on site.



V	Bremsw. 1	Bremsw. 2	Bremsw. 3
0,8	1,18	0,90	0,70
1,2	2,25	1,73	1,41
1,6	3,60	2,70	2,36
2,0	5,40	4,10	3,40

**Figure 63**

Braking distance diagram and table

## RECOMMENDATION

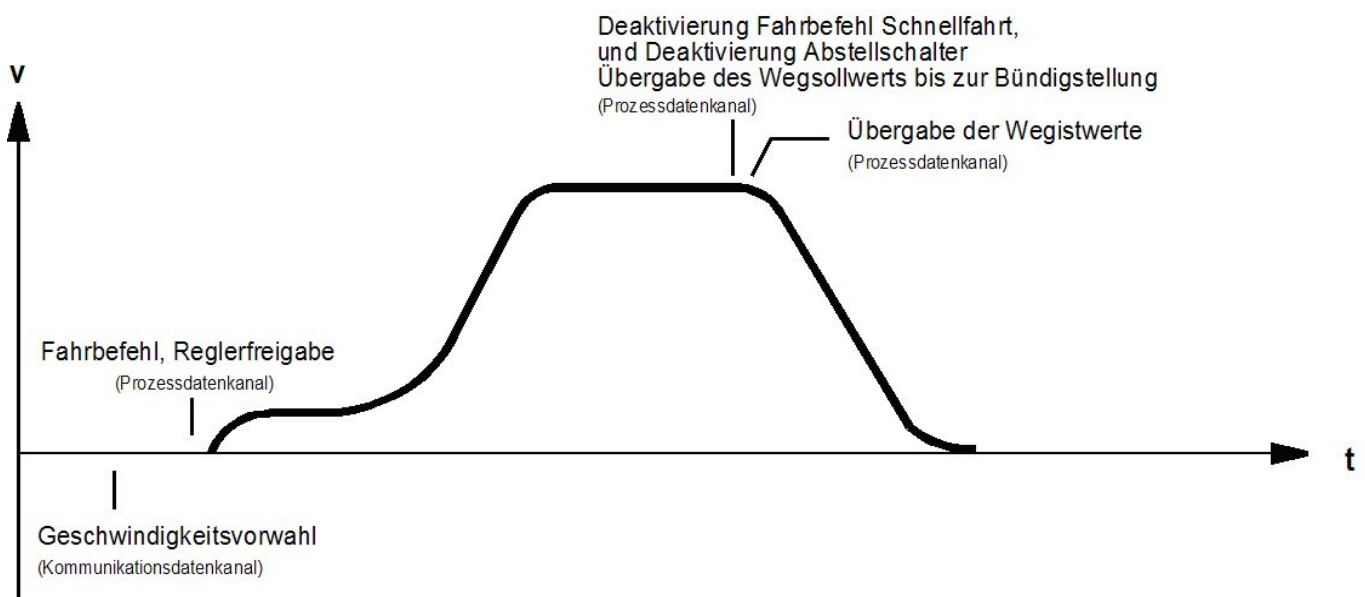
The shut-off point should, if possible, be set to a longer braking path than the determined one in order to leave some space for optimizing the movement characteristics.



## 8.10 Direct Movement Sequence with DCP (Overview)

For the DCP3 protocols, only the signals that are issued when the inverter is actuated via terminals are serially exchanged between the control system and the inverter. The movement characteristics correspond to a normal movement as described in the previous chapter.

For the DCP4 or CANopen Lift protocols, the remaining distance to the next floor is cyclically transferred from the control system to the inverter in addition to some control signals. It is therefore possible for the inverter to calculate an ideal movement curve and to perform a movement with direct approach to the stop.



**Figure 64**

Movement curve for a movement with direct approach

## 8.11 Configuration of Floor Selector

When it is possible to perform movements with inspection controls, the encoders for floor selection are mounted and configured. These might be magnetic switches, absolute value encoders (AWG-05) or contactless encoder systems, such as USP or laser positioning systems.

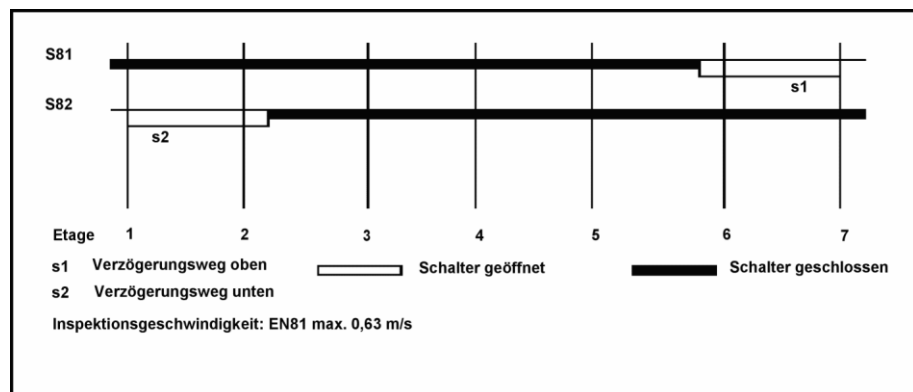
## 8.11.1 Assembly of Delay Switches



### CAUTION!

For your own safety, the ON-OFF inspection switch as well as the UP-DOWN buttons and the emergency stop must be wired to the safety power circuit as prescribed in the circuit diagram.

In order to decelerate the first movements even if the absolute encoder is not yet installed, the delay switches S81 and S82 at the final stops must be fitted to the correct delay points in the shaft for the inspection and releveled control movements. The delay switches must switch securely.



**Figure 65**

Pulse diagram of delay switches

A delay is initiated, if the switches of the movement direction open accordingly. The delay switch S81 opens and delays for the upper final stop. The delay switch S82 opens and delays for the lower final stop. The speed of the inspection and releveled controls must be decelerated at these delay points. The level positions of the end stops may not be traversed.

Make the following adjustments in the service menu:

- > MAINTENANCE
- > MAINTENANCE FUNCTIONS

Scroll to the **ACTIVATE ASSEMBLY MOVEMENT** function in this section and select "ON". Now scroll to **ASSEMBLY MOVEMENT WITH PRE-LIMIT SWITCHES (S81/S82)** and select "ON".



You can now perform the first movement via inspection/relevelling controls for assembling the positioning system as described in chapter 6.6.

### 8.11.2 Basic Settings

After assembly of the CAN encoder system (see enclosed installation description), the following basic settings must be made in the setup menu of the bp408:

Setup menu:     > PARAMETERS  
                   > ELEVATOR DATA  
                   > FLOOR SELECTOR > ABSOLUTE ENCODER (CAN)

then:            > PARAMETERS  
                   > FLOOR SELECTOR  
                   > AWG1 PARAMETERS  
                   > ENCODER  
                   SYSTEM OR  
                   > CUSTOM

Delay points and level positions can be comfortably changed using the setting menus.

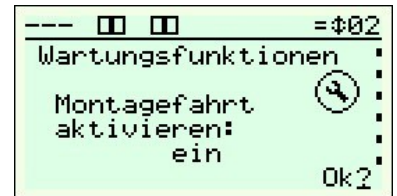
The following basic settings must be changed in the service menu:

Service menu:   > SETTINGS  
                   > FUNCTIONS  
                   > DRIVE UNIT  
                   > MOVEMENT SPEED  
                   > BRAKING DISTANCES  
                   > MINIMUM MOVEMENT DISTANCES

The nominal and intermediate speeds of the system are entered here.

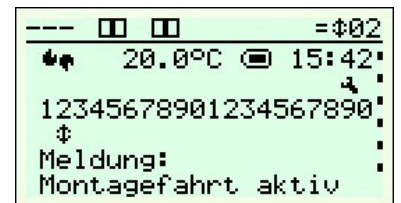
Continue in menu: > SETTINGS  
                   > DISTANCE MEASUREMENT  
                   > PARAMETERS  
                   > GENERAL  
                   DISTANCES SHAFT  
                   PIT SHAFT HEAD  
                   CAR HEIGHT

The approximate shaft pit depth must be specified. This is the distance between the threshold of the lowest floor to the shaft ground. This value is set to 1 m by default and is used to receive a depiction of the shaft that is as close as possible to real circumstances.



▲ Figure 66

Activation of assembly movement in order to move the car without an encoder system.



▲ Figure 67

Note on activated assembly movement in standard image.

### 8.11.3 Calibration Movement with Absolute Encoder

After these settings have been made, the calibration movement can be commenced, taking the following information into consideration. As part of the calibration movement, the level positions of all floors are determined and stored in the program memory.



#### NOTE!

It is recommended to perform the calibration movement with two people.

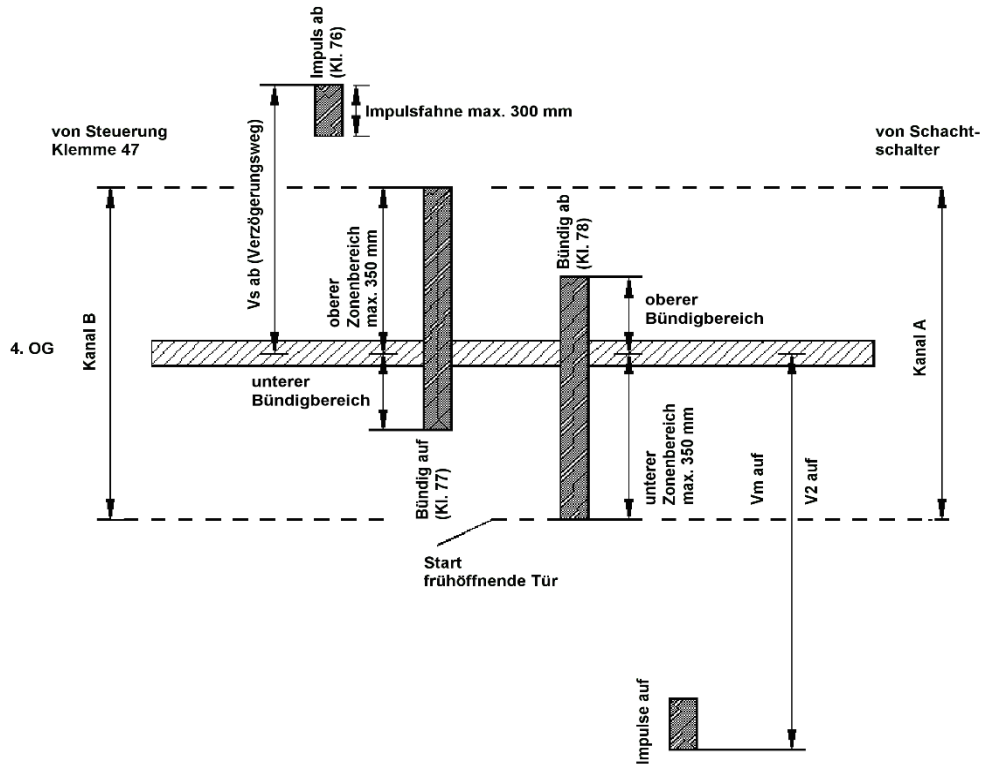
Proceed as follows:

1. Switch the system to INSPECTION.
2. Activate the CALIBRATION MOVEMENT menu item in the ABSOLUTE DISTANCE MEASUREMENT menu. (The program can be exited at any time using the Call/End button.)
3. Move the elevator to the lowest stop (floor 1) and as close as possible to the level position using the inspection buttons. The exact level position is achieved by releasing the brakes and turning the handwheel for traction elevators.
4. With hydraulic elevators, the level position must be adjusted by actuating the emergency release valve or the hand pump.
5. If the elevator is level at floor 1, either press the OK button on the LCD or the interior call button for floor 1. The correct reading of the level position is signaled by the acknowledgment lamp for floor 1 for verification purposes.
6. Proceed in the same manner for the other floors.
7. After all level positions have been set, you can switch back to normal operation.

---	□□	†	=#04
Bündig-Kontrolle:			
Akt. Pos.	11503		
BÜ. Soll	11500		
BÜ. Diff.	3		
Geschw.	0.00		

▲ Figure 68

Level check



Mov  
the  
posi

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FUN

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inde

DELAY TIME

## 8.11.4 Movement Speeds

The movement speeds are configured in the service menu using the  
SETTINGS → FUNCTIONS → DRIVE UNIT menu item.

Abbreviation for the designation of speeds:

VN = Fine adjustment speed  
VI = Inspection speed

VR = Releveling speed

VO = Approach speed

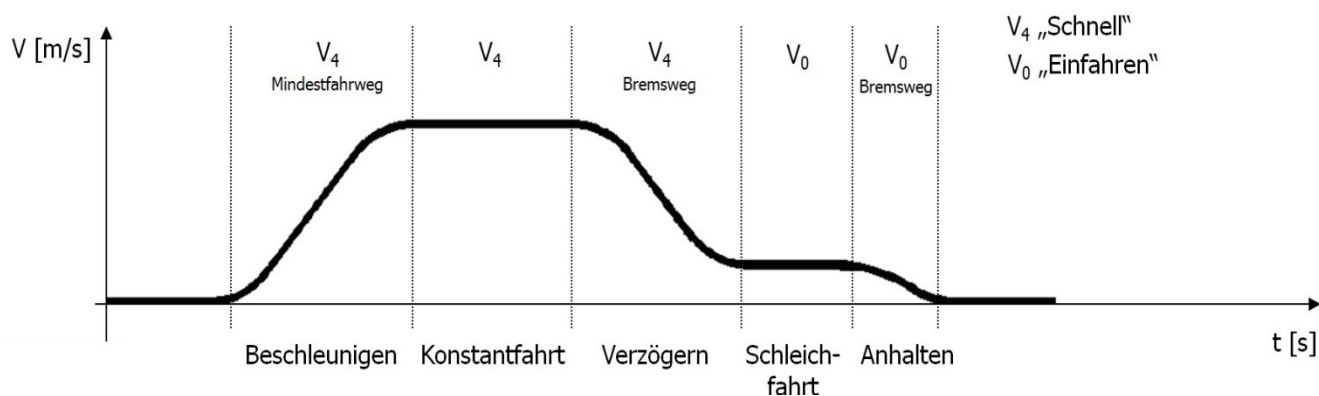
V1..V7 Intermediate speeds and high speeds, depending on the set drive type.

If the movement speeds are changed, you are presented with the option to recalculate the braking distances and minimum movement distances. These must be adjusted, if required.



**NOTE!**

$V_0 < V_1 < V_2 < V_3 < V_4 < V_5 < V_6 < V_7!$



**Figure 70**

Movement curve example with a DCP3 connection with V4 as rated speed.



**NOTE!**

With controlled elevator systems, the instructions of the inverter manufacturer must be observed!

Braking distance V1..7 = Deceleration effort to floor,  
brake distance V1 = Deceleration effort for  
inspection, brake distance VR = Deceleration effort  
for releveling (if separately supported by drive unit.)

Braking distance V<sub>0</sub> (stopping distance) = Shut-off point

Downward fine adjustment = Fine adjustment to floor  
Upward fine adjustment = Fine adjustment to floor

Lower level area = Level check while stopping  
Upper level area = Level check while stopping

Lower zone area = Application point for early opening doors to floor

Upper zone area = Application point for early opening doors to floor

- Shaft pit (bottom travel)

Default value is 1 m. This can be adjusted to match the actual value, in order to accurately measure the shaft with effective values. It defines the valid working area of the encoder.

- Shaft head (top travel)

Default value is 1.5 m. This can be adjusted to match the actual value, in order to accurately measure the shaft with effective values. It defines the valid working area of the encoder.

- Car height

This value is required for approaching the maintenance position, which should be chosen in such a manner that the technician is capable of easily accessing the car roof.

### 8.11.5 Deceleration by S81/S82 at the Terminal Stations during Normal Operation

Some operators require additional safety equipment for the final stops. They are supposed to ensure that elevator is securely switched to approach speed (VO) prior to the elevator reaching the final stops. This is allowed by using the S81 and S82 delay switches.

#### **CAUTION!**

It is crucial for this application that the delay switches S81 and S82 are fitted to the correct delay point of the final stop and switch safely.



Movement with maximum speed must be decelerated at these delay points and the level position of the final stop may not be traversed.

The deceleration is initiated, if the switches of the movement direction open accordingly.

The S81 delay switch opens for upward movements and always switches to the slower speed (VO) prior to the upper final stop.

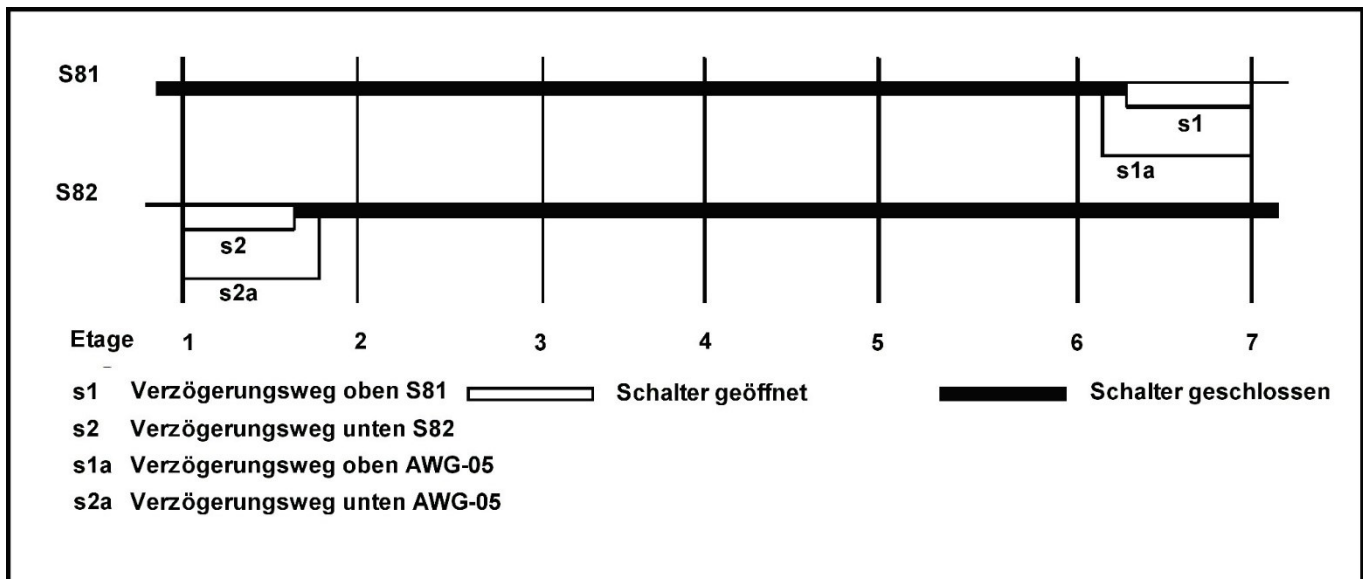
The S82 delay switch opens for downward movements and always switches to the slower speed (VO) prior to the lower final stop.

Settings in the setup menu: > FUNCTIONS

> FLOOR SELECTOR

> PRE-LIMIT SWITCHES  
(S81/82)

ON



▲ **Figure 71**

Pulse diagram with magnetic switches and AWG-05

## 8.12 First Movement in Normal Operation

### CAUTION!

All items must be checked by you for your own safety. Observe the safety instructions in the chapter 2.



Have you observed all items of the previous checklists (see chapter 8.4 and 8.5)? Yes ☐

Are no current faults being displayed in the LCD of the bp408 and the drive unit? Yes ☐

The releveing controls and inspection controls are operational as described in chapter 8.7 and 8.8. Yes ☐

The emergency limit switches are mounted, adjusted and checked for functioning. Yes ☐



The safety switches are mounted, adjusted and checked for functioning.	Yes <input type="checkbox"/>
The impact buffers are mounted and operational.	Yes <input type="checkbox"/>
The required switching magnets in the shaft have been mounted in accordance with the pulse diagram.	Yes <input type="checkbox"/>
The correction switches are mounted, adjusted and checked for proper functioning in accordance with the deceleration distances.	Yes <input type="checkbox"/>
Perform the calibration movement with the absolute encoder AWG-05 as described. (chapter 8.11.3)	Yes <input type="checkbox"/>
The calibration movement with the drive unit has to be performed as described by the manufacturer.	Yes <input type="checkbox"/>
If a DCP connection to the inverter exists, the calibration movement was performed with the DCP parameters as described. (chapter 8.6.3)	Yes <input type="checkbox"/>
The brake application points are adjusted in such a manner that proper deceleration to a stop is possible.	Yes <input type="checkbox"/>
The car door threshold traverses the outer door rolls at sufficient distance.	Yes <input type="checkbox"/>

If all questions have been answered with a "Yes", you can then proceed as follows.

- Keep the doors closed, see "maintenance menu". ☐
- Turn off the external controls. ☐
- Prior to first startup, place the car level with the upper or lower stop using the inspection or releveing controls. ☐
- After switching back to normal operation (inspection and releveing controls OFF), the LCD shows the elevator condition at the lower or upper stop. ☐
- Now start the elevator from the machine room using the "Calls" button in the upward or downward direction in order to control free movement along the shaft. ☐
- You can check the incoming pulses for floor selection in the DIAGNOSTICS → SHAFT SIGNALS menu. ☐
- You can check the input and output signals in the DIAGNOSTICS → SIGNALS menu. ☐
- If the first movement has been completed properly, check the level position, the brake application points and the control parameters for controlled elevator systems and optimize, if required. ☐
- Now check the movement route through the car panel for all stops in the upward and downward direction. ☐
- Turn off the external controls and check the movement route through the external panel for all stops in the upward and downward direction. ☐
- Check the floor indicator, out-of-order indicator and onward movement indicator. ☐
- Check the light barrier, closing force limiter, emergency alert, etc. ☐

You can now continue optimizing the movement characteristics.



## 8.13 Configuration of Emergency Call Device

In accordance with EN 81-28, every elevator must be fitted with an emergency call device connected to a constantly occupied emergency station. After wiring the emergency call device, configure the emergency call device in accordance with the supplied description. The function of the emergency call system must be checked by testing calls.

## 8.14 Configuration of Group Connection

If the system comprises a group of elevators and all elevators are working correctly with their individual control systems, you can then set up the group connection using pluggable interconnections. Check the correct configuration of group parameters and mind parallel external calls for all group members with the external controls activated.

Deactivate the external controls for all group members. No external calls may now be taken any more. Switch on the external controls for one group member at a time and one after the other and check the proper functioning of external calls.

## 8.15 Configuration of Remote Diagnostics

Remote diagnostics can be handled using various networks. If the wiring has been performed in accordance with the provided circuit diagrams, you may configure the connection.



### **NOTE!**

In order to properly commission our WinMOS®300 software, the information and instructions of the WinMOS®300 manual must be observed.

Bear in mind that you can unintentionally stop the elevator on site or via EDI by entering the incorrect parameters (for example runtime monitoring set too low).

Should switching devices for the parallel operation of a modem and an emergency call device be operated on a joint telephone connection, these must be approved by Böhnke + Partner.

The options of WinMOS®300 regarding the elevator attendant functions does not release the operator from his duty to ensure on site for every system that the safety devices and measures (for example emergency stop and emergency calls) are not put out of order by wanton destruction.

A software update of the control system or of components required for the elevator may only be performed, if this update is controlled on site by qualified personnel.

## 8.16 Configuration of a Modem

If an analog modem is used for remote diagnostics, which must correspond to the V.250 standard, the parameters for communication can be entered after the wiring has been completed. This includes, particularly, the used interface, DFÜ300 protocol and the telephone numbers to be called in case of malfunctions and emergencies. Additionally, you should configure the conditions required to issue a return call to central control (for every fault, only in case of locking or never).

## 8.17 Configuration of a Network Connection

If remote diagnostics are handled via a network connection, the following parameter must be entered:

- ▶ IP address: for example 192.168.0.119
- ▶ Subnet mask: for example 255.255.255.0
- ▶ Gateway: for example 192.168.0.2
- ▶ Port: for example 8000 (default setting)

### NOTE!

The IP address, subnet mask and gateway are provided by the administrators of the network. The port 8000 must be available in the network. The used protocol is TCP/IP. More information on remote diagnostics is provided in the current WinMOS®300 manual.



## 8.18 Completion of Commissioning

After completing the commissioning operations, it makes sense to store the current parameterization of the system in the documentation. To this end, perform a readout of the WinMOS®300 parameters from the system and add these to the documentation with the printout. If WinMOS®300 is not available, write these settings down in the supplied printout of the setup and service menus.

The stored faults in the fault stack and fault list as well as the entries in the maintenance stack that were generated during commissioning may be deleted.

If access by third parties is possible (for example caretakers), you should protect access to the menus by assigning a setup and service code.

## 9 Troubleshooting

Due to the digital design of the control systems, a wide variety of possible error causes are already shown in plain text. In most cases, the source for a fault can be found using these messages/faults in the message/fault stack. If the system has been locked by a fault or malfunction, the background lighting of the LCD will flash and the abbreviation "LD or LOCKING DEVICE" for Locking device will be displayed. In order to determine the exact cause of the fault, please have a look at the fault stack. If the cause for the fault has been eliminated, the lock can be removed by actuating the "Call/End" button and answering the prompt with the "OK" button or by briefly turning off the operating voltage.

### 9.1 Monitoring Routines

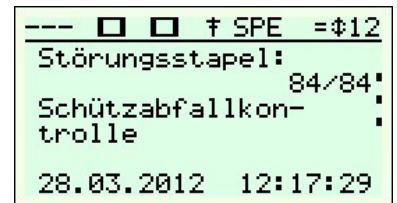
The software of bp408 monitors a variety of signals for their levels and behavior over time. If an irregularity occurs, a corresponding error message is stored in the fault stack with a time stamp. The fault list shows how often an error has occurred.

If a prescribed control or monitoring time (such as starting time control, movement time monitoring, movement delay control) has been exceeded, the drive unit of the elevator is turned off and all movement commands are deleted. If warning devices are tripped, the elevator is stopped at the next stop and it is prevented from starting up again. These warning devices include, for example, motor protection switches, pressure switches and temperature switches for the hydraulic system.

If the safety circuit has tripped, the movement is aborted and all movement commands are deleted.

The actuation of door closing control also leads to movement commands being deleted. The door closing control actuates after three door closure attempts.

The level position of the car is monitored by the absolute encoder or the level switch. If the level position is exited with the elevator at a stop, a fine adjustment is carried out. The fine adjustment is possible with the doors opened, as door and bolt contacts within the door zone area are correspondingly prevented by the safety circuit.



▲ **Figure 72**  
Presentation of an entry in the fault stack with lock.

- ▶ Resistor  
PTC 1, PTC terminals, all common resistors (PTC) are monitored.
- ▶ Movement time  
Monitors the startup, high-speed and low-speed movement phases. See "Control Times" menu.
- ▶ Release relay (33)  
The movement contactors are checked for drop-off after startup.
- ▶ Brake released (35)  
The venting of the brake jaws is checked by contacts prior to startup.
- ▶ Door and bolt control  
Monitors the closing of the safety circuit prior to startup. See "Control Times" menu.
- ▶ Safety circuit  
Monitors the input and output signal of the integrated safety circuit.
- ▶ Controls/LRV (34)  
Monitors the fault output of the inverter.
- ▶ Apply/release brakes (31)  
Monitors the output of the "mechanical brake" of the inverter
- ▶ Pulses / Level / Correction (71-78)  
Monitors the signals from the shaft and checks them for plausibility, if no AWG is used.
- ▶ Fine adjustment (without AWG: 73-74 /77-78)  
Monitors 20 times and 20 seconds per direction and floor.
- ▶ Safety circuit (terminals SSZ, 9, 10, 11, 12, 12A, 12 B, 13, 14)  
Monitors at a stop and while moving.
- ▶ Correction signal/absolute encoder  
Monitors the signals from the shaft and checks for plausibility.
- ▶ Lock  
Monitoring measures can be parameterized with a lock.



#### **MONITORING NOTE!**

Monitoring measures are displayed directly in the service menu via DIAGNOSTICS → **F** AULTS section. They are registered and saved in the fault stack and in the fault list.

## 9.2 Fault Information

Faults influence the performance of functions of the elevator control system in such a manner that proper operation is no longer possible. All current events are displayed, which have lead to a fault or malfunction of elevator functions, such as:

- ▶ speed limiter has been tripped
- ▶ resistor in drive motor, resistor in hydraulic unit,
- ▶ startup control, movement control, delay control,
- ▶ brake control, contactor control,
- ▶ floor selector fault,
- ▶ inverter fault,
- ▶ door closing/opening control,
- ▶ safety circuit.

If a fault occurs, the fault is saved in the fault stack and fault list. If a WinMOS@300 remote diagnostics system is connected to the system, a return call can be issued if a fault occurs. Critical faults can lead to the system being locked. The lock can be removed after eliminating the cause for the fault. The lock can be removed using the "Call/End" button and answering the prompt with "OK" or by briefly turning off the operating voltage.

Very significant faults and malfunctions cannot be reset by turning off the operating voltage.

Faults that are not serious, such as door closure faults, can be reset by issuing a new call.

## 9.3 Fault Reporting

All bp408 units are prepared for remote diagnostics. In order to connect the control system to an intranet and/or the internet, the bp408 control system has been fitted with a LAN port. If the connection is to be made through the telephone network, an analog modem can be connected to the USB-A port.

Gateways for the LONmark standard, OPC server and Profibus gateway are available for connection to building automation.

If a return call for faults is activated in the setup menu, this fault is transferred to the configured service center after a fault has occurred together with the type, date and time of the fault.

For more information on remote diagnostics, consult the WinMOS®300 manual or visit [www.WinMOS.de](http://www.WinMOS.de).

```

--- 00 00 † G4: =#12
Störungstapel: 75/81
Bremse nicht
geöffnet
20.03.2012 14:14:03

```

▲ **Figure 73**

Presentation of an entry in fault stack memory.

```

--- 00 00 † G4: =#12
Position:
Phy. Etage 12
Log. Etage 12
Richtung keine
Akt. Pos. 39500 mm
Geschw. 0 mm/s

```

▲ **Figure 74**

Additional details for an entry in the fault stack memory.

## 9.4 Fault Stack

The fault stack contains the last 128 faults, including time stamps. The faults are stacked by their chronological order. A display routine allows for the fault messages to be displayed on the LCD in plain text. The following is displayed:

- ▶ Date,
- ▶ time,
- ▶ fault
- ▶ and the floor for faults that are related to specific floors as well as the entered floor designation.

A fault entry can be opened using the "Right" button. The position, speed and a selection of important signals is then displayed, which were active at the time of the incident. This makes it possible to retrace a history of the last faults that have occurred.

To delete the stack, press "OK" and answer the safety query with the "OK" button as well. In order to ensure complete and unbroken logging, we recommend to only delete the fault stack after the entries have been transferred to a WinMOS®300 center.

## 9.5 Fault List

The number of registered faults is saved in the fault list. The following is displayed:

- ▶ fault,
- ▶ quantity
- ▶ and the floor for faults that are related to specific floors.

A display routine allows for the fault list to be displayed on the LCD in plain text.

To delete the list, press "OK" and answer the safety query with the "OK" button as well. In order to ensure complete and unbroken logging, we recommend to only delete the fault list after the entries have been transferred to a WinMOS®300 center.

## 9.6 Messages

Messages refer to special operating conditions of the system and that the elevator may be operational in a restricted manner only. All information that have lead to this message at that point in time are displayed.

Examples:

- ▶ External controls are deactivated.
- ▶ Emergency stop actuated within the car
- ▶ Inspection mode turned on
- ▶ Releveling controls turned on.
- ▶ Interior priority turned on.
- ▶ Priority calls are active.
- ▶ Full load or overload contacts have tripped.
- ▶ Fire/fire department movement is activated.
- ▶ Emergency power active
- ▶ Elevator from group
- ▶ Car moves to parking floor.
- ▶ Car stopped at parking floor.

## 9.7 Repairs

If a fault has been found in the control system electronics, an on-site repair measure cannot be recommended for economic reasons. To save time and costs, please keep the control system number and the circuit diagrams ready when you make your call.

## 10 Maintenance

Prior to the initiation of maintenance measures, we recommend to register this measure with the bp408 unit in the service menu via MAINTENANCE > MAINTENANCE FUNCTIONS > MAINTENANCE ON. This prevents fault information from being sent via remote data transmission and the system is shown as "undergoing maintenance".

As part of the usual maintenance operations, please perform the following checks on the bp408 control systems:

- ▶ General visual inspection for possible dust deposits, moisture or corrosion if such irregularities are found, remove them.
- ▶ Are the connections of the control system mounted properly?
- ▶ Do the fault stack memory and/or the fault list show any errors/faults? Registered fault messages must be checked and, if need be, deleted.
- ▶ Check messages and the message stack (recorded messages) for any anomalies.
- ▶ For the emergency lighting unit, ensure that the capacity of the battery is enough for one hour of emergency lighting inside the car.
- ▶ When using uninterruptible power supply units (UPS), the maintenance instructions of the supplied manuals must be observed.
- ▶ The toothed belts of an absolute encoder system are maintenance-free under normal circumstances. In case of heavy loads or any noise development, it is recommended to treat the running surface of the toothed belt with the supplied talcum or silicone spray.



▲ **Abbildung 75**

Das Steuerungssystem bp408 ist ein sehr wartungsfreundliches System. Es kann Sie automatisch beim Bedarf einer Wartung informieren.

---	□□	□□	=#02
Störungstapel:			
			18/18
Pas. SiKr. im Stand			
Etage 1 ("EG")			
29.03.2012 10:32:08			

▲ **Figure 76**

Entry in fault stack memory

---	□□	□□	=#02
Meldungstapel:			
			64/89
Aufzug wieder in			
Betrieb			
10.05.2012 14:29:53			

▲ **Figure 77**

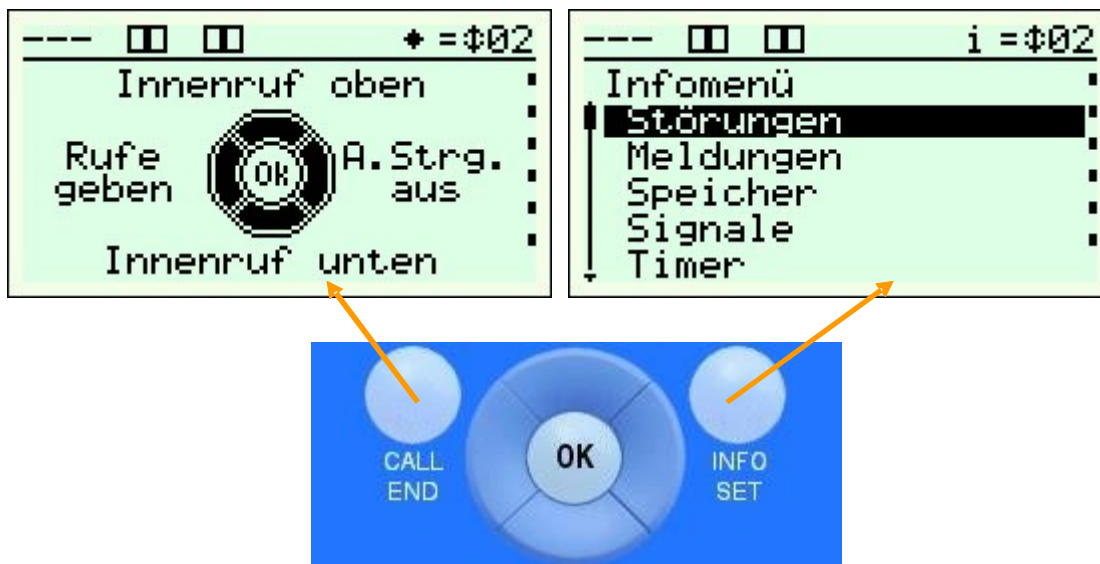
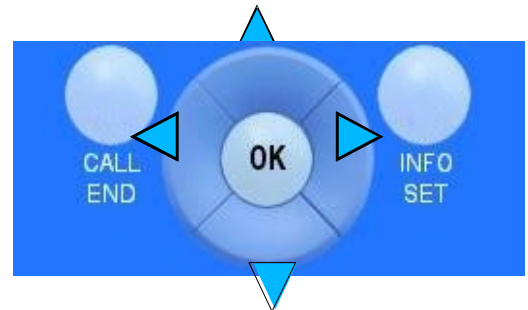
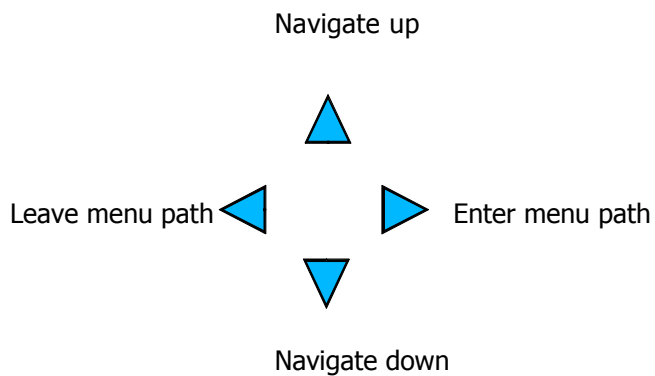
Entry in message stack memory



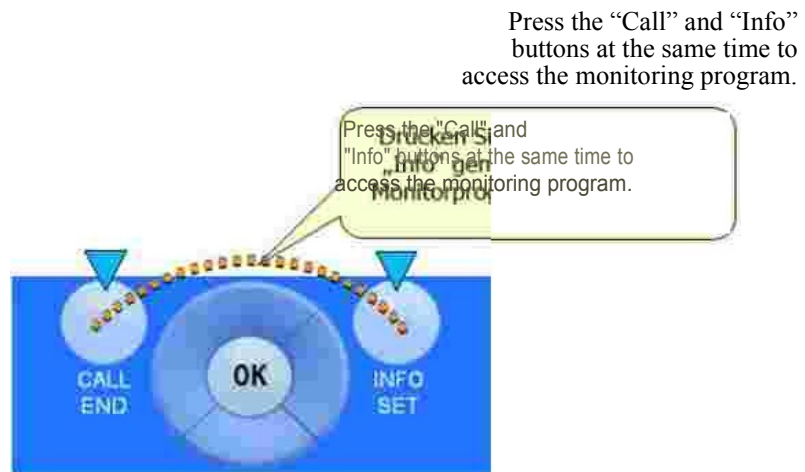
# Annex

## A Menu Navigation bp408

As of: Version 78D2502B (27.02.2015)



- Firmware update via USB stick.
- In order to access the monitoring program, where a backup and update of the operating software can be performed, keep the two outer buttons pressed for approx. 3 seconds.



## B Quick Overview of Service Menu

### Service Menu

=====

#### + - Diagnostics

```
| |
| | +- Malfunctions
| | |
| | +- Messages
| | |
| | +- Storage
| | |
| | | +- Malfunction stack
| | | |
| | | +- Message stack
| | | |
| | | +- Maintenance stack
| | | |
| | | +- Malfunction list
| | |
| | +- Signals
| | |
| | | +- Shaft-Signals
| | | |
| | | +- Port I/O
| | | |
| | | +- Calls
| | | |
| | | +- Controller
| | | |
| | | | +- Ins/Ero inputs
| | | | |
| | | | +- Evacuation inputs
| | | | |
| | | | +- Evacuation outputs
| | | | |
| | | | +- Display Outputs
| | | | |
| | | | +- Misc inputs 1
| | | | |
| | | | +- Misc inputs 2
| | | | |
| | | | +- Misc inputs 3
| | | | |
| | | | +- Misc outputs 1
| | | | |
| | | | +- Misc outputs 2
| | | | |
| | | | +- Misc outputs 3
| | | | |
| | | | +- Misc outputs 4
| | | |
| | |
```

- + - Docking op. inputs
- + - Docking op.outputs
- + - Auto lift inputs
- + - Auto lift outputs
- + - Floor selector
  - + - Floor sel. inputs
  - + - Floor sel. outputs
- + - Drive unit
- + - Doors
  - + - Hall door monitoring using separate door contacts
    - \* Hall doors 1..127
  - + - Door A inputs
  - + - Door A outputs
  - + - Door A CAN data
  - + - Door B inputs
  - + - Door B outputs
  - + - Door B CAN data
  - + - Door C inputs
  - + - Door C outputs
  - + - Door C CAN data
- + - Load measuring
- + - UPS
- + - Energy meter
- + - Card reader
- + - Group
- + - Timer
  - + - Door A Timer

```

| | |
| | +- Door B Timer
| | |
| | +- Door C Timer
| | |
+- State
|
+- Interfaces
| |
| | +- CAN 1 port
| | |
| | +- CAN 2 port
| | |
| | +- Network connection
| | |
| | +- SAP
| | |
| | +- SLP
| | |
| | +- LIN bus
| | |
| | +- AWG-05 (RS-485)
| | |
| | +- USV (Effekta)
| | |
| | +- USB-A (host)
| | |
| | +- Serial interface 1
| | |
| | +- Serial interface 2
| | |
+- Node List
| |
| | +- Node CAN 1
| | |
| | +- Node CAN 2
| | |
| | +- LIN bus
| | |
+- Times/statistic
| |
| | +- Door cycle counter
| | |
| | +- Trip counter
| | |
| | +- Park statistics
| | |
| | +- Times
| | |
+- Checksums
+- Settings
| |

```

+ - Functions

+ - User Interface

\* Language

- English
- Deutsch [Default]
- Nederlands
- Français
- Italiana
- Svenska
- Polski
- Russian
- Türkçe
- Magyar

\* Secondary Language

- English [Default]
- Deutsch
- Nederlands
- Français
- Italiana
- Svenska
- Polski
- Russian
- Türkçe
- Magyar

\* Startup Dialog

- Current malfunction or message [Default]
- Trip counter and hour meter

\* Auto adjust. daylight-saving time

- off
- on [Default]

+ - Controller

+ - General

\* Door gong

- off
- on hall calls [Default]
- on car and hall calls
- on car calls
- on extra hall calls

\* Car fan mode

- automatic and manual [Default]
- manually only

\* Car light out of zone

- as on idle
- always on [Default]

\* Car light on faults

- always on [Default]
- as on idle

\* Car light on lift remote off

- on idle [Default]

- immediately off
- \* Car light reduction
  - off [Default]
  - on
- \* Car light switched on again on landing call
  - on [Default]
  - off
- \* Car light on brightness
  - 10..100 [100] %
- \* Car light off brightness
  - off/1..100 [20] %
- \* Emergency stop cancels calls
  - off [Default]
  - on
- \* After em.stop enable hall calls by car call or manual door
  - off [Default]
  - on
- \* Door sill cancels pending calls
  - on [Default]
  - off
- \* Use "no load" signal for making the Occupied-signal
  - off [Default]
  - on
- \* Car calls on chemical operation
  - cancel [Default]
  - process all car calls
- \* Landing call on floor closes open/opening car door
  - off [Default]
  - on
- \* Calls when activating the cleaning operation
  - cancel [Default]
  - process all car calls
  - process car calls, until cleaning floor
- \* On lift allocation, ignore door and motion detector
  - off [Default]
  - on
- \* Ignore extra calls on Blue Modus
  - off [Default]
  - on
- \* Ignore safety light curtain on Blue Modus
  - off [Default]
  - Blue Modus C (Standby)
  - Blue Modus B (Shut Down)
- \* Floor display if lift is remote off
  - on [Default]
  - off
- \* Call acknowledges
  - cancel on stopping [Default]
  - cancel after door opening
  - cancel when door opening
- \* Temporary enabled calls use blinking acknowledge
  - off [Default]
  - on

- \* Disable temporary enabled calls by entering a call
  - on
  - off [Default]
- \* Hall lantern
  - turn on at slowing point [Default]
  - turn on when doors are unlocked
  - turn on when doors open
  - turn on when doors are fully open
- \* Hall lantern blinking on priority
  - off
  - on [Default]
- \* Hall lantern blinking on guest call
  - off [Default]
  - on
- \* Arrival indication off (463/scheduler) affects speech synth.
  - on [Default]
  - off
- \* Direction of control floor
  - up and down [Default]
  - up only
  - down only
- \* Drive to control floor with load only
  - off [Default]
  - on
- \* Cancel car calls on control floor
  - off [Default]
  - all
  - above
  - below
- \* Use body detector for "no load" monitoring too
  - off [Default]
  - on
- \* Misboarder monitoring
  - off [Default]
  - on
- \* Automatic alternative routing
  - off
  - on [Default]
- \* Activation Buzzer (652) alarm
  - off
  - Ins/Ero and Fire alarm/Fire recall
  - Ins/Ero and Fire alarm/Fire recall and call to floor [Default]
- \* Activation Buzzer (652) overload
  - off
  - on [Default]
- \* Activation Buzzer (652) doors
  - off
  - Nudging [Default]
- + Car calls
  - \* Max. number of car calls on "no load"
  - off/1..127 [off]



- \* Clear car calls on max. number calls on "no load"
  - off [Default]
  - on
- \* Clear car calls on "no load" signal activation
  - off [Default]
  - on
- \* Clear car calls if door detector is not being triggered n-times
  - off/1..50 [off]
- \* New car call cancels load time
  - on [Default]
  - off
- \* New car call cancels hold time
  - off [Default]
  - on
- \* Pending car calls on landing calls off
  - cancel [Default]
  - complete
- \* Overload signal cancels car calls
  - off [Default]
  - on
- \* Clear car calls if landing door is opened
  - off [Default]
  - on
- \* Accept handicapped car calls only, after a handicapped landing call
  - off [Default]
  - on
- \* Signal if a disabled car call was selected
  - off [Default]
  - on
- \* Prevent disabling of low priority car calls
  - off [Default]
  - on
- \* PB/APB Collect car calls
  - off [Default]
  - on
- \* PB/APB one alterable car call
  - off [Default]
  - on
- \* Car call canceling by repressing call button
  - off [Default]
  - on
- \* Load time activation by car call on current floor
  - off [Default]
  - on
- +/- Landing calls
  - \* Signal if a disabled hall car was selected
    - off [Default]
    - on
  - \* Prevent disabling extra landing calls
    - off [Default]
    - on
  - \* Process next extra landing call, if car not occupied

- off [Default]
- on
- \* Extra landing calls without any door opening
  - off [Default]
  - on
- \* Landing call at remote off floor opens door
  - off [Default]
  - on
- \* Landing calls on loadtime operation
  - collective [Default]
  - cancel
- \* Landing calls on lift allocation
  - collective [Default]
  - cancel
- + - VIP service
  - \* Landing calls handling on car priority
    - collective [Default]
    - cancel
  - \* Car calls handling on car priority
    - cancel [Default]
    - process pending car calls
  - \* Car calls on car preference/VIP (84)
    - one alterable car call [Default]
    - collect car calls
  - \* Hold car calls pressed on car prio. until doors close
    - off [Default]
    - on
  - \* Car preference activates signal Priority (60)
    - on [Default]
    - off
  - \* Car preference activates signal Priority car (64)
    - on [Default]
    - off
  - \* Release disabled car calls on car preference
    - off [Default]
    - on
  - \* On car preference re-open the doors opened on this floor before
    - off [Default]
    - on
  - \* On car preference re-open closing doors
    - on [Default]
    - off
  - \* Low priority car call activates car preferences (VIP) (84)
    - off [Default]
    - on
  - \* Lift allocation cancels car allocation
    - off [Default]
    - on
- + - Priority calls
  - \* Unlock car calls for low prio. call

- off [Default]
- automatic
- \* Car calls during priority
  - cancel [Default]
  - process all car calls
  - process car calls, until prio. floor
- \* Allow entering of new car calls during priority
  - off [Default]
  - on
- \* Landing calls during priority
  - cancel
  - collective [Default]
- \* Car calls on low priority operation
  - one alterable car call [Default]
  - collect car calls
- \* Trip to priority floor with no load only
  - off [Default]
  - on
- \* Collect priority calls
  - off [Default]
  - on
- \* Prevent disabling of low priority landing calls
  - off [Default]
  - on
- + - High priority calls
  - \* Unlock car calls for high prio. call
    - off [Default]
    - automatic
  - \* Car calls during high priority
    - cancel [Default]
    - process all car calls
    - process car calls, until prio. floor
  - \* Allow entering new car calls during high priority
    - off [Default]
    - on
  - \* Landing calls during high prio.
    - cancel
    - collective [Default]
  - \* Car calls on high priority operation
    - one alterable car call [Default]
    - collect car calls
  - \* Trip to high priority floor with no load only
    - off [Default]
    - on
  - \* Collect high priority calls
    - off [Default]
    - on
  - \* Prevent disabling of high priority landing calls
    - off [Default]
    - on

+ - Group

- \* Park mode
  - Fixed [Default]
  - Zoning
  - Lobby
  - automatic (self-learning)
- \* Number of lobby cars parked  
none/1..8 [0]
- \* Door opening on hall call
  - Open one car per floor only
  - Open one car per landing call [Default]
  - Open all cars on the floor
- \* Multiple priority calls per floor
  - off [Default]
  - on, if car is on priority floor
  - on, if driving to priority floor
- \* Penalty for car at lobby floor  
off/1..5 [1]
- \* Penalty for lift parked  
off/1..5 [1]
- \* Penalty for Blue Modus C  
1..15 [8]
- \* Penalty for Blue Modus B  
1..31 [16]
- \* Penalty for idle lift  
off/1..5 [3]
- \* Penalty for car call stopping  
1..16 [8]
- \* Distance to floor factor  
1..4 [1]
- \* Penalty for directional change  
off/1..4 [2]
- \* Send group settings to all active group members
  - off [Default]
  - Execute

#### + - Drive unit

- + - Travelling speed
  - \* V0 (Creeping speed)  
0..16000 [50] mm/s
  - \* V1  
0..16000 [0] mm/s
  - \* V2  
0..16000 [0] mm/s
  - \* V3  
0..16000 [0] mm/s
  - \* V4  
0..16000 [0] mm/s
  - \* V5  
0..16000 [0] mm/s
  - \* V6  
0..16000 [0] mm/s

- \* V7  
0..16000 [0] mm/s
- \* VN (Releveling speed)  
0..300 [10] mm/s
- \* VI (Inspection speed)  
0..630 [500] mm/s
- \* VR (Emerg. rescue speed)  
0..630 [500] mm/s
- \* Max. full load speed
  - V0 (Creeping speed)
  - V1
- \* Speed increase after start
  - V0 (Creeping speed)
- \* Speed reduction at end stop
  - V0 (Creeping speed)
- \* Max. speed (440)
  - V0 (Creeping speed)
  - V1
- +/- Slowing distance
  - \* V0 (stopping dist.)  
0..65000 [35] mm
  - \* V1  
0..65000 [0] mm
  - \* V2  
0..65000 [0] mm
  - \* V3  
0..65000 [0] mm
  - \* V4  
0..65000 [0] mm
  - \* V5  
0..65000 [0] mm
  - \* V6  
0..65000 [0] mm
  - \* V7  
0..65000 [0] mm
  - \* VN (Releveling speed)  
0..65000 [5] mm
  - \* VI (Inspection speed)  
0..65000 [750] mm
  - \* VR (Emerg. rescue speed)  
0..65000 [750] mm
  - \* Additional slowing distance on start
    - 50 %
    - 25 % [Default]
    - 12.5 %
    - 6.25 %
  - \* Additional braking distance while driving
    - 50 %
    - 25 %
    - 12.5 % [Default]
    - 6.25 %



- 0..65000 [0] mm
- + - Speed change
  - \* Distance speed increase bottom  
0..99999 [0] mm
  - \* Distance speed reduction top  
0..99999 [0] mm
  - \* Distance speed increase top  
0..99999 [0] mm
  - \* Distance speed reduction bottom  
0..99999 [0] mm
- + - Drive profile
  - \* Acceleration  
100..2000 [800] mm/s<sup>2</sup>
  - \* Deceleration  
100..2000 [800] mm/s<sup>2</sup>
  - \* Starting jerk  
100..2000 [500] mm/s<sup>3</sup>
  - \* Travel jerk  
100..2000 [1000] mm/s<sup>3</sup>
  - \* Slowing jerk  
100..2000 [1000] mm/s<sup>3</sup>
  - \* Stopping jerk  
100..2000 [500] mm/s<sup>3</sup>
- + - Doors
  - \* Door on parking floor
    - Standard
    - Remains closed [Default]
    - Remains open
    - Opens and closes
  - \* Door on remote off floor
    - Standard
    - Remains closed [Default]
    - Remains open
    - Opens and closes
  - \* Door at reset
    - Opens and closes
    - Remains closed [Default]
  - \* Door on landing control off
    - Remains open [Default]
    - Close when idle
  - \* Door at stopover
    - Opens and closes
    - Remains closed [Default]
  - \* Door at stopover during priority
    - Remains closed [Default]
    - Opens and closes
  - \* Door lock condition
    - Default [Default]
    - SC Shaft door
    - SC Car door A

- SC Car door B
- \* Door lock sig. on safety light curtain/door sill/emergency stop
  - off [Default]
  - Off after 10 min
  - On
- \* Keep doors on disabled floors locked
  - off [Default]
  - on
- \* Keep doors on disabled calls locked
  - off [Default]
  - on
- \* Keep all closed doors permanently locked
  - off [Default]
  - on
- \* Cancel door locking during emergency stop operation
  - on [Default]
  - off
- \* Pre-opening doors
  - off [Default]
  - on
- \* Keep landing doors locked during door pre-opening
  - off [Default]
  - on
- \* Doors reverse on landing call
  - off/1..3/Unlimited [3]
- \* Door open button operative, if car call is disabled
  - on [Default]
  - off
- \* Start load time automatically on arrival
  - off [Default]
  - on
- \* Load time activation on allocation time (priority call)
  - off [Default]
  - on
- \* Loadtime acknowledge blinking
  - off [Default]
  - on
- \* Hall call triggers automatic swing door opener
  - off [Default]
  - on
- \* Car call triggers automatic swing door opener
  - off [Default]
  - on
- \* Handle automatic swing door opener like car door
  - off [Default]
  - on
- \* Activation of automatic swing door opener
  - with door opening [Default]
  - after door opening
- \* Door condition for the signal door close (66)
  - SC Shaft door [Default]
  - SC Car door A



- SC Car door B
- Shaft door closed but door detector
- \* Hall call must be pending for signal door close (66)
  - on [Default]
  - off
- \* Advance warning close door until door is closed
  - off [Default]
  - on
- \* Door condition for the signal Lift occupied (45)
  - Default [Default]
  - SC Shaft door
  - SC Car door A
  - SC Car door B
- \* Keep doors open when idle 1..127
- \* Doors remain closed on exception 1..127
- \* Doors closed on select.door open 1..127
- + - Load measuring
  - + - Car load parameter
    - \* Read settings from device
      - off [Default]
      - Execute
    - \* No load limit
      - 0..65535 [10] kg
    - \* Full load limit
      - 0..65535 [10] kg
    - \* Overload limit
      - 0..65535 [10] kg
    - \* Send settings to the device
      - off [Default]
      - Execute
  - + - Reference weight
    - \* Preset car reference weight
      - 0..65535 [0] kg
  - + - Rope load difference
    - \* Read settings from device
      - off [Default]
      - Execute
    - \* Rope load difference
      - 0..65535 [10] kg
- + - Remote Monitoring
  - \* Fault callback
    - Off [Default]
    - On new stack entry
    - If lift is out of service
  - \* Emergency callback
    - off [Default]
    - on
  - \* Maintenance callback

- off [Default]
- on
- \* Message callback
  - off [Default]
  - on
- \* Auto clock setting via monitoring
  - off [Default]
  - on
- \* Enable clock setting via monitoring
  - off
  - on [Default]
- \* Indicate a 1-button collective controller via monitoring
  - off [Default]
  - on
- \* Turn lift remote off if the BMS/Gateway connection is faulty
  - off [Default]
  - on
- \* Redialling
  - off/1..255 [30] min
- \* Renew Bluetooth pin
  - off [Default]
  - Execute

+ - Transponder/Codes

+ - Times

+ - General times

- \* Dwell time after car call
  - 1..20 [3] s
- \* Dwell time after landing call
  - 1..30 [5] s
- \* Dwell time at lobby floor after landing call
  - 1..30 [5] s
- \* Dwell time after guest call
  - 1..180 [60] s
- \* Extra dwell for handicapped accessible car calls
  - 1..120 [5] s
- \* Extra dwell for handicapped accessible hall calls
  - 1..120 [5] s
- \* Parking
  - off/10..65535 [off] s
- \* If park floor changed, re-park after
  - off/10..65535 [15] s
- \* Allocation time low priority call
  - 1..9999 [60] s
- \* Allocation time high priority call
  - 1..9999 [60] s
- \* Allocation time direct run or lift allocation
  - 1..9999 [60] s
- \* Allocation time service position
  - 1..30 [5] min

- \* Car light off  
off/10..9999 [off] s
- \* Display off  
off/3..9999 [off] s
- \* Landing displays reduced  
off/3..9999 [off] s
- \* Blue Modus C (Standby) on time  
off/1..65535 [30] min
- \* Blue Modus C (Standby) off delay  
off/1..255 [4] s
- \* Blue Modus C minimum length of stay  
off/1..255 [4] s
- \* Blue Modus B (Shut Down) on time  
off/5..65535 [off] min
- \* Blue Modus B (Shut Down) off delay  
off/1..255 [30] s
- \* Blue Modus B minimum length of stay  
off/1..255 [4] s
- \* Car fan run delay time  
off/1..255 [off] s
- \* Max. car fan run time  
off/1..255 [off] min
- \* Automatic air exchange interval (car fan)  
off/1..255 [off] min
- \* Automatic air exchange duration (car fan)  
off/1..255 [off] min
- \* Arrival indicator delay  
off/0.1..10.0 [off] s
- \* Arrival indicator puls time  
Impulse/1..30 [3] s
- \* Speech synthesis delay  
off/0.1..10.0 [off] s
- \* Speech synthesis puls time  
1..30 [3] s
- \* Start inhibitor delay time  
off/1..15 [off] s
- \* Selective blocking of hall call directions  
off/1..30 [off] s
- \* Timespan for enabling calls disabled via menu  
off/1..120 [off] s
- \* Signal duration disabled call selected  
off/1..60 [3] s
- \* Time span car call canceling by re-pressing car call button  
Unlimited/1..240 [0] s
- \* Time duration for code input  
Automatic/1..240 [10] s
- \* LCD-illumination  
always on/1..60 [15] min
- \* Automatic LCD-menu homing  
off/10..255 [off] min
- \* Blinking light pulse time (114)  
off/0.1..25.5 [off] s
- \* Generic malfunction delayed (495)

	off/1..255 [10] s
*	Emergency call unit ready signal delay
	off/0.1..6500.0 [10.0] s
*	Clearing operation repeat time
	off/1..240 [off] min
*	Duration advance drive warning
	off/1..10 [off] s
*	System cold start delay
	off/1..255 [off] s
*	Automatic Test drive
	off/15..65535 [off] min
*	Time synchronization impulse
	- off [Default]
	- on
*	Time synchronization impulse, time of day
	0..23 [0] o'clock
+- Monitoring times	
*	Door close monitoring
	off/1..60 [20] s
*	Door open monitoring
	off/1..60 [20] s
*	Door locking monitoring
	off/1..60 [10] s
*	Manual door monitoring time in group operation
	off/1..255 [10] s
*	Start control
	1..45 [15] s
*	Driving monitoring
	1..45 [45] s
*	Deceleration control
	1..30 [15] s
*	Relevelling control
	1..45 [20] s
*	Pawl device monitoring lifting/lowering
	off/1..60 [10] s
*	Pawl device monitoring retract/extend
	off/1..60 [3] s
*	Pawl device monitoring re-pumping
	off/1..255 [5] s
*	Emergency power sequence monitoring
	off/30..255 [60] s
*	Emergency power enabling monitoring
	off/1..255 [off] s
*	Chemical operation monitoring time (timeout)
	off/1..255 [off] min
*	Automatic emergency rescue monitoring
	1..255 [30] s
+- Drive unit times	
*	Main contactor debounce time on
	off/1..1000 [100] ms

- \* Main contactor on monitoring time/max. wait time  
off/1..3000 [1000] ms
- \* Main contactor debounce time off  
off/1..1000 [100] ms
- \* Main contactor off monitoring time/max. wait time  
off/1..3000 [1000] ms
- \* Safety brake debounce time  
off/1..1000 [100] ms
- \* Safety brake monitoring time  
off/1..6000 [1000] ms
- \* Brake debounce time on  
off/1..1000 [100] ms
- \* Brake monitoring time on  
off/1..3000 [1000] ms
- \* Brake debounce time off  
off/1..1000 [100] ms
- \* Brake monitoring time off  
off/1..3000 [1000] ms
- \* Brake delayed off  
off/1..2000 [off] ms
- \* Main contactor delayed off  
off/1..2000 [off] ms
- \* Star-delta start  
off/1..5000 [1000] ms
- \* Motor delayed off  
off/1..5000 [off] ms
- \* Up-valve delayed close  
off/1..5000 [off] ms
- \* Down-valve delayed close  
off/1..5000 [off] ms
- \* Main contactor delayed off  
off/1..2000 [off] ms
- \* Drive (motor) fan after-run time  
off/1..600 [off] s
- \* Relevelling on delay time  
0..10000 [1000] ms
- \* Relevelling off delay time  
0..5000 [0] ms
- \* Homing time  
off/1..60 [15] min
- \* Fast start activation delay time  
off/1..10000 [1000] ms
- \* Automatic emergency rescue delay  
off/1..255 [20] s
- \* Drop protection monitoring time after deactivation  
500..5000 [1000] ms
- \* Pawl device run delay re-pumping  
off/1..5000 [100] ms
- \* Pawl device end switches debounce time  
off/1..5000 [100] ms

+ - Door times

- \* Dwell time after light curtain

	1..20 [1] s
*	Dwell time after force limit
	1..20 [3] s
*	Dwell time after door open button
	1..20 [4] s
*	Close doors when idle
	off/1..240 [8] s
*	Advance warning close idle door
	off/1..60 [off] s
*	Advance warning open door
	off/1..15 [off] s
*	Advance warning close door
	off/1..15 [off] s
*	Door nudge time
	off/1..120 [off] s
*	Advance warning door nudging
	off/1..15 [off] s
*	Load time 1
	off/1..239/Unlimited [1] min
*	Load time 2
	off/1..239/Unlimited [1] min
*	Enable motion detector after
	off/1..10000 [off] ms
*	Disable motion detector after
	off/1..20000 [off] ms
*	Motion detector timeout
	off/1..60 [18] s
*	Door open time
	off/1..60 [10] s
*	Door close time
	off/1..60 [10] s
*	Delay for signal close door (66)
	off/1..600 [off] s
*	Duration signal close door (66)
	1..20 [3] s
*	Repeat delay signal close door (66)
	off/1..600 [15] s
*	Door open with delay
	off/1..10000 [off] ms
*	Door close with delay
	off/1..10000 [off] ms
*	Idle period during door reverse move
	off/1..3000 [100] ms
*	Door motor delayed off at open limit switch
	off/1..10000 [250] ms
*	Door motor delayed off with close switch
	off/1..10000 [250] ms
*	Door motor off, if door is closed, after
	off/1..240 [off] s
*	Door motor off if door is opened, after
	off/1..240 [off] s
*	Lock debounce timer

- off/1..2000 [300] ms
- \* Lock delay before start  
off/1..10000 [off] ms
- \* Lock delay after stop  
off/1..60000 [off] ms
- \* Sig. debounce time door open monitoring  
100..5000 [2000] ms
- \* Monitor of time SLC  
off/1..10 [3] s
- \* Duration auto. swing door opener signal  
off/1..255 [off] s
- \* Delay time automatic swing door opener  
100..4000 [250] ms
- \* Door-close-btn. or car call cancels swing door opener time
  - off [Default]
  - on

+ Scheduler

- \* Timer 1..16

+ Floors

+ Special floors

- \* Lobby floor  
off/1..3 [off]
- \* Lobby floor  
off/1..3 [off]
- \* Adjust parking floor automatically (self-learning)
  - off [Default]
  - on
- \* Parking floor  
off/1..3 [off]
- \* Parking in hidden position  
off/1..2000 [off] mm
- \* Enable parking at floors with no doors
  - off [Default]
  - on
- \* Control floor remote off  
off/1..3 [off]
- \* Remote off floor  
off/1..3 [off]
- \* Remote off in hidden position  
off/1..2000 [off] mm
- \* Peak-up floor  
off/1..3 [off]
- \* Peak-down floor  
off/1..3 [off]
- \* Fire recall floor  
off/1..3 [off]
- \* Alternate fire recall floor  
off/1..3 [off]
- \* Emergency power floor  
off/1..3 [off]

		* Blue Modus floor off/1..3 [off]
		* Blue Mode in hidden position off/1..2000 [off] mm
		* Service floor off/1..3 [off]
		* Control floor generic off/1..3 [off]
		* Lift allocation floor off/1..3 [off]
		* Cleaning floor off/1..3 [off]
		* Docking service floor 1..8 off/1..3 [off]
		* Rescue floor off/1..3 [off]
		* Fire alarm return floor 1..16 off/1..3 [off]
	+ -	Floor names
		* Floor text 1..127
		* Send floor text - off [Default] - on
	+ -	Disable calls
		* Keep car call at lobby enabled, on signal "Disable all car calls" - off [Default] - on
		* Car calls disabled 1..127
		* Landing calls disabled 1..127
	+ -	7-segment displays
		* Custom display encoding - off [Default] - on
		* Bit mask floor 1..63
	+ -	Temperatures
		* Overtemperature comparator (238) -55.0..125.0 [35.0] °C
		* Undertemperature comparator (239) -55.0..125.0 [7.0] °C
		* Max. Machine room temperature 10.0..125.0 [60.0] °C
		* Min. Machine room temperature -50.0..30.0 [0.0] °C
	+ -	Shaft encoding
		+ - Parameter



- + - General ways
  - \* Shaft pit area  
350..65000 [1000] mm
  - \* Shaft head area  
350..65000 [1500] mm
  - \* Car height  
500..10000 [2000] mm
  - \* Upper door zone  
10..350 [150] mm
  - \* Lower door zone  
10..350 [150] mm
  - \* Upper level zone  
1..350 [10] mm
  - \* Lower level zone  
1..350 [10] mm
  - \* Relevel area up  
2..350 [20] mm
  - \* Relevel area down  
2..350 [20] mm
  - \* Relevelling up if doors closed  
off/1..350 [off] mm
  - \* Pawl device lifting distance  
0..500 [50] mm
  - \* Inspection stop before top floor level  
off/1..3000 [off] mm
  - \* Inspection stop before bottom floor level  
off/1..3000 [off] mm
  - \* Distance for driving monitoring  
20..50000 [1000] mm
  - \* Stop before floor level on rescue operation  
off/1..500 [100] mm
- + - Speed difference
  - \* Signal (201) at  $v <$   
off/1..65535 [off] mm/s
  - \* Signal (202) at  $v <$   
off/1..65535 [off] mm/s
  - \* Signal (203) at  $v <$   
off/1..65535 [off] mm/s
  - \* Run-in speed pre-opening doors  
0..800 [800] mm/s
  - \* Max. emergency rescue speed  
50..300 [300] mm/s
- + - Position threshold
  - \* Signal (581) at position  $>$   
off/1..500000 [off] mm
  - \* Signal (582) at position  $>$   
off/1..500000 [off] mm
  - \* Signal (583) at position  $>$   
off/1..500000 [off] mm
  - \* Signal (584) at position  $>$   
off/1..500000 [off] mm



- \* Assembly mode with pre-limit switches (S81/S82)
  - off
  - on [Default]
- \* Ignore safety light curtain or door sill on assembly mode
  - off [Default]
  - on
- \* Enable Ero outside limits
  - off [Default]
  - turned on once
  - permanent activated (max. 12h)
- \* Enable door open/close button on Inspection control
  - off [Default]
  - on
- \* Keep car door closed on Ins/Ero operation
  - off [Default]
  - on
- \* Floor display on Ins/Ero
  - off [Default]
  - on
- \* Controlled deceleration on Ero operation
  - on [Default]
  - off
- \* Enable Inspection drive by turning maintenance on
  - off [Default]
  - on
- \* Inspection speed
  - Slow [Default]
  - Fast
- \* Button inspection fast (89)
  - off [Default]
  - on
- \* Inspection run operated by car panel
  - off [Default]
  - on
- \* Enable remote activation overspeed governor
  - off [Default]
  - on for 5 minutes
  - permanent on
- \* Drive tuning operation
  - off [Default]
  - on
- \* Drive data transfer from electronic nameplate
  - off [Default]
  - Execute
- \* UPS-Test operation mode
  - off [Default]
  - Short test
  - Long test

+ Maintenance settings

- \* Trip counter interval
  - off/1..4294967295 [off]
- \* Hourly meter interval

- off/0.1..429496729.5 [off] h
- \* Maintenance date
- \* Cyclic interval trip counter
- off/1..4294967295 [off]
- \* Cyclic interval hour meter
- off/0.1..429496729.5 [off] h
- \* Cyclic interval in months
- off/1..65535 [off]
- \* Set new maintenance intervals
  - off [Default]
  - Execute
- + Maintenance stack
- + System data
  - + Print system data
  - + Print menu tree
  - + Save logs
  - + Save parameters
  - + Save factory default
  - + View text file
- + Testing
  - + UCM-Test (A3)
    - \* Code for Tests
    - \* UCM-test (A3) with doors open
      - off
      - on [Default]
    - \* Enable UCM-test (A3)
      - off [Default]
      - on, using drive
      - on, using brake
  - + Brake test
    - \* Code for Tests
    - \* Brake test speed
      - V0 (Creeping speed)
      - V1
      - V2
      - V3
      - V4
      - V5
      - V6
      - V7
      - VN (Releveling speed)

		- VI (Inspection speed)
		- VR (Emerg. rescue speed) [Default]
		* Enable brake test
		- off [Default]
		- on
		+ - Limit switch test
		* Code for Tests
		* Enable limit switch test
		- off [Default]
		- on
		+ - Driving monitoring
		* Code for Tests
		* Enable driving monitoring test
		- off [Default]
		- on
		+ - Drive capability
		* Code for Tests
		* Drive capability
		- off [Default]
		- on
		+ - Functions
		* Code for Tests
		* Testing, landing calls off
		- Normal [Default]
		- off, until reset
		- off, still after reset
		* Doors during testing
		- Normal [Default]
		- Keep doors closed, until reset
		- Keep doors closed, still after reset
		* Ignore overload signal until restart
		- off [Default]
		- on
		+ - Lock floors/doors
		* Door disabling table 1..127
		+ - Times/statistic
		+ - Door cycle counter
		+ - Trip counter
		+ - Park statistics
		+ - Times
		+ - Enter calls

- | +- Car calls
- | |
- | +- Car calls handicap.
- | |
- | +- Low prio. car calls
- | |
- | +- Landing calls
- | |
- | +- Landings up
- | |
- | +- Landings down
- | |
- | +- Landing calls extra
- | |
- | +- Landings up extra
- | |
- | +- Landings down extra
- | |
- | +- Priority calls
- | |
- | +- High priority calls
- |
- + - Tripcnt/hours meter
- |
- + - System info
- |
- + - Sundries
- |
- | +- Setup info
- | |
- | +- Access codes
- | | \* Service code
- | | \* Info code
- | |
- | +- Date/Time
- | |
- + - Commands
- | \* Revoke remote off via remote monitoring
- | - off [Default]
- | - Execute
- | \* Revoke landing control off via remote monitoring
- | - off [Default]
- | - Execute
- | \* Enable floors locked by remote monitoring
- | - off [Default]
- | - Execute
- | \* Fire alarm reset
- | - off [Default]
- | - Execute
- | \* Fire service reset
- | - off [Default]
- | - Execute

- \* Chemical operation reset
  - off [Default]
  - Execute
- \* Allocation operation reset
  - off [Default]
  - Execute
- \* Pawl device extend
  - off [Default]
  - Execute
- \* Pawl device retract
  - off [Default]
  - Execute

## C Quick Overview of Setup Menu

### + - Parameter

#### + - Lift data

- \* Top terminal floor  
2..127 [16]
- \* Bottom terminal floor  
1..126 [1]
- \* Type of lift
  - Traction lift [Default]
  - Hydraulic lift
- \* Drive type traction
  - Single speed
  - Two speed [Default]
  - Variable frequency (CANopen)
  - Variable frequency (DCP)
  - Variable frequency (Parallel)
- \* CANopen Mode (profile)
  - Position Profile Mode [Default]
  - Speed Profile Mode
- \* Parallel Mode
  - KEB binary [Default]
  - Universal 1-out-of-n
  - Universal 1-out-of-n (VN)
  - Fuji binary
  - Schindler VF11/22/33/44BR
  - Arkel ADrive
  - CT Mentor MP
- \* Drive type hydraulic
  - unregulated [Default]
  - LRV/iValve (Bucher)
  - NGV (GMV)
  - NGV A3 (GMV)
  - AZFR (ALGI)
  - AZRS (ALGI)
  - regulated with DCP control
  - BLAIN (SEV)
  - ADrive (Omar)
- \* DCP Mode (profile)
  - DCP4+ (continuous brake distance feedback) [Default]
  - DCP4 (Brake distance feedback before start)
  - DCP3
  - Bucher
  - DCP-01
- \* DCP 16-bit mode
  - off [Default]
  - on
- \* Motor control
  - Direct on line
  - Star / delta



- Soft starter [Default]
- Frequency controlled
- \* Separate relevelling unit
  - off [Default]
  - up only
  - down only
  - up and down
- \* Drive upward using overtravel and relevelling (URACA)
  - off [Default]
  - on
- \* Separate relevelling unit
  - off [Default]
  - on
- \* Type of system
  - Single lift [Default]
  - Group lift 1
  - Group lift 2
  - Group lift 3
  - Group lift 4
  - Group lift 5
  - Group lift 6
  - Group lift 7
  - Group lift 8
- \* Controller system
  - Collective controller [Default]
  - PB - without call storage
  - APB - with call storage
  - Simple one button collective direction dependend
  - Simple one button collective direction independend
- \* Floor selector type
  - Floor selector emulation
  - Absolute encoder (CAN) [Default]
  - Using 4 switches impulse & level
  - Using 6 switches 2 impulse & 2 level
  - Absolute encoder emulation
  - Absolute encoder AWG-05 (RS-485)
- \* Protective Circuit (SMZ)
  - Off [Default]
  - on, without blocking
  - on, with blocking
  - On, Test only
- \* Rated load
  - 100..65535 [630] kg

#### + - Terminals

##### + - Control Terminals

##### + - Input terminals

- \* Virtual input 1..48

##### + - Output terminals

- \* Virtual output 1..48

- |
  - |
    - | +- Call terminals
    - | | \* Virtual input 1..48
    - |
    - | +- Relay
    - | | \* Virtual output 1..48
    - |
    - | +- Remote monit.terminals
    - | |
      - | +- Monitoring input
      - | | \* Monitoring Input 1..32
      - |
      - | +- Monitoring output
      - | | \* Monitoring output 1..32
  - | +- Terminals CAN 1
  - | +- Terminals CAN 2
  - | +- SLP-Terminals
  - | |
    - | +- SLP-Input terminals
    - | | \* SLP Virtual input 1..80
    - |
    - | +- SLP-Output termin.
    - | | \* SLP Virtual output 1..80
    - |
    - | +- Call terminals
    - | | \* SLP Virtual input 1..80
    - |
    - | +- Relay
    - | | \* SLP Virtual output 1..80
- + - Floor Selector
  - |
    - + - APS1 settings
      - \* Type
        - User defined
        - Rotary encoder 458 mm [Default]
        - Rotary encoder 256 mm
        - Limax-2 0.5 mm
        - USP 0.1 mm
        - APS 0.5 mm
        - iDiscovery 0.5 mm
        - SBOX 0.5 mm
      - \* Code sequence
        - Clockwise [Default]
        - Counter clockwise
      - \* Resolution
        - 1..65535 [1024]
      - \* Length
        - 1..65535 [458] mm

- \* Scaling function
  - Disabled
  - Enabled [Default]
- \* APS-Offset
  - 0..4294967295 [0]
- \* Write configuration
  - off [Default]
  - Execute

#### + - Doors

##### + - Door settings

- \* Door count
  - 1..3 [1]
- \* Operating mode
  - Selective [Default]
  - Selective, alternate locked
  - simultaneous (not selective)

##### + - Door table

- \* Door table 1..127
- \* Second door table (sig. 80) 1..127
- \* Third door table (sig. 380) 1..127
- \* Swing doors (manual) 1..127

##### + - Door A settings

- \* Landing door type
  - Automatically operated [Default]
  - Manually operated
- \* Car door type
  - Automatic door (parallel) [Default]
  - Automatic door (CANopen)
  - none
  - Door simulation
  - Manually operated
- \* Door open limit
  - off [Default]
  - on
- \* Door close limit
  - off [Default]
  - on
- \* Door close button enabled on limit switch
  - off
  - on [Default]
- \* Door motor at open limit switch
  - off [Default]
  - on
- \* Door motor at close limit switch
  - off [Default]
  - on
- \* Safety light curtains
  - off [Default]
  - on

- \* Retiring cam
  - off [Default]
  - on
- \* Door A enabling via terminal (435)
  - off [Default]
  - on
- \* Door A enabling floor selective
  - off [Default]
  - on
- \* Ignore door enabling signal in case of fire
  - off [Default]
  - on
- \* Door close sig. on, if Ins/Ero
  - off [Default]
  - on
- \* Car door opens, if landing door opens
  - off [Default]
  - on
- \* Floor selective door limit switches
  - off [Default]
  - on
- \* Use floor selective door limit switches for car door
  - off [Default]
  - on
- \* Floor selective light curtain and force limit signals
  - off [Default]
  - on
- +/- Door B settings
  - \* Landing door type
    - Automatically operated [Default]
    - Manually operated
  - \* Car door type
    - Automatic door (parallel) [Default]
    - Automatic door (CANopen)
    - none
    - Door simulation
    - Manually operated
  - \* Door open limit
    - off [Default]
    - on
  - \* Door close limit
    - off [Default]
    - on
  - \* Door close button enabled on limit switch
    - off
    - on [Default]
  - \* Door motor at open limit switch
    - off [Default]
    - on
  - \* Door motor at close limit switch
    - off [Default]

- on
- \* Safety light curtains
  - off [Default]
  - on
- \* Retiring cam
  - off [Default]
  - on
- \* Door B enabling via terminal (436)
  - off [Default]
  - on
- \* Door B enabling floor selective
  - off [Default]
  - on
- \* Ignore door enabling signal in case of fire
  - off [Default]
  - on
- \* Door close sig. on, if Ins/Ero
  - off [Default]
  - on
- \* Car door opens, if landing door opens
  - off [Default]
  - on
- \* Floor selective door limit switches
  - off [Default]
  - on
- \* Use floor selective door limit switches for car door
  - off [Default]
  - on
- \* Floor selective light curtain and force limit signals
  - off [Default]
  - on
- + - Door C settings
  - \* Landing door type
    - Automatically operated [Default]
    - Manually operated
  - \* Car door type
    - Automatic door (parallel) [Default]
    - Automatic door (CANopen)
    - none
    - Door simulation
    - Manually operated
  - \* Door open limit
    - off [Default]
    - on
  - \* Door close limit
    - off [Default]
    - on
  - \* Door close button enabled on limit switch
    - off
    - on [Default]
  - \* Door motor at open limit switch
    - off [Default]

- on
- \* Door motor at close limit switch
  - off [Default]
  - on
- \* Safety light curtains
  - off [Default]
  - on
- \* Retiring cam
  - off [Default]
  - on
- \* Door C enabling via terminal (437)
  - off [Default]
  - on
- \* Door C enabling floor selective
  - off [Default]
  - on
- \* Ignore door enabling signal in case of fire
  - off [Default]
  - on
- \* Door close sig. on, if Ins/Ero
  - off [Default]
  - on
- \* Car door opens, if landing door opens
  - off [Default]
  - on
- \* Floor selective door limit switches
  - off [Default]
  - on
- \* Use floor selective door limit switches for car door
  - off [Default]
  - on
- \* Floor selective light curtain and force limit signals
  - off [Default]
  - on

#### + - Interfaces

##### + - CAN ports

##### + - CAN 1 port

- \* Interface
  - off
  - on [Default]
- \* Baud rate
  - 250 kBit/s [Default]
  - 125 kBit/s
- \* Monitoring CLK
  - off [Default]
  - on
- \* Function
  - RDT-300
  - EIS-300

- DCP (RS-485)
- DCP logging
- APS logging
- Energy meter (UMG)
- GDB
- SAP
- SLP
- AWG-05 (RS-485)
- USV (Effekta)
- LIN bus master
- \* Modem device
  - Analog modem
  - ISDN
  - GSM
  - FirePlug & WiFly (Bluetooth & WiFi)
  - EA-GSM Modem (Leitronic)
  - EA-GSM Internet (Leitronic)
  - GPRS/UMTS
- + CAN 2 port
  - \* Interface
    - off [Default]
    - on
  - \* Baud rate
    - 250 kBit/s [Default]
    - 125 kBit/s
  - \* Function
    - RDT-300
    - EIS-300
    - DCP (RS-485)
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Modem device
    - Analog modem
    - ISDN
    - GSM
    - FirePlug & WiFly (Bluetooth & WiFi)
    - EA-GSM Modem (Leitronic)
    - EA-GSM Internet (Leitronic)
    - GPRS/UMTS
  - \* LIN bus master
    - off [Default]
    - on

+ Serial ports

- + Serial interface 1
  - \* Function
    - RDT-300
    - EIS-300
    - DCP (RS-485)
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Baud rate
    - 1200 Bit/s
    - 2400 Bit/s
    - 4800 Bit/s
    - 9600 Bit/s
    - 19200 Bit/s
    - 38400 Bit/s
    - 57600 Bit/s
    - 115200 Bit/s [Default]
  - \* Parity
    - none [Default]
    - odd
    - even
  - \* Modem device
    - Analog modem
    - ISDN
    - GSM
    - FirePlug & WiFly (Bluetooth & WiFi)
    - EA-GSM Modem (Leitronic)
    - EA-GSM Internet (Leitronic)
    - GPRS/UMTS
  - \* Faults on service
    - off [Default]
    - on
  - \* EIS-300 Legacy Mode
    - on [Default]
    - off
  - \* Parking trip after setting the parking floor via EIS-300
    - off [Default]
    - on
  - \* Callback server usage (Internet)
    - off [Default]
    - on
  - \* Access Point Name (APN)
  - \* Access Point User (APN)
  - \* Access Point Password (APN)
  - \* IP Callback server
  - \* Host name Callback server



- \* Port Callback server (Call Acceptance)
  - 1..65535 [9001]
- \* Access password callback server
- + Serial interface 2
  - \* Function
    - off [Default]
    - Debug
    - RDT-300
    - EIS-300
    - DCP (RS-485)
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Baud rate
    - 1200 Bit/s
    - 2400 Bit/s
    - 4800 Bit/s
    - 9600 Bit/s
    - 19200 Bit/s
    - 38400 Bit/s
    - 57600 Bit/s
    - 115200 Bit/s [Default]
  - \* Parity
    - none [Default]
    - odd
    - even
  - \* Modem device
    - Analog modem
    - ISDN
    - GSM
    - FirePlug & WiFly (Bluetooth & WiFi)
    - EA-GSM Modem (Leitronic)
    - EA-GSM Internet (Leitronic)
    - GPRS/UMTS
  - \* Faults on service
    - off [Default]
    - on
  - \* EIS-300 Legacy Mode
    - on [Default]
    - off
  - \* Parking trip after setting the parking floor via EIS-300
    - off [Default]
    - on
  - \* Callback server usage (Internet)
    - off [Default]
    - on

- \* Access Point Name (APN)
- \* IP Callback server
- \* Host name Callback server
- \* Port Callback server (Call Acceptance)
  - 1..65535 [9001]
- \* Access password callback server
- + - Serial interface 3
  - \* Function
    - RDT-300
    - EIS-300
    - DCP (RS-485) [Default]
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Baud rate
    - 1200 Bit/s
    - 2400 Bit/s
    - 4800 Bit/s
    - 9600 Bit/s
    - 19200 Bit/s
    - 38400 Bit/s [Default]
    - 57600 Bit/s
    - 115200 Bit/s
- + - Serial interface 4
  - \* Function
    - RDT-300
    - EIS-300
    - DCP (RS-485)
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Baud rate
    - 1200 Bit/s
    - 2400 Bit/s
    - 4800 Bit/s
    - 9600 Bit/s
    - 19200 Bit/s
    - 38400 Bit/s [Default]

		- 57600 Bit/s
		- 115200 Bit/s
	+-	USB-B (device)
		* Function
		- RDT-300 [Default]
		- EIS-300
		- DCP (RS-485)
		- DCP logging
		- APS logging
		- Energy meter (UMG)
		- GDB
		- SAP
		- SLP
		- AWG-05 (RS-485)
		- USV (Effekta)
		- LIN bus master
		* Device number
		0..99 [0]
	+-	USB-A (host)
		* Function
		- RDT-300
		- EIS-300
		- DCP (RS-485)
		- DCP logging
		- APS logging
		- Energy meter (UMG)
		- GDB
		- SAP
		- SLP
		- AWG-05 (RS-485)
		- USV (Effekta)
		- LIN bus master
		* Modem device
		- Analog modem
		- ISDN
		- GSM
		- FirePlug & WiFly (Bluetooth & WiFi)
		- EA-GSM Modem (Leitronic)
		- EA-GSM Internet (Leitronic)
		- GPRS/UMTS
		* Baud rate
		- 1200 Bit/s
		- 2400 Bit/s
		- 4800 Bit/s
		- 9600 Bit/s
		- 19200 Bit/s
		- 38400 Bit/s
		- 57600 Bit/s
		- 115200 Bit/s [Default]
		* Faults on service
		- off [Default]

- on
- \* EIS-300 Legacy Mode
  - on [Default]
  - off
- \* Enable diagnostic callback triggered by emergency call unit
  - off [Default]
  - on
- \* Callback server usage (Internet)
  - off [Default]
  - on
- \* Access Point Name (APN)
- \* Access Point User (APN)
- \* Access Point Password (APN)
- \* IP Callback server
- \* Host name Callback server
- \* Port Callback server (Call Acceptance)
  - 1..65535 [9001]
- \* Access password callback server
- + - Network connection
  - \* Interface
    - off [Default]
    - on
  - \* IP address
  - \* Subnet-mask
  - \* Gateway
  - \* Primary DNS
  - \* Secondary DNS
  - \* Function
    - RDT-300 [Default]
    - EIS-300
    - DCP (RS-485)
    - DCP logging
    - APS logging
    - Energy meter (UMG)
    - GDB
    - SAP
    - SLP
    - AWG-05 (RS-485)
    - USV (Effekta)
    - LIN bus master
  - \* Port
    - 1..65535 [8000]
  - \* Web server service
    - off [Default]
    - on
  - \* Web server password
  - \* Callback server usage
    - off [Default]
    - on
  - \* IP Callback server
  - \* Host name Callback server

- \* Port Callback server (Call Acceptance)
  - 1..65535 [9001]
- \* Access password callback server
- + Modem
  - \* Additional init string
  - \* ISDN MSN (own telephone number)
  - \* ISDN B-channel protocol
    - default [Default]
    - X.75
  - \* Number of rings to answer
    - 1..9 [1]
  - \* Switch-on delay time telephone/modem selector
    - off/1..255 [4] s
  - \* Afterrun time telephone/modem selector
    - off/1..30 [4] min
  - \* GSM code
  - \* Bluetooth/WiFi friendly name extension
  - \* Bluetooth code (Pairing)
  - \* Init WiFly device
    - off [Default]
    - Execute
- + Energy meter
  - \* Current transformer, primary
    - 1..10000 [5] A
  - \* Current transformer, secondary
    - 1..5 [5] A
- + LIN bus
  - \* Direction indicator on A1/A2
    - Hall lantern [Default]
    - Direction indication
  - \* Function A3
    - off [Default]
    - Out of service (46)
    - Lift occupied (45)
    - Low priority hall call acknowledge
    - Door gong
    - Door gong up
    - Door gong down
    - Lift here
    - Special run
    - Hall call enable
  - \* Function A4
    - off [Default]
    - Out of service (46)
    - Lift occupied (45)
    - Low priority hall call acknowledge
    - Door gong
    - Door gong up
    - Door gong down
    - Lift here

- | - Special run
- | - Hall call enable
- |
- + - SAP
  - \* Mounting 1st SAP
    - Top terminal floor [Default]
    - Bottom terminal floor
  - \* Call assignment
    - Normal (1 door) [Default]
    - Selective (2 doors)
    - Extra (1 door)
  - \* Calls over group
    - off [Default]
    - on
  - \* Priority calls
    - on [Default]
    - off
  - \* Flexible priority
    - off [Default]
    - on
  - \* Direction indicator on A1/A2
    - Hall lantern [Default]
    - Direction indication
  - \* Selective gong on A3/A4
    - off [Default]
    - on
  - \* Function A3
    - off [Default]
    - Out of service (46)
    - Lift occupied (45)
    - Low priority hall call acknowledge
    - Door gong
    - Door gong up
    - Door gong down
    - Lift here
    - Special run
    - Hall call enable
  - \* Function A4
    - off [Default]
    - Out of service (46)
    - Lift occupied (45)
    - Low priority hall call acknowledge
    - Door gong
    - Door gong up
    - Door gong down
    - Lift here
    - Special run
    - Hall call enable
  - \* Drive direction mapped to floor byte
    - off [Default]
    - on
  - \* Floor indicator minus one

	- off [Default]
	- on
	* Number SAP
	off/1..255 [off]
+- Functions	
+- User Interface	
	* Language
	- English
	- Deutsch [Default]
	- Nederlands
	- Français
	- Italiana
	- Svenska
	- Polski
	- Russian
	- Türkçe
	- Magyar
	* Secondary Language
	- English [Default]
	- Deutsch
	- Nederlands
	- Français
	- Italiana
	- Svenska
	- Polski
	- Russian
	- Türkçe
	- Magyar
+- Controller	
+- Monitoring	
	* Unattended car movement (UCM)
	- Off
	- on, with blocking [Default]
	* Generic monitoring 1 (30)
	- off [Default]
	- on, stop at floor
	- on, immediately
	- on, blocked mode at floor
	- on, blocked mode immediately
	* Text generic monitoring 1 (30)
	- Generic monitoring [Default]
	- UPS monitoring
	- Vandalism monitoring
	- Motor protection monitoring
	- Safety contactor monitoring
	- ...
	* Ins/Ero ignores generic monitoring 1 (30)
	- off [Default]
	- on

- \* BlueModus ignores generic monitoring 1 (30)
  - off [Default]
  - on
- \* General monitoring 1 (30) delay
  - off/0.1..6500.0 [off] s
- \* Send to floor on generic monitoring 1 (30)
  - off/1..3 [off]
- \* Door on general monitoring 1 (30) floor
  - Standard
  - Remains closed [Default]
  - Remains open
  - Opens and closes
- \* Generic monitoring 2 (53)
  - off [Default]
  - on, stop at floor
  - on, immediately
  - on, blocked mode at floor
  - on, blocked mode immediately
- \* Text generic monitoring 2 (53)
  - Generic monitoring [Default]
  - UPS monitoring
  - Vandalism monitoring
  - Motor protection monitoring
  - Safety contactor monitoring
  - ...
- \* Ins/Ero ignores generic monitoring 2 (53)
  - off [Default]
  - on
- \* BlueModus ignores generic monitoring 2 (53)
  - off [Default]
  - on
- \* General monitoring 2 (53) delay
  - off/0.1..6500.0 [off] s
- \* Send to floor on generic monitoring 2 (53)
  - off/1..3 [off]
- \* Door on general monitoring 2 (53) floor
  - Standard
  - Remains closed [Default]
  - Remains open
  - Opens and closes
- \* Generic monitoring 3 (257)
  - off [Default]
  - on, stop at floor
  - on, immediately
  - on, blocked mode at floor
  - on, blocked mode immediately
- \* Text generic monitoring 3 (257)
  - Generic monitoring [Default]
  - UPS monitoring
  - Vandalism monitoring
  - Motor protection monitoring
  - Safety contactor monitoring



- ...
- \* Ins/Ero ignores generic monitoring 3 (257)
  - off [Default]
  - on
- \* BlueModus ignores generic monitoring 3 (257)
  - off [Default]
  - on
- \* General monitoring 3 (257) delay
  - off/0.1..6500.0 [off] s
- \* Send to floor on generic monitoring 3 (257)
  - off/1..3 [off]
- \* Door on general monitoring 3 (257) floor
  - Standard
  - Remains closed [Default]
  - Remains open
  - Opens and closes
- \* Light supply monitoring (36)
  - off
  - on [Default]
- \* Car light monitoring (52)
  - off [Default]
  - on
- \* Machine room temperature monitoring (38)
  - off
  - on [Default]
- \* Monitoring UPS
  - off [Default]
  - on
- \* Supervision control signal door/zone relay
  - Off [Default]
  - on, with blocking
- \* Hall door monitoring using separate door contacts
  - off [Default]
  - on
  - on, using supervision signal (720)
- \* Hall door monitoring 1..127
- \* Safety barrier monitoring
  - off [Default]
  - on
- \* Safety circuit bypass monitoring
  - off
  - on, stop immediately
  - on, stop immediately blocked [Default]
- \* Separating door monitoring (430)
  - off [Default]
  - on
- \* Door sill monitoring (17)
  - off [Default]
  - on
- \* Passive safety circuit monitoring
  - on, lift blocked [Default]
  - on, Without blocking
- \* Mains power failure (710)

- off [Default]
- on, stop at floor
- on, immediately
- on, blocked mode at floor
- on, blocked mode immediately
- \* Emergency call unit ready signal monitoring
  - off [Default]
  - on
- \* Process input door contact bypass (410 NC)
  - off [Default]
  - on
- \* Trigger for driving monitoring
  - Floor selector impulse [Default]
  - Distance covered
- +/- Emergency power
  - \* Function
    - off [Default]
    - on using enable signal
    - on without enable signal
  - \* Unlock disabled floors
    - off
    - on [Default]
  - \* Emergency main supply journey delay
    - off/1..255 [off] s
  - \* UPS-Emergency supply journey delay
    - off/1..255 [off] s
  - \* Cancel remote off
    - off [Default]
    - on
  - \* Activate drives 2. parameter set
    - off [Default]
    - on
  - \* Max. evacuation speed
    - V0 (Creeping speed)
    - V1
  - \* Evacuation direction
    - none [Default]
    - up
    - down
    - Set direction by using full load limit
  - \* Doors at fire emergency power floor
    - Standard
    - Remains closed
    - Remains open [Default]
    - Opens and closes
  - \* Relevelling on emergency power operation
    - on [Default]
    - off
  - \* Travel on UPS-operation
    - to the next floor using drive [Default]
    - to the em.power floor using drive

- to the em.power floor not using drive
- \* Ignore light supply on emergency power operation
  - off [Default]
  - on
- \* Emergency stop on activating emergency power (121)
  - off [Default]
  - on
- \* Rotation sense monitoring on emergency power operation
  - on [Default]
  - off
- \* Send lift to emergency floor
  - always [Default]
  - if out of door zone
- + Fire alarm
  - \* Function
    - off [Default]
    - on
    - on, with reset signal (342)
  - \* Fire detector count
    - none/1..16 [0]
  - \* Fire detector usage
    - on fire alarm [Default]
    - on rescue operation
    - on fire alarm and rescue operation
  - \* Fire detector acknowledge signals
    - off [Default]
    - always
    - on fire alarm
    - on rescue operation
    - on fire alarm and rescue operation
  - \* Send an idle lift to the fire alarm floor
    - on [Default]
    - off
  - \* Enable door open button
    - off
    - on [Default]
  - \* Pass smoke filled floors
    - off [Default]
    - on
  - \* Unlock disabled floors
    - off
    - on [Default]
  - \* Cancel remote off
    - off [Default]
    - on
  - \* Activation
    - By fire alarm (124/474) [Default]
    - By fire detector (301..30x)
  - \* Doors at fire alarm return floor
    - Standard
    - Remains closed
    - Remains open [Default]

- Opens and closes
- \* Secondary fire alarm (474) signal used
  - off [Default]
  - on
- \* Rescue operation usage (699)
  - off [Default]
  - on
- \* Landing calls on rescue operation
  - all [Default]
  - only active fire alarm floors
- \* Doors on rescue operation
  - Standard
  - Remains closed
  - Remains open [Default]
  - Opens and closes
- + Fire service
  - \* Function
    - off [Default]
    - on, fire recall and service
    - on, fire recall only
    - on, fire recall or service
    - on, fire recall only and auto service
    - on, fire service only
  - \* Fire recall with reset signal (342)
    - off [Default]
    - on
  - \* Return to fire recall floor, if service (126) off
    - off [Default]
    - on
  - \* Turn off fire service without returning to the fire recall floor
    - off [Default]
    - on
  - \* Unlock disabled floors
    - off
    - on [Default]
  - \* Ignore overload on fire service
    - off [Default]
    - on
  - \* Ignore machine room temperature on fire service operation
    - off [Default]
    - on
  - \* Cancel remote off
    - off
    - on [Default]
  - \* Doors
    - Peep door function [Default]
    - Normal operation
  - \* Doors do stop at position, if door open/close button is not pressed
    - off [Default]
    - on
  - \* Homing the car by turning off/on the fire recall (125) key within 5 s

- on [Default]
- off
- \* Car calls need constant pressure
  - off [Default]
  - on
- \* Close doors manually using the close-door button
  - off [Default]
  - on
- \* Disable upper floor
  - off [Default]
  - on
- \* Use alternate fire recall (475)
  - off [Default]
  - on
- \* Fire service doors 1..47
- \* Door open button acknowledge on fire service doors
  - off [Default]
  - on
- +/- Emergency rescue
  - \* Emergency rescue
    - manually only [Default]
    - automatic and manual
  - \* Floor display on emergency rescue operation
    - on
    - off [Default]
- +/- Attendant service
  - \* Function
    - off [Default]
    - on, using start and direction keys
    - on, featuring car calls
  - \* Adopt attendant service operation from lift group
    - off [Default]
    - on
  - \* Map hall call acknowledges on car call acknowledges
    - off [Default]
    - on
  - \* Hall call acknowledges trigger the buzzer (652)
    - off [Default]
    - on
  - \* Allow priority landing calls
    - off [Default]
    - on
  - \* Close doors when idle, if being in attendant service mode
    - off [Default]
    - on
- +/- Access zones
  - \* Function
    - off [Default]
    - on
  - \* Zone preselection via impulse at the door table inputs (80, 380)

- off [Default]
- on
- \* Zone preselection floor
  - off/1..3 [off]
- \* Turn off zone operation via car preference (84)
  - off [Default]
  - on
- + - Group
  - \* Park mode
    - Fixed [Default]
    - Zoning
    - Lobby
    - automatic (self-learning)
  - \* Number of lobby cars parked
    - none/1..8 [0]
  - \* Door opening on hall call
    - Open one car per floor only
    - Open one car per landing call [Default]
    - Open all cars on the floor
  - \* Multiple priority calls per floor
    - off [Default]
    - on, if car is on priority floor
    - on, if driving to priority floor
  - \* Penalty for car at lobby floor
    - off/1..5 [1]
  - \* Penalty for lift parked
    - off/1..5 [1]
  - \* Penalty for Blue Modus C
    - 1..15 [8]
  - \* Penalty for Blue Modus B
    - 1..31 [16]
  - \* Penalty for idle lift
    - off/1..5 [3]
  - \* Penalty for car call stopping
    - 1..16 [8]
  - \* Distance to floor factor
    - 1..4 [1]
  - \* Penalty for directional change
    - off/1..4 [2]
  - \* Send group settings to all active group members
    - off [Default]
    - Execute
- + - Guest Calls
  - \* Function
    - off [Default]
    - on, send lift by car call only
    - on, send lift by hold time expired
    - on, send lift by car call or hold time expired
    - on, send lift by enable signal or car call
    - on, send lift by enable sig., car call, hold time expired

- \* Allow entering of new car calls while waiting to proceed guest calls
  - off [Default]
  - on
- \* Landing calls on guest operation
  - collective [Default]
  - cancel
- \* Clear car calls if guest operation is activated
  - off [Default]
  - on
- \* Start to pickup floor on no-load if doors closed
  - off [Default]
  - on
- \* End of guest trip on no-load if doors closed
  - off [Default]
  - on
- \* Ignore car call blocking, when waiting for guest
  - on [Default]
  - off
- \* Cancelling of the guest call acknowledge
  - cancel after guest was delivered [Default]
  - cancel when picking up the guest
- + - Key switch
  - \* Key switch 1 bistable
    - off [Default]
    - on
  - \* Key switch 2 bistable
    - off [Default]
    - on
  - \* Key switch 3 bistable
    - off [Default]
    - on
  - \* Key switch 4 bistable
    - off [Default]
    - on
- + - Handicapped access
  - \* Handicapped accessible calls
    - off [Default]
    - on
- + - Chemical Operation
  - \* Function
    - off [Default]
    - on, on-neutral-off key switch 3-state
    - on, key-button/card reader on landings
    - on, activation in the car
    - on, activation in car, door closing via hall call
- + - Earth quake evacuation operation
  - \* Function
    - off [Default]
    - on

- \* Unlock disabled floors
  - off
  - on [Default]
- \* Cancel remote off
  - off [Default]
  - on
- \* Evacuate an idle lift too
  - off [Default]
  - on
- + - Docking service
  - \* Function
    - off [Default]
    - on, type 1 simple docking operation
    - on, type 2 underfloor lift
  - \* Docking service position range
    - 50..4000 [500] mm
  - \* Generic docking service speed
    - V0 (Creeping speed) [Default]
    - V1
    - V2
    - V3
    - V4
    - V5
    - V6
    - V7
    - VN (Releveling speed)
    - VI (Inspection speed)
    - VR (Emerg. rescue speed)
  - \* Speed docking service floor 1..8
    - V0 (Creeping speed) [Default]
    - V1
    - V2
    - V3
    - V4
    - V5
    - V6
    - V7
    - VN (Releveling speed)
    - VI (Inspection speed)
    - VR (Emerg. rescue speed)
- + - Automobile Lift
  - \* Function
    - off [Default]
    - on, signal lights "Forward-Stop-Back-Drive Out"
    - on, signal lights "Red-Green"
  - \* Car detection by light barrier status
    - off [Default]
    - on
- + - Special functions



- \* Car preference with car doors open
  - off [Default]
  - on
- \* Code input
  - off [Default]
  - on, triggered by pressing a disabled car call
  - on, triggered by activation signal (696)
- \* Code input, number of digits
  - 1..10 [4]
- \* Door side alternate locked call processing
  - off [Default]
  - on
- \* Shuttle between top/bottom using the bottom car call
  - off [Default]
  - on
- \* Above the lobby, use only empty cars for landing calls
  - off [Default]
  - on
- \* Door open button acts on last door opened by call
  - off [Default]
  - on
- \* Hold car preference/VIP (84) signal, as long car calls are pending
  - off [Default]
  - on
- \* Car allocation remains active as long as allocation time is not expired
  - off [Default]
  - on
- \* Drive on dead man's control using car calls
  - off [Default]
  - on
  - on, using enable signal (406)
- \* Relevelling when drive on dead man's control using car calls
  - off [Default]
  - on
- \* Automatic floor to floor mode
  - off [Default]
  - on, stop at every floor
  - on, stop at alternate floors
  - on, using entrance area monitoring

#### + - Floor Selector

- \* Direction of correction run
  - Bottom floor [Default]
  - Top floor
- \* Extended Level monitoring (224)
  - off [Default]
  - on
- \* Relevelling with separate switches
  - off [Default]
  - on
- \* Pre-limit switches (S81/S82)
  - off [Default]
  - on

- \* APS offset correction
  - off [Default]
  - top
  - bottom
  - top and bottom
  - zone
- \* Monitoring inspection switches (452/453)
  - off [Default]
  - on
- \* Rotation sense monitoring
  - on [Default]
  - on, lift blocked
- + Drive unit
  - + General
    - \* Drive with integrated contactors
      - off [Default]
      - on
    - \* Enable of drive control (693)
      - off [Default]
      - Up
      - Down
      - No direction
    - \* Enable of drive control (693)
      - off [Default]
      - Up
      - Down
      - No direction
    - \* Fast start while doors are closing
      - off [Default]
      - on
    - \* Contactor release check (33)
      - off
      - on
      - on, lift blocked [Default]
    - \* Contactor release check separate relevelling unit
      - off [Default]
      - on
    - \* Drive unit monitoring with blocking mode
      - off [Default]
      - on
    - \* Drive unit monitoring with blocking mode
      - off [Default]
      - on
    - \* Drive unit monitoring (34)
      - off [Default]
      - on
      - on, lift blocked
    - \* Drive unit monitoring (34)
      - off [Default]
      - on

- on, lift blocked
- \* Ignore drive unit status on Blue Modus
  - off [Default]
  - on
- \* Brake monitoring
  - off [Default]
  - Using 1 switch
  - Using 2 switches
  - Using 3 switches
  - Using 4 switches
- \* Brake monitoring with blocking mode
  - off [Default]
  - on
- \* Safety brake monitoring (330)
  - off [Default]
  - on
  - on, lift blocked
- \* Rope brake monitoring (451)
  - off [Default]
  - on
  - on, lift blocked
- \* Brake test monitoring (691)
  - off [Default]
  - on
- \* Motor thermistor monitoring (450)
  - off
  - on, stop at floor [Default]
  - on, immediately
  - on, blocked mode at floor
  - on, blocked mode immediately
- \* Phase monitoring (54)
  - off
  - on, stop at floor
  - on, immediately [Default]
  - on, blocked mode at floor
  - on, blocked mode immediately
- \* Overpressure monitoring (50)
  - off
  - on, stop immediately [Default]
  - on, stop immediately blocked
- \* Low pressure monitoring (51)
  - off [Default]
  - on, stop immediately
  - on, stop immediately blocked
- \* Safety valve monitoring 2 UCM/A3
  - off [Default]
  - on
- \* Inspection speed
  - Slow [Default]
  - Fast
- \* Button inspection fast (89)
  - off [Default]
  - on

- \* Speed reduction (440)
  - off [Default]
  - on
- \* Transmit mode
  - event-driven [Default]
  - Cyclic
- + - Releveling
  - \* Releveling
    - off [Default]
    - on
  - \* Max. number releveling per floor
    - 1..20/Unlimited [10]
  - \* Without protective circuit (SMZ) usage
    - off [Default]
    - on
  - \* Monitor the door cam lock (19) sig. if releveling
    - on [Default]
    - off
  - \* Releveling only, if doors closed
    - off [Default]
    - on
  - \* Signal Destination pending (153) while releveling
    - off [Default]
    - on
- + - Drop protection
  - \* Drop protection
    - off [Default]
    - on
  - \* Drop protection on inspection operation
    - on [Default]
    - off
  - \* Drop protection optionally used for UCM protection
    - off [Default]
    - on
  - \* Hold drop protection activated
    - off [Default]
    - on
- + - Pawl device
  - \* Pawl device
    - off [Default]
    - on
  - \* Car seated using level signal
    - off [Default]
    - on
  - \* Pawl device lifting/lowering tries
    - 1..10 [3]
  - \* Car seated using fine adjustment unit
    - off [Default]
    - on

- | \* Door lock, if pawl device is not extended
  - | - Unlock the door immediately
  - | - Unlock the door delayed by 45 min [Default]
- | \* Door lock while seating the car
  - | - off
  - | - on [Default]
- | \* Pawl device using a limit switch for "retracted"
  - | - on [Default]
  - | - off
- | \* Signal "Retracting" (211) on driving
  - | - off [Default]
  - | - on
- | \* Speed
  - | - VN (Releveling speed) [Default]
  - | - V0 (Creeping speed)
  - | - V1
- | \* Pawl device disabled 1..31

+ - Tripcnt/hours meter

- | \* Trip counter (SRAM)
  - | 0..4294967295 [0]
- | \* Hour meter (SRAM)
  - | 0.0..429496729.5 [0.0] h
- | \* Direction change counter (SRAM)
  - | 0..4294967295 [0]
- | \* Direction change count flex limit advance warning
  - | off/1..4294967295 [off]
- | \* Block lift on direction change count flex renew
  - | off/1..4294967295 [off]
- | \* Flex limit advance warning date
- | \* Flex limit stopping date

+ - Date/Time

+ - Sundries

| +- Access codes

- | \* Setup code
- | \* Service code
- | \* Info code
- | \* RD code (Monitoring code)
- | \* Code for Tests

| +- Various numbers

- | \* Lift number
- | \* Controller number
- | \* RD-number (Monitoring id)
- | \* Phone number 1
- | \* Phone number 2
- | \* Phone number 3
- | \* Phone number 4
- | \* Phone number 5
- | \* Phone number 6

- | \* Phone number 7
- | \* Phone number 8 (emergency number)
- | \* Company logo
- |
- + - System data
  - |
  - + - Print system data
  - |
  - + - Print menu tree
  - |
  - + - Save parameters
  - |
  - + - Load parameters
  - |
  - + - Load factory default
  - |
  - + - Save factory default
  - |
  - + - Default settings
  - |
  - + - View text file