

Bewegung durch Perfektion | Movement by Perfection

ZIEHL-ABEGG



Die Königsklasse The Royal League

Die Königsklasse in Lufttechnik, Regeltechnik und Antriebstechnik | The Royal League in ventilation, control and drive technology



ZA sbc4

Electronic brake control

Original operating instructions

Store for future use!



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1 General

Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, start-up, maintenance, repair, cleaning and disposal / recycling are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

1.1 Structure of the operating instructions

These operating instructions are designed to ensure safe working on and with the ZAsbc4 electronic brake control. The document contains safety instructions that must be complied with as well as information that is essential for fault-free operation of the device.

Keep these operating instructions together with the device. It must be ensured that all persons that are to work on the device can refer to the operating instructions at any time. In addition to the operating instructions, directives in the sense of the ordinance on industrial safety and health and the work equipment ordinance are also to be provided.

Keep the operating instructions for continued use. They must be passed-on to all successive owners, users and final customers.

1.2 Target group

The operating instructions address persons entrusted with planning, installation, start-up, maintenance and servicing, who have the corresponding qualifications and skills for their job.

1.3 Exclusion of liability

Concurrence between the contents of these operating instructions and the described hardware and software in the device has been examined.

It is still possible that non-compliances exist; no guarantee is assumed for complete conformity. The contents of this manual are put through periodic reviews. Necessary modifications are incorporated into the next version.

ZIEHL-ABEGG SE is not liable for damage due to misuse, incorrect use, improper use or as a consequence of unauthorized repairs or modifications.

1.4 Copyright

These operating instructions contain copyright protected information. The operating instructions may be neither completely nor partially photocopied, reproduced, translated or put on data medium without previous explicit consent from ZIEHL-ABEGG SE. Infringements are liable for damages.

All rights reserved, including those that arise through patent issue or registration on a utility model.

2 Safety instructions

2.1 General

This chapter contains instructions to prevent personal injury and property damage. These instructions do not lay claim to completeness. In case of questions and problems, please consult our company technicians.

2.2 Intended use

The ZAsbc4 electronic brake control is a system component designed to provide contactor-less control of electromechanical motor brakes in passenger and goods elevator applications.

The electronic brake control is available in two variants:

ZAsbc4C:

Mounting on frequency inverter ZAdyn4C

ZAsbc4B:

Mounting in the control cabinet

The devices are not designed for any other use than those listed here – this is considered improper use.

Reading these operating instructions and complying with all the information they contain – especially the safety instructions – is considered part of intended use. Furthermore, it also includes carrying out all the inspection work at the prescribed intervals. The operator of the ZAsbc4C or the ZAsbc4B, not the manufacturer, is responsible for all personal injury and damage to property resulting from improper use!!

2.3 Pictographs

Safety instructions are highlighted with warning triangles and are depicted according to the degree of hazard as follows.

	<p>Danger! General hazardous area. Death or severe injury or significant property damage can occur if the corresponding precautions are not taken!</p>
	<p>Attention! Risk of moderate or minor injury if the corresponding precautions are not taken!</p>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">CAUTION!</div>	<p>Attention! Material damage is possible if the corresponding precautions are not taken!</p>
	<p>Danger! Danger by dangerous, electric voltage! Death or severe injury can occur if the corresponding precautions are not taken!</p>
	<p>Information Important information and advice for user</p>

2.4 Product safety

The device conforms to the state of the art at the time of delivery and is fundamentally considered to be reliable. The device and its accessories must only be used in a flawless condition and installed and operated with compliance to the operating instructions. Exceeding the limits stated in the “Enclosure / technical data” chapter can lead to a defect in the device.

2.5 Requirements placed on the personnel / due diligence

Persons entrusted with the planning, installation, commissioning and maintenance and servicing in connection with the device must have the corresponding qualifications and skills for these jobs. Based on their training, knowledge and experience as well as knowledge of the relevant standards, they must be able to judge the work transferred to them and be able to recognize possible hazards. In addition, they must be knowledgeable about the safety regulations, EU directives, rules for the prevention of accidents and the corresponding national as well as regional and in-house regulations. Personnel to be trained or instructed and apprentices are only permitted to work on the device under the supervision of an experienced person. This also applies to personnel undergoing general training. Comply with the legal minimum age.

2.6 Commissioning



Danger!

During commissioning, unexpected and hazardous conditions can arise in the entire system due to incorrect settings, defective components or incorrect electrical connections.

During the commissioning following has to be observed:

- Remove all persons and objects from the hazardous area.
- The EMERGENCY-OFF function activation must be operational.
- The mechanical safety brake must be installed and in working order.
- Commissioning is only permitted subject to compliance with the EMC-Directive 2014/30/EU.

2.7 Working on the device / the brakes

Before working on previously installed devices, separate them from the mains and secure them against reconnection.



Danger!

Even in the case of an interrupted safety circuit or inactive inputs, the X-BA connection is not electrically isolated from the mains. Before working on previously installed devices, disconnect them from the mains and secure them against reconnection.



Danger!

It is generally forbidden to carry out work on electrical live parts. Protection class of the device when open is IP00! It is possible to touch hazardous voltages directly.

2.8 Modifications / interventions in the device

For reasons of safety, no unauthorized interventions or modifications may be made on the device. All planned modifications must be authorized by the manufacturer in writing.

Use only genuine spare parts / genuine wearing parts / genuine accessories from the ZIEHL-ABEGG SE. These parts were specifically designed for the device. There is no guarantee that parts from non-original sources are designed and manufactured in correspondence with load and safety requirements.

Parts and special equipment not supplied by the ZIEHL-ABEGG SE are not approved for use. Also, the internal safeguards may only be replaced by ZIEHL-ABEGG SE employees.

2.9 Operator's obligation of diligence

The device has been designed and constructed with consideration of a hazard analysis and after carefully selecting the harmonized standards to be complied with as well as additional technical specifications. It thus complies with the state-of-the art and ensures the highest degree of safety. However, this safety can only be achieved in practical operation when all the necessary measures are taken. The machine operator therefore has a duty of care to ensure that these measures are planned and to supervise their execution.

In particular, the operator must ensure that

- the device is only used as intended (cf. the "Product overview" Chapter concerning this),
- the installation is operated solely in a flawless, functional condition and that especially the safety devices are periodically checked for their properly functioning condition,

- the required personal safety gear is available to and used by the operating, maintenance and repair personnel,
- the operating instructions are always readily available at the location where the frequency inverter is being used, are complete and are in legible condition,
- only sufficiently qualified and authorized personnel operate, maintain and repair the device,
- these staff receive regular instruction in all relevant occupational safety and environmental protection issues, are knowledgeable about the operating instructions and, especially, are familiar with the safety instructions contained therein,
- all safety and warning notices attached to the device are never removed and remain legible.

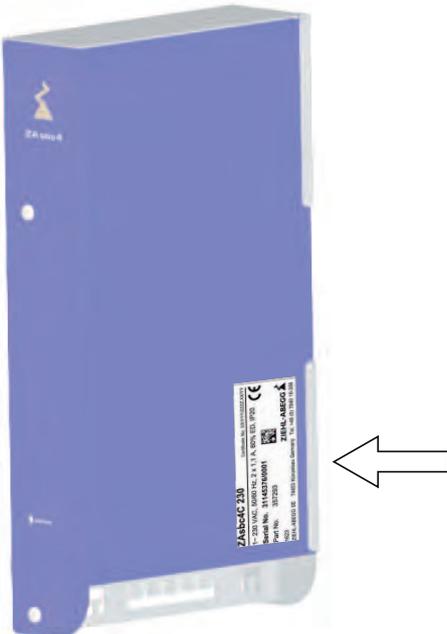
2.10 Employment of external personnel

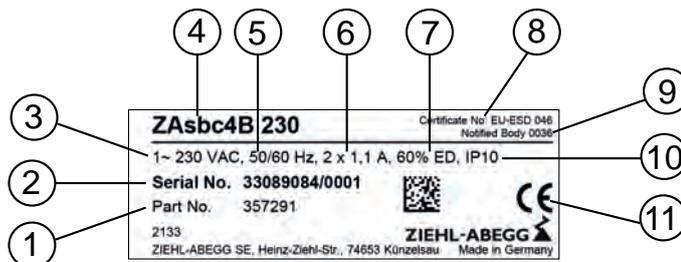
Maintenance and service work are frequently carried out by external employees who often do not recognize the specific situations and the thus resulting dangers.

These persons must be comprehensively informed about the hazards in their area of activity. You must monitor their working methods in order to intervene in good time if necessary.

3 Product overview

3.1 Name plate

ZAsbc4C	ZAsbc4B
<p>The name plate is located on the right-hand side of the ZAsbc4C housing.</p> 	<p>The name plate is located on the upper side surface of the ZAsbc4B.</p> 



Name plate using the ZAsbc4B 230 as an example

no.	Designation
1	Part no.
2	Series number
3	Mains connection voltage
4	Series
5	Mains frequency
6	Rated output current
7	Duty cycle in the case of 30 s medium cycle time
8	Type-examination certificate number
9	Identification number of the notified body
10	Protection rating
11	CE mark

3.2 Service & maintenance

- These jobs must be completed during the recurrent maintenance work:
 - Check the device for dirt and clean if necessary.
 - Check the connections and tighten screws if necessary.
- Safety-related functions must undergo regular testing. The tests are listed in detail in chapter "Commissioning/safety function test".

3.3 Transport

- The device is packed ex factory to suit the transport method previously agreed.
- The device may only be transported in the original packaging.
- Avoid shocks and impacts to the device during the transport.

3.4 Disposal & recycling

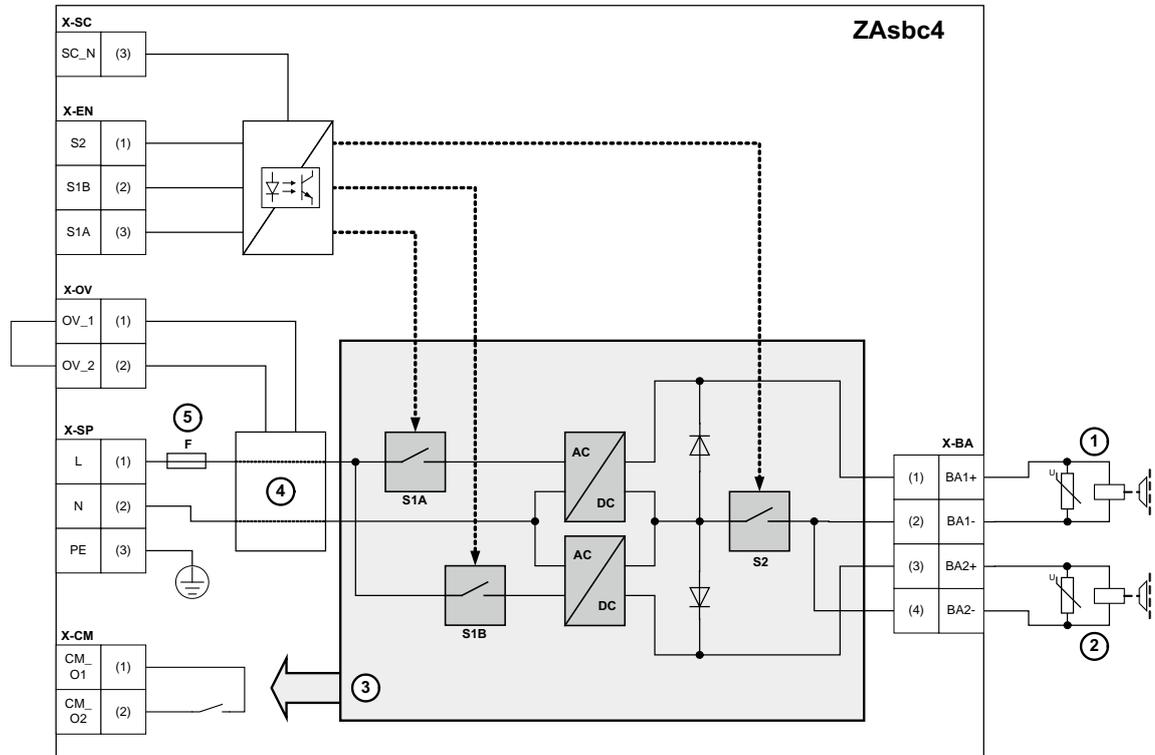
Disposal must be carried out professionally and environmentally friendly in accordance with the legal stipulations.

4 Functional description

4.1 Activation of motor brakes

The ZAsbc4 electronic brake control is used for safety-related switching of redundant electromechanical brakes in passenger and goods elevator applications. The contactors normally used for switching the motor brakes can be replaced by the ZAsbc4. The ZAsbc4 is designed as a safety circuit and complies with EN 81-20 Section 5.9.2.2.2.3 a) 2).

"Brake control" functional circuit diagram



Brake control functional circuit diagram

- 1 Brake circuit 1
- 2 Brake circuit 2
- 3 Brake control monitoring
- 4 Overvoltage protection
- 5 Fusing (to be replaced only by ZIEHL-ABEGG SE employees)

At the connection X-EN the brake control has three inputs (S1A, S1B, S2). During operation, the inputs are activated by contacts on the frequency inverter or the elevator control system, which is supplied by the end of the safety chain. At the output for the connection of the motor brakes (X-BA connection), two brake circuits can be connected.

Switching on/opening the brakes:

- Brake circuit 1 is energized if at input S1A and input S2 a "1" signal (safety chain voltage) is applied.
- Brake circuit 2 is energized if at input S1B and input S2 a "1" signal (safety chain voltage) is applied.

Switching off/closing the brakes:

- Brake circuit 1 is closed if at input S1A and/or input S2 a "0" signal (0 V) is applied.
- Brake circuit 2 is closed if at input S1B and/or input S2 a "0" signal (0 V) is applied.

Input S1A	Input S2	Brake circuit 1 (BA1+, BA1-)
0	0	Locked
1	0	Locked
0	1	Locked
1	1	energized

Input S1B	Input S2	Brake circuit 2 (BA2+, BA2-)
0	0	Locked
1	0	Locked
0	1	Locked
1	1	energized



Danger! Impermissible use of the ZAsbc4

Risk of death, severe injury and/or significant material damage.

- ▷ Only use the ZAsbc4 in accordance with EN81-20 for drives with two independently operating, redundant brake circuits. The failure of one of the two brake circuits alone must not result in an unsafe condition. Even if one brake circuit fails, the second brake circuit must retain sufficient braking action to delay, stop and hold the elevator car.
- ▷ The two redundant brake circuits must each be connected to an output on the ZAsbc4.

Operational switching off of the brakes must be carried out using the S1A, S1B inputs with a time delay before S2. In this way, the energy stored in the brake circuit inductances is reduced by a free-wheeling circuit. The brakes engage slowly and quietly. The time offset must be at least the maximum switching time of the brakes (see “Functional description/Principle circuit diagram” and “Function description/Sequence of signals” chapters). When used with frequency inverters of type ZAdyn, the time offset can be generated by outputs with the functions RB and MB.

If the S2 input is switched off at the same time or before S1A, S1B, the energy stored in the brake circuits is not reduced via a free-wheeling circuit. The brakes engage fast and loudly. This is only permissible in the case of inspection runs, return runs and emergency stops.

CAUTION!

Attention! Overload of components

Destruction of components

- ▷ Do not operationally switch off the brakes via the S2 input.

4.2 Brake control monitoring

The CM_O relay output at the X-CM connection shows the status of the switching elements controlled via the inputs. The output must be monitored by the lift control system. In the following cases, the lift control system must avoid a repeated start-up:

- Relay fails to be energized at the end of movement (closing of brakes: "0" signal at S1A and S1B and S2).
- Relay is de-energized when at a standstill without applying a movement command (brakes closed: "0" signal at S1A, S1B, S2).
- Relay is not de-energized at the start of movement (opening of brakes: "1" signal at S1A or S1B or S2). Note: The response to the fault described can occur after completing the movement.



Danger!
Uncontrolled movement of elevator cabin

Risk of death, severe injury and/or significant material damage.

▷ An evaluation of the relay contact in series with other contacts is not permitted, since then the relay de-energization cannot be monitored at the start of movement. A defect with the brake control is not detected in this case. This can lead to uncontrolled movements of the elevator cabin.

In addition, other monitoring functions are performed internally. If the ZAsbc4 detects an error, the brake circuits are locked and the following outputs are switched off:

- SC_O (X-SC terminal 4/5)
- BM_O (X-BM terminal 1/2)

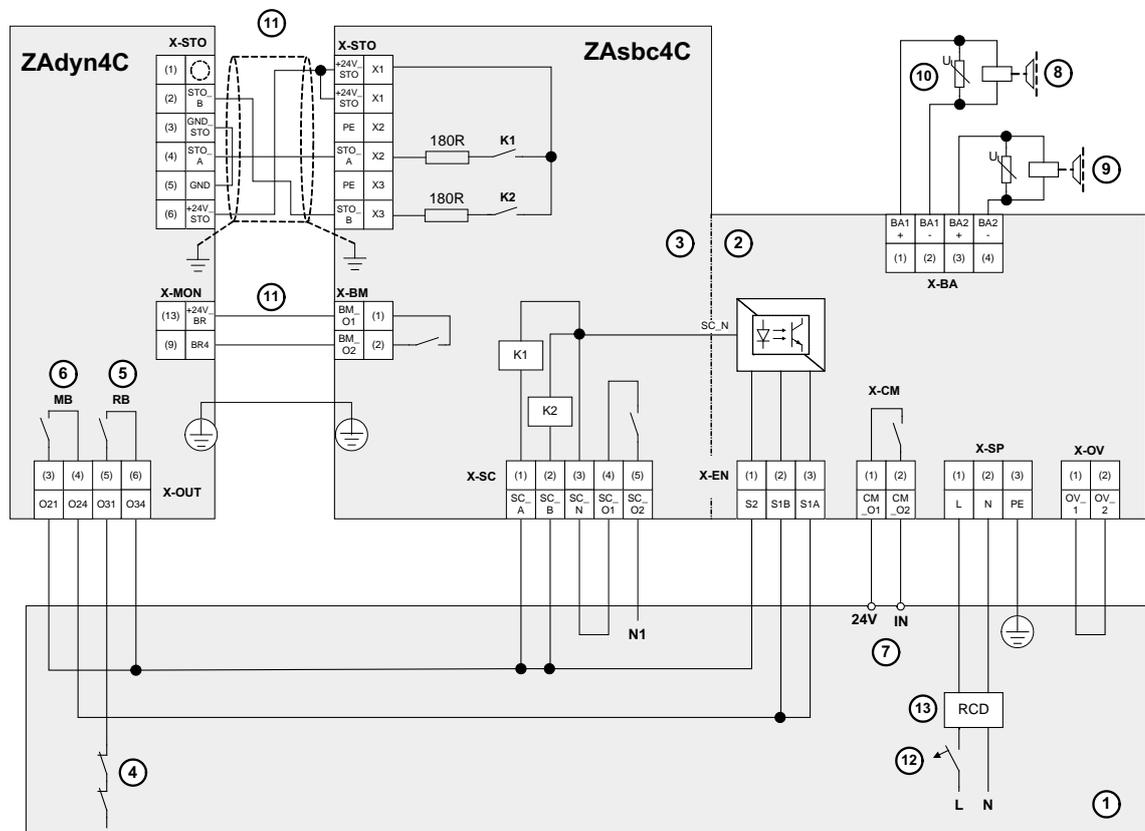
The SC_O output must interrupt the neutral conductor of the safety chain.

Output BM_O is an informative output.

It is recommended to evaluate output BM_O to enable error diagnosis. For evaluation with frequency inverters type ZAdyn, see chapter "Electrical installation: Feedback output (X-BM)".

4.3 Principle circuit diagram

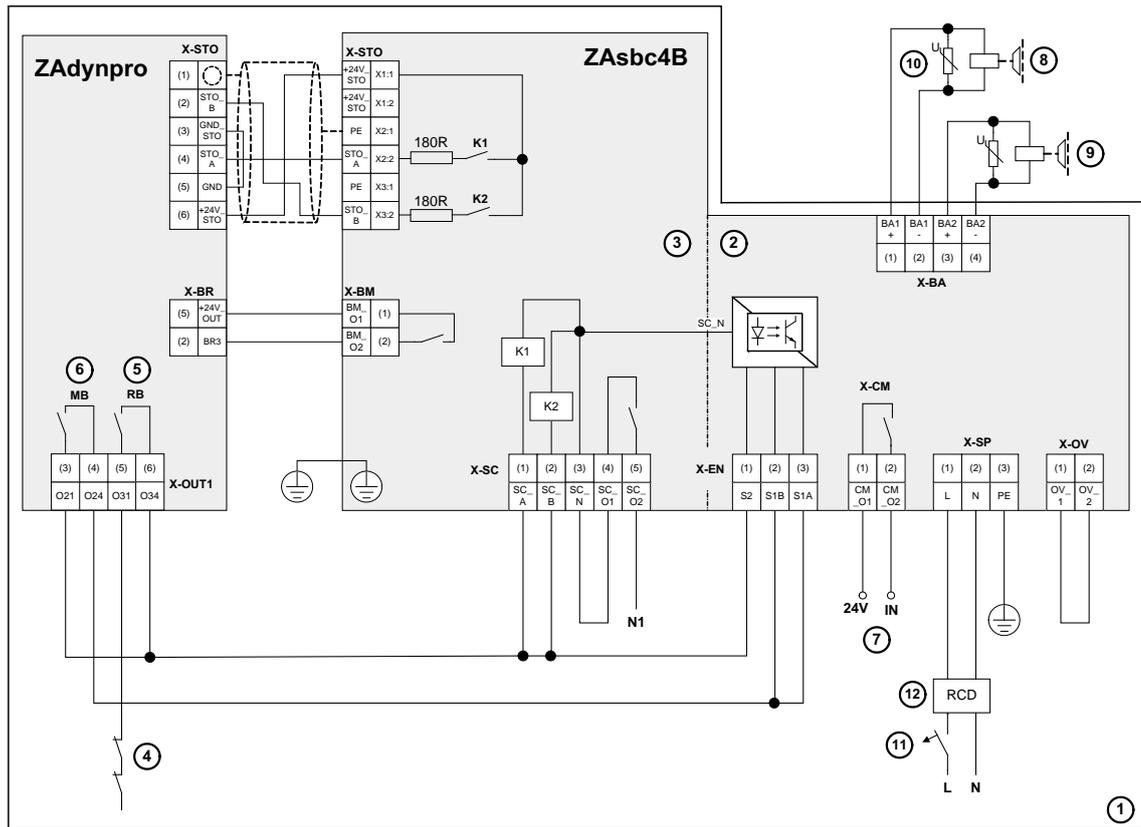
4.3.1 ZAsbc4C



Principle circuit diagram

- 1 Control system/switch cabinet
- 2 Activation of motor brakes
- 3 Connection to ZAdyn4C
- 4 End of electrical safety chain
- 5 ZAdyn4C "RB contactor" output
- 6 ZAdyn4C "MB brake" output
- 7 Digital input for "brake control monitoring" control system
- 8 Brake circuit 1
- 9 Brake circuit 2
- 10 varistor
- 11 Cable already connected to ZAsbc4C
- 12 Line protection switch (max. B16)
- 13 Earth leakage circuit breaker (type A, 30 mA)

4.3.2 ZAsbc4B



Principle circuit diagram

- 1 Control system/switch cabinet
- 2 Activation of motor brakes
- 3 Connection at frequency inverter
- 4 End of electrical safety chain
- 5 Output 1 (ZAdyn: "MotContact" function)
- 6 Output 2 (ZAdyn: "MB" function)
- 7 Digital input for "brake control monitoring" control system
- 8 Brake circuit 1
- 9 Brake circuit 2
- 10 varistor
- 11 Line protection switch (max. B16)
- 12 Earth leakage circuit breaker (type A, 30 mA)

4.4 Control of "Safe switch-off (STO)"

To activate the "Safe switch-off (STO)" function of the ZAdyn frequency inverters, two coupling relays are integrated in the ZAsbc4, which must be controlled by the end of the safety chain. The relays K1 and K2 are controlled using the connections X-SC:SC_A and X-SC:SC_B. During operation, both inputs are activated by a contact on the frequency inverter or the elevator control system, which has to be supplied by the end of the safety chain. When used with ZAdyn frequency inverters, the two inputs must be switched simultaneously with the "RB contactor" output of the frequency inverter for each run.



Information

When using the "Safe switch-off (STO)" function, also observe the information in the operating instructions of the frequency inverter.



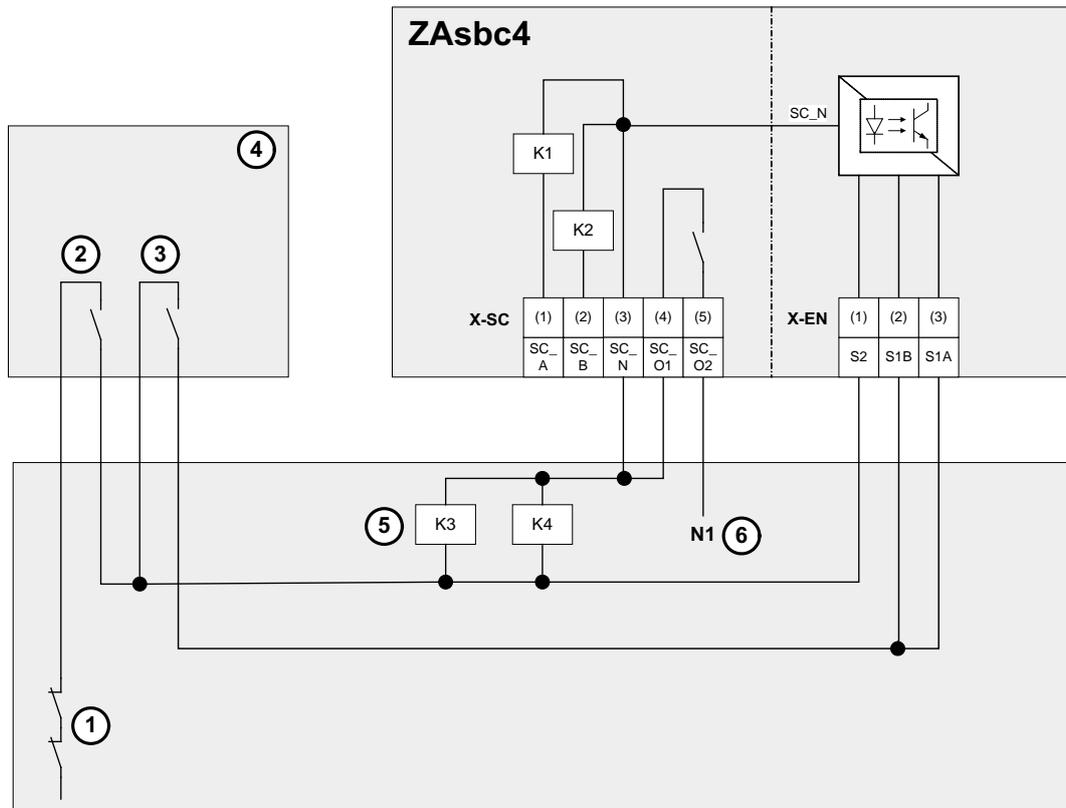
Danger! Misuse

Risk of death, severe injury and/or significant material damage.

▷ When using the relays K1/K2 to control a safe switch-off of other manufacturers' frequency inverters, it is essential to check whether the relays comply with the manufacturer's specifications.

4.5 Use of the ZAsbc4 with motor contactors

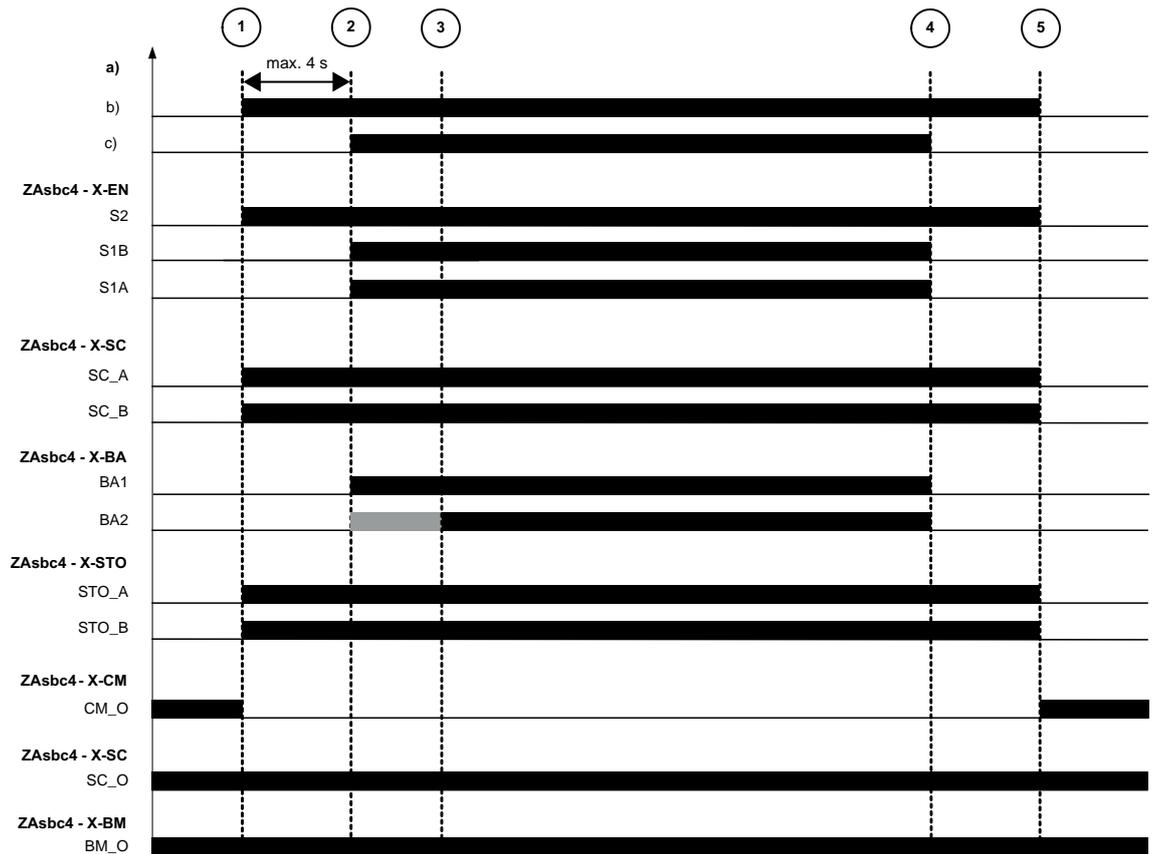
When using motor contactors (frequency inverter without safe switch-off (STO)), the contactors are to be incorporated in such a way that the motor contactors are de-energised if the safety chain neutral conductor is interrupted by the contact SC_O.



Incorporation of motor contactors with frequency inverters without safe switch-off (STO)

- 1 End of electrical safety chain
- 2 Output 1 (ZAdyn: "MotContact" function)
- 3 Output 2 (ZAdyn: "MB" function)
- 4 Frequency inverter or elevator control system
- 5 Motor contactors
- 6 Safety chain neutral conductor

4.6 Sequence of signals



Normal travel

a) Frequency inverter/control outputs

b) Output 1 (ZAdyn: "MotContact" function)

c) Output 2 (ZAdyn: "MB" function)

S2 Activation of internal switch S2

S1B Activation of internal switch S1B

S1A Activation of internal switch S1A

SC_A Safety chain for relay STO_A for frequency inverters with safe switch-off (STO)

SC_B Safety chain for relay STO_B for frequency inverters with safe switch-off (STO)

BA_1 Brake circuit 1

BA_2 Brake circuit 2

STO_A/B STO_A/B relay output

CM_O Brake control monitoring

SC_O Interruption of the safety chain in the event of a ZAsbc4 error

BM_O Feedback

4.6.1 General description

1	<p>When movement begins:</p> <p>Activation of inputs</p> <ul style="list-style-type: none"> • S2 (X_EN:1) • SC_A (X-SC:1) • SC_B (X-SC:2) <p>When using motor contactors, the motor contactors are activated instead of the inputs SC_A and SC_B.</p> <p>The outputs STO_A (X-STO:X2:2) and STO_B (X-STO:X3:2) are activated. The output CM_O (X-CM:1 / X-CM:2) is deactivated.</p>
2	<p>Opening the brakes:</p> <p>Delayed activation of inputs</p> <ul style="list-style-type: none"> • S1B (X-EN:2) • S1A (X-EN:3) <p>Delay time 0.0..4.0 s</p> <p>Output for brake circuit 1 is activated:</p> <ul style="list-style-type: none"> • X-BA1:+ • X-BA1:-
3	<p>The output for brake circuit 2 (XBA2:+/BA2:-) is activated depending on any set delay time (see "Commissioning/DIP switch" chapter).</p>
4	<p>Closing the brakes:</p> <p>Deactivation of inputs</p> <ul style="list-style-type: none"> • S1B (X-EN:2) • S1A (X-EN:3) <p>Outputs for brake circuit 1 and 2 are deactivated --> (Slow closing of brakes using internal free-wheeling circuit)</p>
5	<p>End of movement:</p> <p>Deactivation of inputs</p> <ul style="list-style-type: none"> • S2 (X_EN:1) • SC_A (X-SC:1) • SC_B (X-SC:2) <p>When using motor contactors, the motor contactors are deactivated instead of the inputs SC_A and SC_B.</p> <p>The outputs STO_A (X-STO:X2:2) and STO_B (X-STO:X3:2) are deactivated. The output CM_O (X-CM:1 / X-CM:2) is activated.</p>

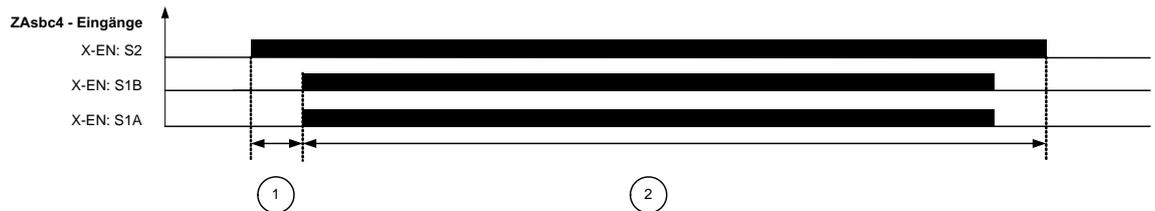
4.6.2 Description for use with frequency inverters type ZAdyn with STO function

1	<p>When movement begins:</p> <p>The ZAdyn frequency inverter switches the "RB contactor" output. With this signal, the S2, SC_A, SC_B inputs of the ZAsbc4 must be switched without a delay. When using motor contactors, the motor contactors are activated instead of the SC_A and SC_B inputs. The relays for controlling the STO function of the ZAdyn (STO_A / STO_B) or the motor contactors are energized. The CM_O relay output of the ZAsbc4 switches off (monitoring by the elevator control system).</p>
2	<p>Opening the brakes:</p> <p>The ZAdyn frequency inverter switches the "MB brake" output with a time delay. With this signal, the S1A, S1B inputs of the ZAsbc4 must be switched without a delay. Brake circuit 1 is energized. Brake circuit 2 is energized dependent on a possibly set delay time (see chapter "Commissioning/DIP switch").</p>
3	<p>Possible time-displaced switching of brake circuit 2 (see chapter "Commissioning/DIP switch").</p>
4	<p>Closing the brakes:</p> <p>The ZAdyn frequency inverter switches off the "MB brake" output. With this signal, the S1A, S1B inputs of the ZAsbc4 must be switched off without a delay. The S2 input of the ZAsbc4 must still remain set. The brake circuits 1/2 are closed (slow switch-off of the brakes via a free-wheeling circuit).</p>

5	<p>End of movement: The ZAdyn frequency inverter switches off the "RB contactor" output. With this signal, the S2, SC_A, SC_B inputs of the ZAsbc4 must be switched off without a delay. When using motor contactors, the motor contactors are deactivated instead of the SC_A and SC_B inputs. The relays for controlling the STO function of the ZAdyn (STO_A / STO_B) or the motor contactors are de-energized. The CM_O relay output of the ZAsbc4 switches on (monitoring by the elevator control system).</p>
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4.6.3 Time monitoring of the control signals (X-EN)

The ZAsbc4 carries out an internal plausibility check. For fault-free control, the following times must be complied with:

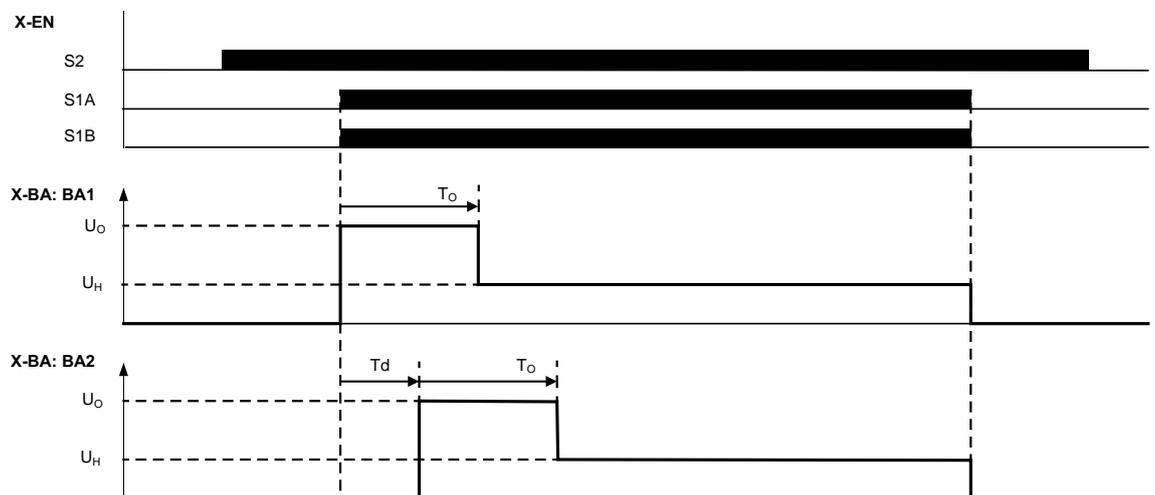


- 1 Maximum time when opening the brakes until all three S1A, S1B, S2 input signals are applied: 4 s. The S2 input signal must be applied when opening the brakes before or at the most simultaneously with the S1A, S1B input signals.
- 2 Maximum control time: 180 s

4.7 Reduction in output voltage (overexcitation) / brake circuit 2 delay

The voltage at one or both brake circuits can be reduced to a lower hold voltage after opening the brakes. The over-excitation time before reduction of the voltage is configurable (see "Commissioning/DIP switch" chapter).

Activation of brake circuit 2 can be delayed. The delay time is adjustable (see "Commissioning/DIP switch" chapter).



- T_o Overexcitation time (parameterisable)
- T_d Delay time of brake circuit 2 (parameterisable)
- U_o Voltage during the overexcitation time
- U_H Holding voltage after the overexcitation time



Information

The functions to reduce the output voltage and delay brake circuit 2 when opening are not safety-relevant. In the event of an error, e.g. the output voltage might not be reduced to the holding voltage.

5 Mechanical installation



Danger!

The following points must be complied with during the mechanical installation to avoid causing a defect in the device due to assembly errors or environmental influences:

Ambient conditions

- Mounting the device on vibrating components is not allowed.
- The device must not be exposed to any shock.
- Prevent humidity.
- Avoid aggressive and conductive materials in the environment.
- The user must ensure compliance with the ambient conditions (see chapter "Annex/Technical Data").

5.1 ZAsbc4C

5.1.1 General notes

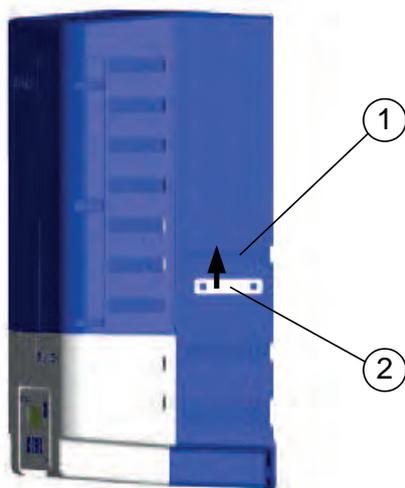
- The ZAsbc4C is only suitable for side mounting on the ZAdyn4C frequency inverter.
- The ZAdyn4C frequency inverter is suitable for wall mounting in the machine room or in the elevator shaft or for assembly in the switch cabinet.

Mounting

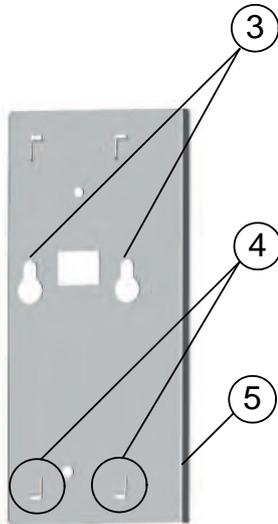
- Check the device for any transport damage.
- Use the fasteners supplied.
- Installation position: vertical, connection terminals (X-SC, X-CM, X-BM) at bottom; no horizontal assembly.
- Install the device when de-energized.
- Prevent drilling chips, screws and other foreign bodies from getting inside the device.
- Maintain the stated minimum clearances to ensure unobstructed cooling-air feed as well as unobstructed outgoing air discharge (see fig. "Minimum clearances").

5.1.2 Assembly on the ZAdyn4C 011-032

▷ Push the mounting plate (2) into the top groove (1) of the ZAdyn4C.



- ▷ Screw the M5 screws with washers two turns into the mounting plate.
- ▷ Fit the fastening plate in such a way that the M5 screws grips the recesses (3) in the fastening plate. The chamfer (5) on the fastening plate must be on the right-hand side.
- ▷ At the same time, hook in the hooks (2) on the fastening plate into the middle groove on the ZAdyn4C. In doing so, take care that the washers are located between the screw head and the fastening plate.

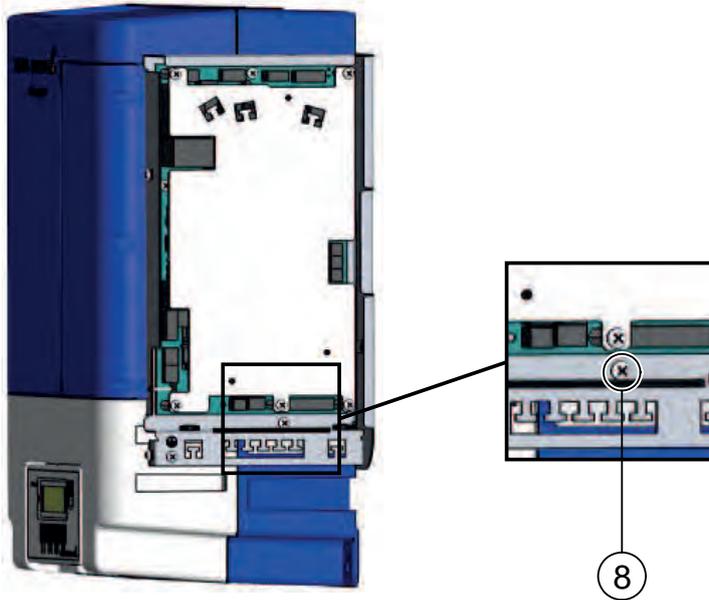


fastening plate

- ▷ Press the fastening plate down so that the M5 screws and the hooks snap in.
- ▷ Tighten the M5 screws.
- ▷ Hook the ZAsbc4C with the openings on the side (7) into the top hooks of the fastening plate (6). Press the ZAsbc4C down carefully until it is touching.



- ▷ Remove the cover of the ZAsbc4C.
- ▷ Tighten M4 screw (8) .



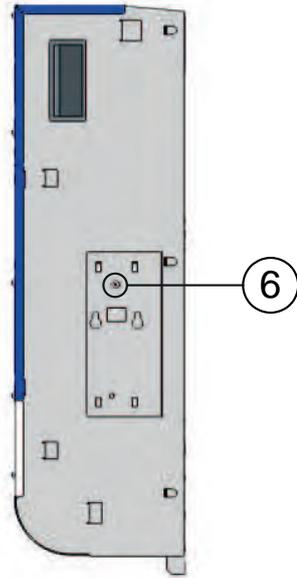
- ▷ Mount the cover of the ZAsbc4C.

5.1.3 Assembly on the ZAdyn4C 040-074

- ▷ Insert the hook (1) of the fastening plate in the openings (2) on the right side of the ZAdyn4C. Ensure here that the chamfer (3) of the fastening plate is on the right side. The press-in nut (4) of the fastening plate grips the elongated hole (5) in the side of the ZAdyn4C.



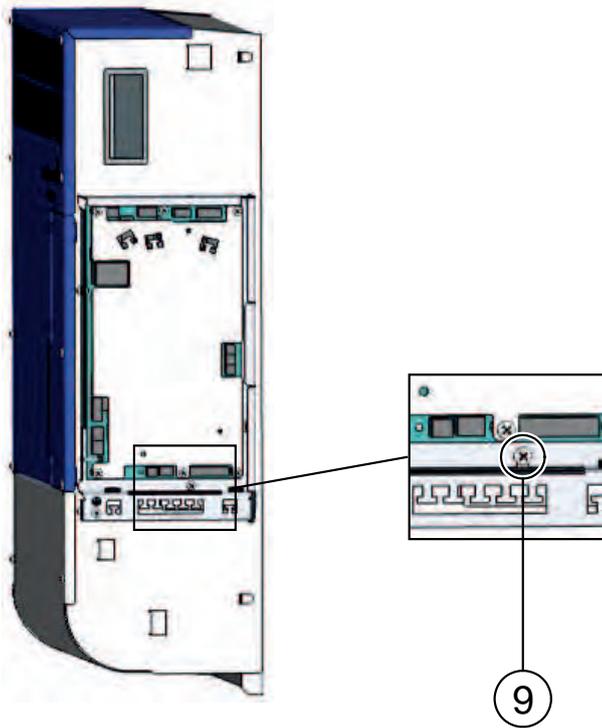
- ▷ Screw on the fastening plate with the screw M4 (6).



- ▷ Hook the ZAsbc4C with the openings on the side (8) into the top hooks of the fastening plate (7). Press the ZAsbc4C down carefully until it is touching.

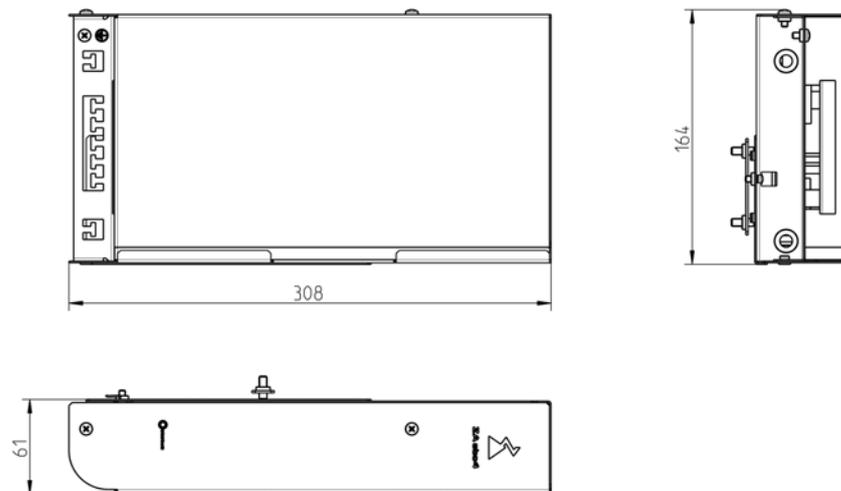


- ▷ Remove the cover of the ZAsbc4C.
- ▷ Tighten M4 screw (9) .



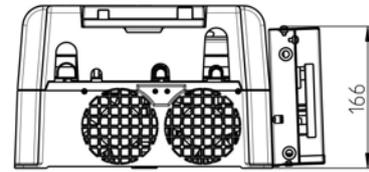
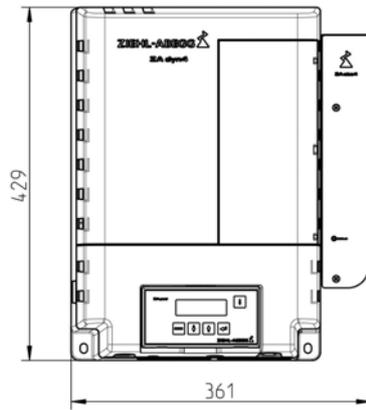
- ▷ Mount the cover of the ZAsbc4C.

5.1.4 Dimensions / minimum clearances

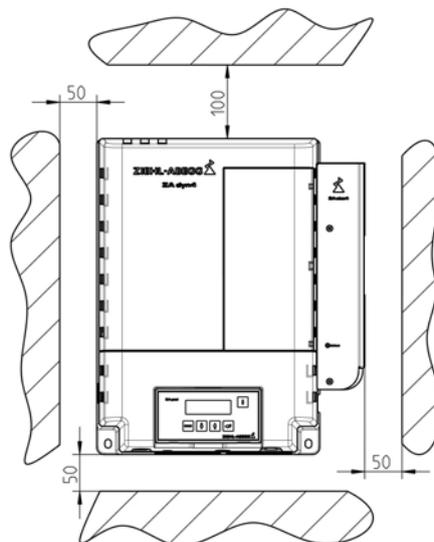


ZDSB02M0, 07.03.2016

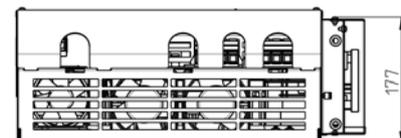
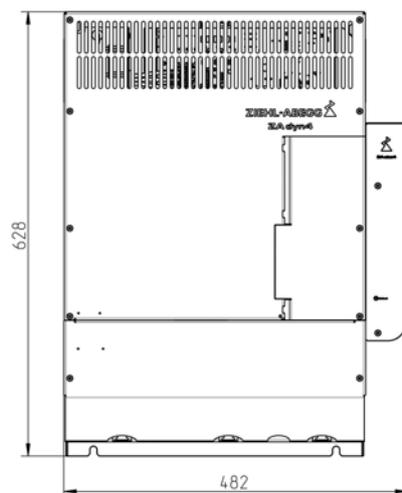
Dimensions of ZAsbc4C in mm



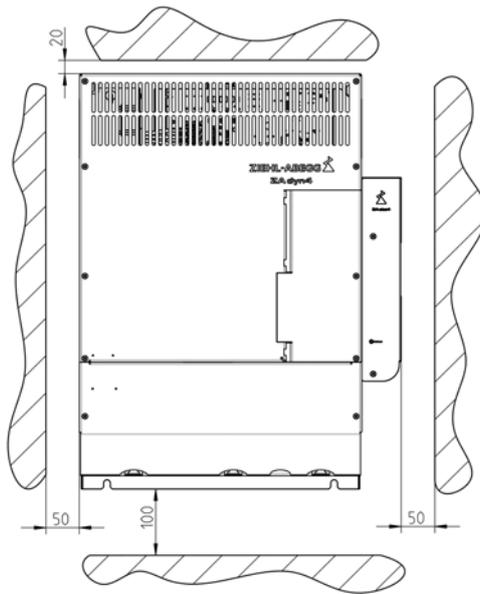
ZDSB02M0, 07.03.2016
 ZAdyn4C 011-032 and
 ZAsbc4C dimensions in mm



ZDSB02M0, 07.03.2016
 ZAdyn4C 011-032 and
 ZAsbc4C minimum distances in mm



ZDSB02M0, 07.03.2016
 ZAdyn4C 040-074 and
 ZAsbc4C dimensions in mm



ZDSB02M0, 07.03.2016
 ZAdyn4C 040-074 and
 ZAsbc4C minimum distances in mm

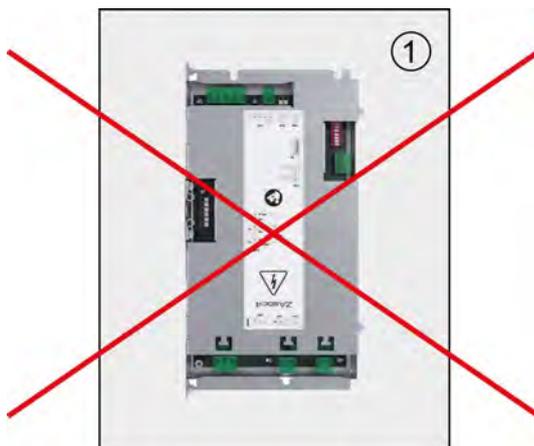
5.2 ZAsbc4B

5.2.1 General notes

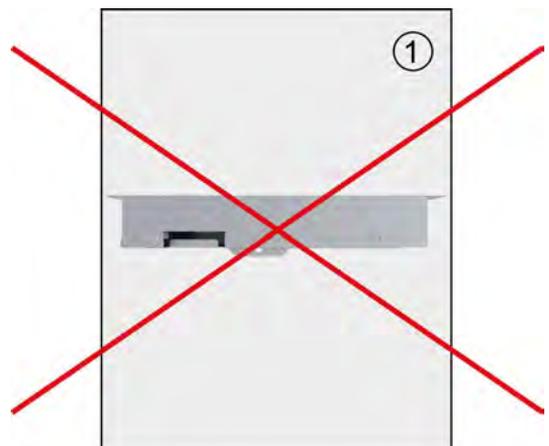
- The ZAsbc4B is only suitable for installation in the switch cabinet.

Mounting

- Check the device for any transport damage.
- Install the device when de-energized.
- Installation should be on a metallic mounting plate.
- Permitted installation positions:
 - Mounted with the rear on the mounting plate
 - Mounted with the side area on the mounting plate
- Non-permitted installation positions:



1 Mounting plate



1 Mounting plate

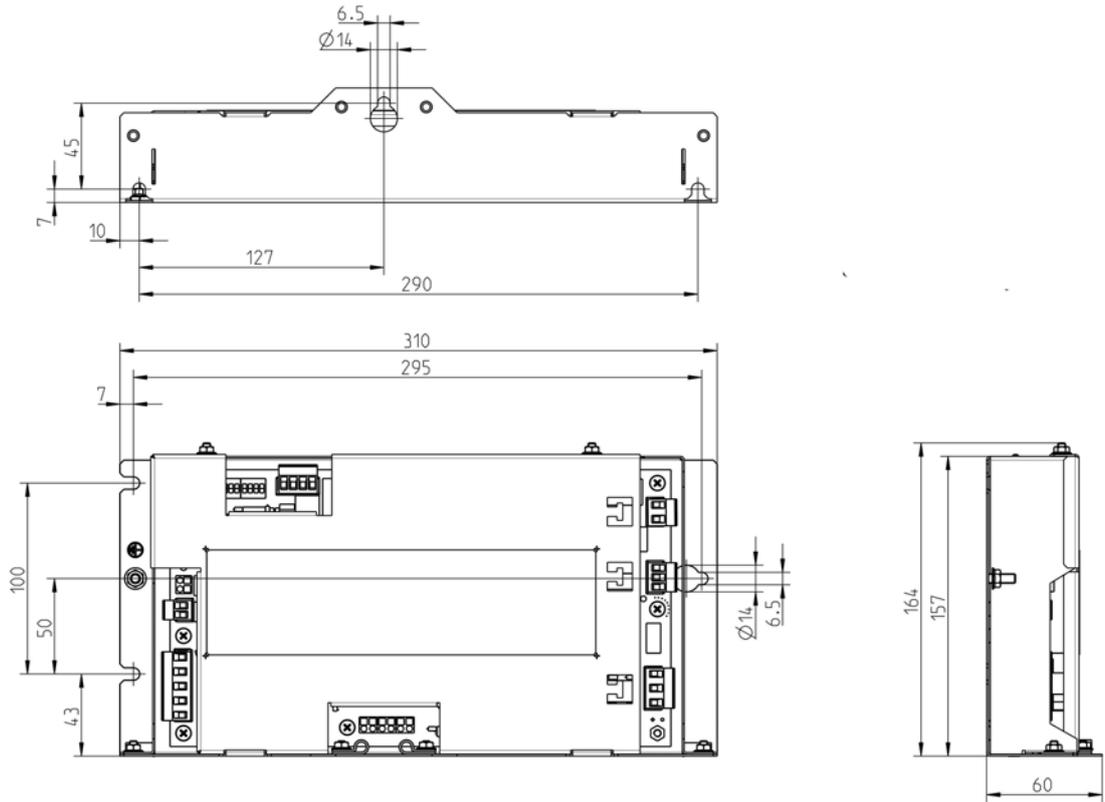
- Use three M6 threaded screws for installation.
- Prevent drilling chips, screws and other foreign bodies from getting inside the device.



Information

When installing the ZAsbc4B there are no minimum distances to be observed.

5.2.2 Dimension drawings



ZDSB03M0
27.10.2017 Index 000

6 Electrical installation

**Danger!**

Never work on the ZAsbc4 when it is energised.

**Danger!**

Operating the ZAsbc4 with the housing covers removed is not permitted as there are energised, bare parts inside the device. Failure to comply with this regulation may result in serious personal injury.

**Attention!**

Parts can be destroyed by electrostatic discharge.

Discharge yourself by suitable action before working on electrical components (connectors, etc.). You can do this, for example, by touching earthed metal parts.

Work on electric components may only be carried out by trained electricians or by persons instructed in electricity under the supervision of an electrician in accordance with electrical engineering regulations.

A second person must always be present when working on energized parts or lines who disconnects in case of emergency.

Electrical equipment must be checked regularly: Loose connections are to be re-tightened and damaged cables must be replaced immediately.

Always keep switch cabinets and all electrical supply facilities locked. Access is only allowed for authorized persons using a key or special tool.

Never clean electrical equipment with water or similar liquids.

You must comply with the requirements concerning electrical installation according to EN 81-20, 5.10.

6.1 EMC-compatible installation

**Danger!****Coupling of interference voltages in the safety chain**

Risk of death, severe injury and/or significant material damage.

- ▷ Lay the cables to avoid coupling.
- ▷ The cables to X-EN and X-SC must be laid physically separated from the power cables.

When correctly installed (see below), the device corresponds to the following standards:

- EN 12015 Electromagnetic compatibility – product series standard for lifts, escalators, moving pavements – spurious emission
- EN 12016 Electromagnetic compatibility – product series standard for lifts, escalators, moving pavements – interference immunity

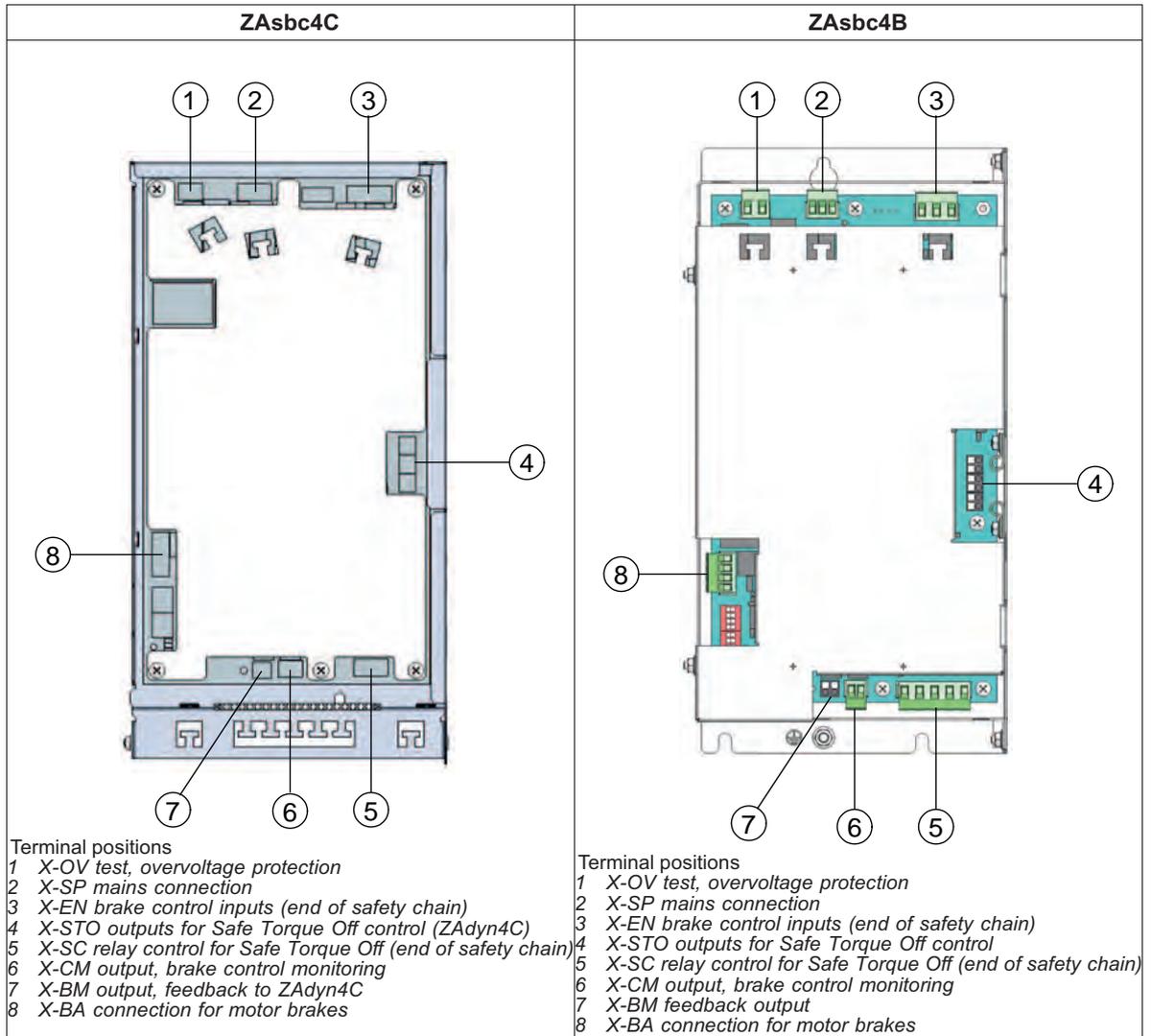
The following points must be observed if the above mentioned standards are to be adhered to:

- Do not twist shielding for connections; use a suitable shield connection system.
- Run the control cables and the power cables separately from the power cables.
- Brakes equipped with varistors (Varistor S20K250 (TDK) or equivalent).

**Information**

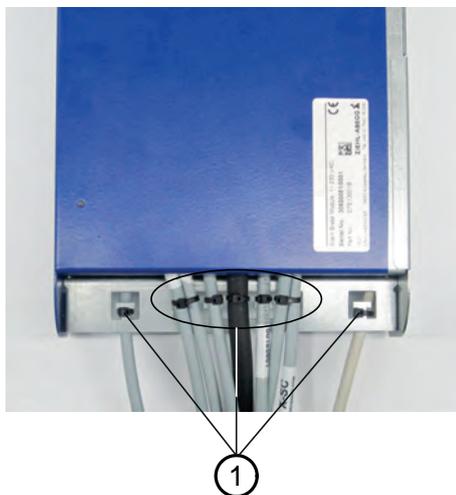
In the case of motors of ZIEHL-ABEGG SE, the varistors are installed ex works in the connection compartment of the brakes.

6.2 Terminal positions



6.3 Strain relief for ZAsbc4C

Strain relief must be provided by cable ties on all cables of the ZAsbc4C. Fix the cable ties to the recesses provided in the ZAsbc4C housing (see fig.).

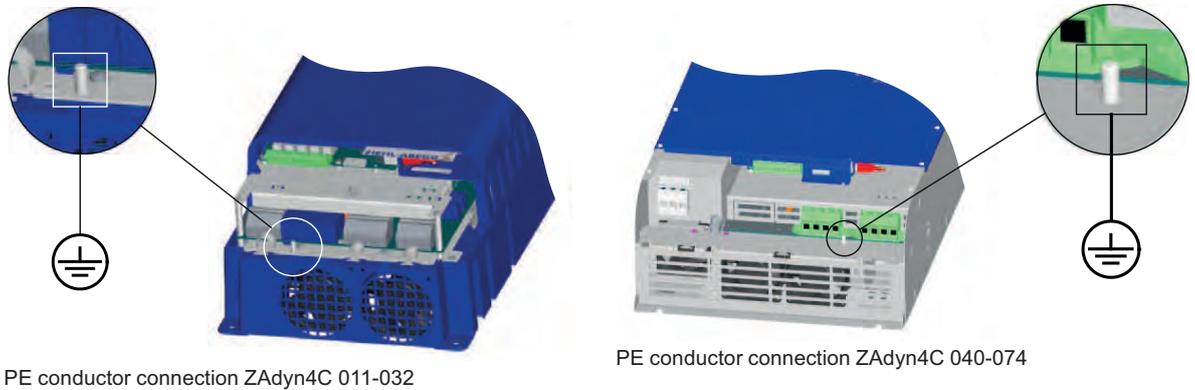


1 Strain relief by cable ties

6.4 Protective earth connection

6.4.1 ZAsbc4C protective earth connection

- The protective conductor is already pre-assembled on the ZAsbc4C.
- The protective conductor of the ZAsbc4C must be connected to the protective earth connection of the ZAsbc4C.

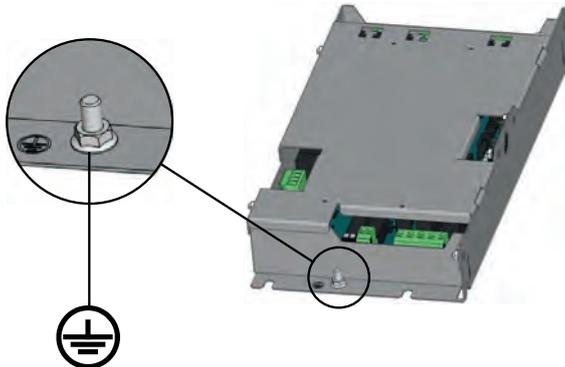


PE conductor connection ZAdyn4C 011-032

PE conductor connection ZAdyn4C 040-074

6.4.2 ZAsbc4B PE conductor connection

- The PE conductor connection (M5 threaded bolt) for the ZAsbc4B must be connected to the PE conductor system.
- The cross-section of the PE conductor must be at least 2.5 mm².



ZAsbc4B PE conductor connection

6.5 Mains connection (X-SP)

CAUTION!

Attention!

Wrong connection values at the mains connection

Defect on the ZAsbc4

▷ Check before connecting to the mains whether the technical data of the ZAsbc4 correspond to the required connection values.

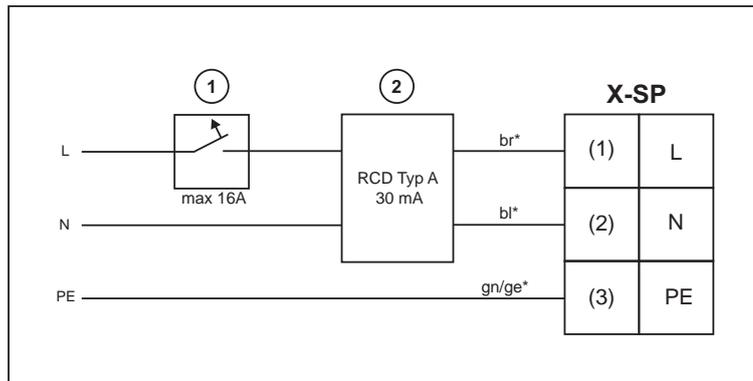
- The ZAsbc4 is designed for operation in an earthed supply system. Permissible network configurations are:
 - TN network
 - TT network



Information

The ZAsbc4 is unsuitable for use in the IT network!

- The size of the mains fuse must reflect the cable cross-section used and the ambient conditions.
- As fuse protection, use a line protection switch with trip characteristics type B and a rated current not bigger than 16 A.
- **ZAsbc4C:** ZIEHL-ABEGG SE offers the prefabricated cable set LS-SBC4-...-HX-ST.



Mains connection

1 Line protection switch (characteristics type B, max. 16 A)

2 Earth leakage circuit breaker (type A, 30 mA)

() terminal designation of connector

* Core colour of the pre-assembled X-SP connecting cable from the cable set LS-SBC4-...-HX-ST

FI circuit breaker (RCCB)

The voltage supply of the brakes must be fused by means of an earth leakage circuit breaker (type A, 30 mA) (see also EN 81-20, 5.11.1.4).

6.6 Connection of motor brakes (X-BA)

CAUTION!

Attention!

Short circuit at the X-BA output

Defect on the ZAsbc4

▷ The X-BA output is not short-circuit-proof. Correctly connect the motor brakes to the X-BA output.

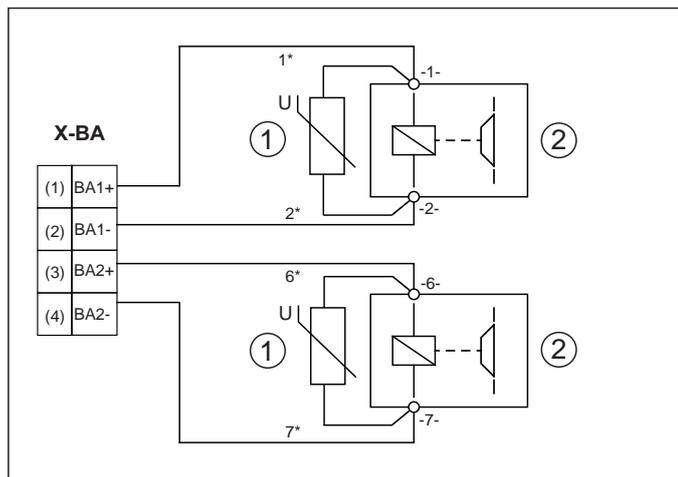
- Both brake circuits BA1 and BA2 are to be routed in separate sheathed cables in each case. When laying to protect against damage (e.g. in a cable duct, armoured conduit, or similar), routing is also permissible in a joint sheathed cable (exclusion of short circuits).
- If brakes with different holding voltages are connected to both brake circuits (a brake with over-excitation, a brake without overexcitation), the cables at X-BA must be shielded to ensure compliance with EMC limits. The shield must be applied on both sides (see chapter "Commissioning/DIP switch").
- Directly in the terminal box of the drive, varistors are to be provided at the connections of the brake coils (Varistor S20K250 (TDK) or equivalent).



Information

In the case of motors of ZIEHL-ABEGG SE, the varistors are installed ex works in the terminal box of the brakes.

- The maximum line length is 25 m.
- ZIEHL-ABEGG SE supplies the pre-assembled cable L-BA-...-HX-SBC4-AE.



Connection for motor brakes

1 Varistor type S20K250 or equivalent

2 Redundant brake circuits

() terminal designation of connector

-...- Terminal at the plastic junction box for the brake connection

* Core number of the pre-assembled connection cable L-BA-...-HX-SBC4-AE



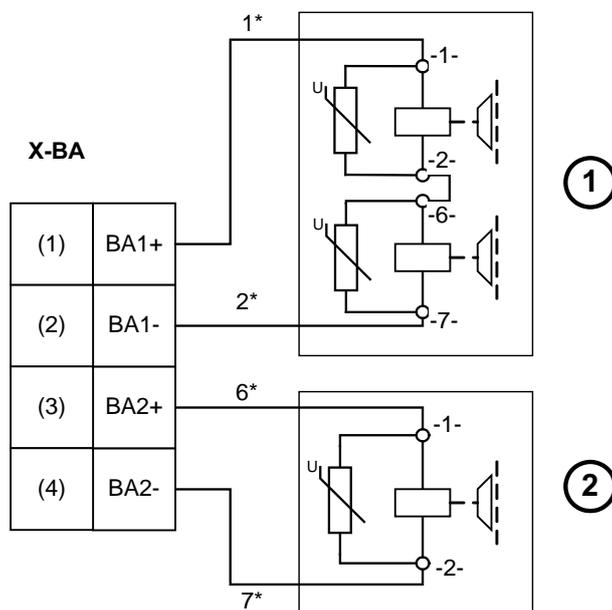
Danger!

Unsafe condition due to the failure of a brake circuit

Risk of death, severe injury and/or significant material damage.

▷ Connect a brake circuit at each of the two outputs.

▷ Connect only brakes, which ensure that if one brake circuit fails the second brake circuit will retain sufficient braking action to delay, stop and hold the lift car.



Connection example: Drive with two operating brakes and a safety brake

1 Service brakes at brake circuit 1 (series or parallel circuit)

2 Safety brake at brake circuit 2

() terminal designation of connector

-...- Terminal at the plastic junction box for the brake connection

* Core number of the pre-assembled connection cable L-BA-...-HX-SBC4-AE



Danger!

Failure of the safety brake

Risk of death, severe injury and/or significant material damage.

▷ In the case of gear drives with only the safety brake at the power take-off end of the gear box (traction sheave shaft or traction sheave) working, monitor de-energization of the safety brake (e.g. by means of a microswitch or proximity switch).

6.7 Test overvoltage protection/error acknowledgement (X-OV)



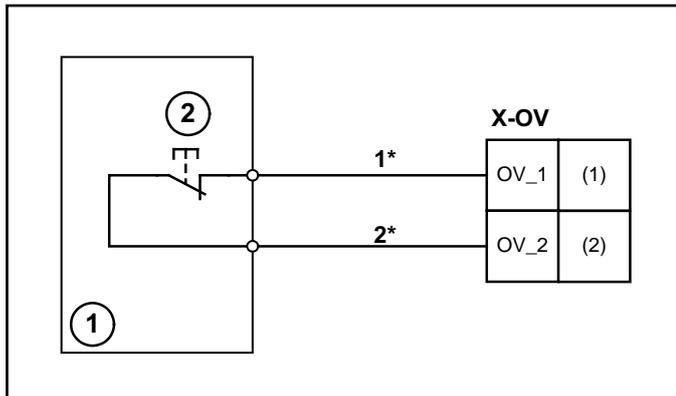
Danger!

Electric shock

Death or severe injury

▷ The connections to X-OV are at mains potential. Take this into account during installation (e.g. through suitable insulation/cover).

- The jumper at the X-OV connection is required for the overvoltage protection test.
- Guide the jumper to an accessible area.
- In the event of a fault, the ZAsbc4 can be reset by pressing the button on the X-OV connection (see chapter "Fault diagnosis/fault response and acknowledgement").
- **ZAsbc4C**: ZIEHL-ABEGG SE offers the prefabricated cable set LS-SBC4-...-HX-ST.



Overvoltage protection relay connection

1 Brake control

2 Switch or scoop-proof jumper to be removed for overvoltage protection function test

() terminal designation of connector

* Wire number of the pre-assembled connecting cable designated X-OV from the cable set for ZAsbc4C

🔗 For more information on the overvoltage protection test, see chapter "Commissioning/safety function tests".

6.8 Brake control inputs (X-EN)/Safe Torque Off relay (X-SC)

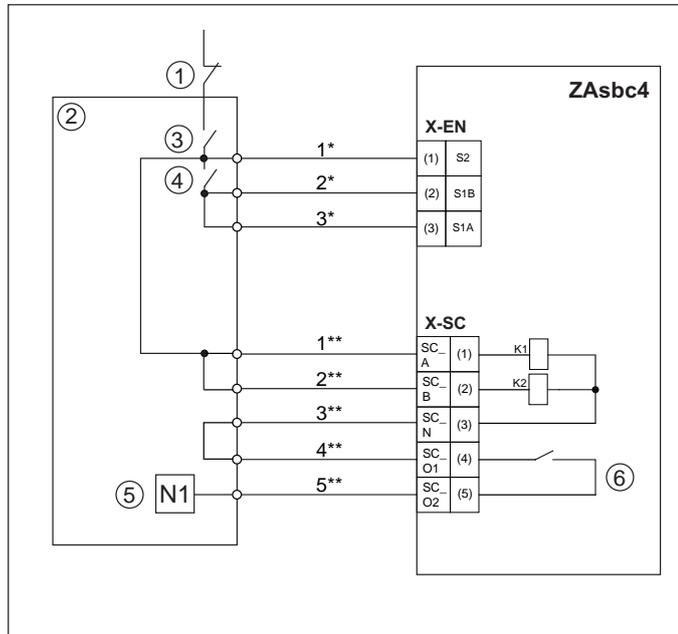


Danger!

Uncontrolled movement of elevator cabin

Risk of death, severe injury and/or significant material damage.

- ▷ Activation of the inputs at X-EN and X-SC may only be possible when the safety chain is closed. Otherwise, it can lead to uncontrolled movement of the elevator cabin.



Brake control / Safe Torque Off relay connection

1 Electrical safety chain

2 Frequency inverter or elevator control system

3 Output 1 (ZAdyn: "MotContact" function)

4 Output 2 (ZAdyn: "MB" function)

5 Safety chain neutral conductor

6 "Brake control error" output

() terminal designation of connector

* Wire number of the pre-assembled connecting cable with the designation X-EN from the cable set for ZAsbc4C

** Wire number of the pre-assembled connecting cable with the designation X-SC from the cable set ZAsbc4C

6.8.1 ZAsbc4 in use with ZAdyn frequency inverters

- The inputs must be supplied in line with all the electrical safety devices of the safety chain.
- The inputs are activated during operation by digital outputs on the ZAdyn frequency inverter:
 - Digital output with "MB" function S1A, S1B
 - Digital output with "MotContact" function S2, SC_A, SC_B
- Once the RB output on the ZAdyn with the MotContact function is de-energized, the inputs S1A, S1B, S2, SC_A and SC_B must be switched off.
- When using ZIEHL-ABEGG SE frequency inverters with the "Safe switch-off (STO)" function, the relays K1 and K2 are activated using the inputs SC_A and SC_B. These can be used to control the "Safe switch-off" (STO) function.
- The SC_O "Brake control error" output contact must be integrated in the safety chain neutral conductor. The contact is closed if no error exists on the ZAsbc4C or ZAsbc4B.
- For details of control, refer to the "Function description / "Safe switch-off" control" and "Function description / Sequence of signals" chapters.
- **ZAsbc4C:** ZIEHL-ABEGG SE offers the prefabricated cable set LS-SBC4-...-HX-ST.

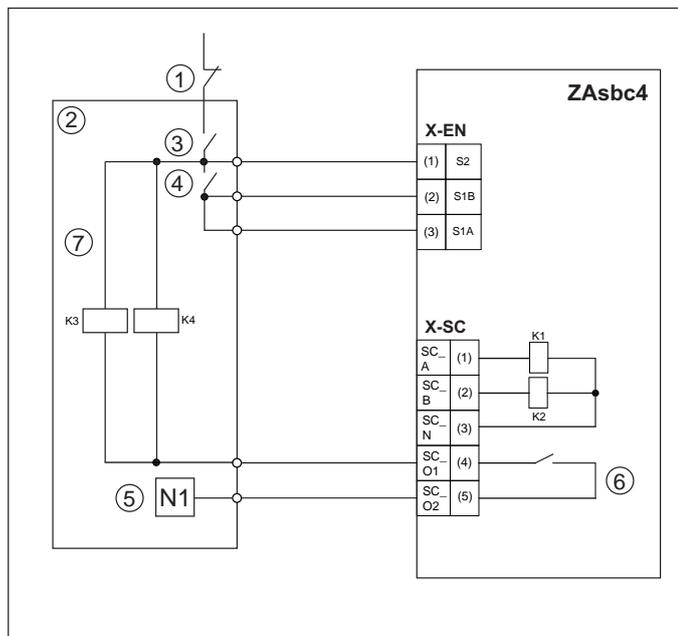
6.8.2 ZAsbc4B with frequency inverters from other manufacturers

- The inputs must be supplied in line with all the electrical safety devices of the safety chain.
- Once output 1 on the frequency inverter or elevator control system is de-energized, the inputs S1A, S1B, S2, SC_A and SC_B must be switched off.
- The inputs S1A and S1B with output 2 must be switched to S2, SC_A and SC_B with a time delay (for details, see “Function description / Control of motor brakes” and “Function description / Sequence of signals” chapters).
- The ZAsbc4B has two relays (K1, K2) that can be switched via the inputs SC_A, SC_B. The inputs are activated via a contact of the frequency inverter or the elevator control system, which are supplied by the end of the safety chain. The suitability of these relays for controlling a function for safely switching off the torque (Safe Torque Off, STO) must be verified using the technical documentation for the frequency inverter.
- If there are faults on the frequency inverter or the elevator control system, the inputs S1A, S1B, S2, SC_A and SC_B must be switched off.
- The SC_O “Brake control fault” output contact must be integrated into the safety chain neutral conductor. When the contact is opened, the energy supply to the power unit must also be interrupted.

6.8.3 Use of the ZAsbc4 with motor contactors

A fault in the brake control must interrupt the energy supply to the power unit.

To achieve this, the safety chain neutral conductor is to be connected to the motor contactor coils using the terminals X-SC:SC_O2 and X-SC:SC_O1.

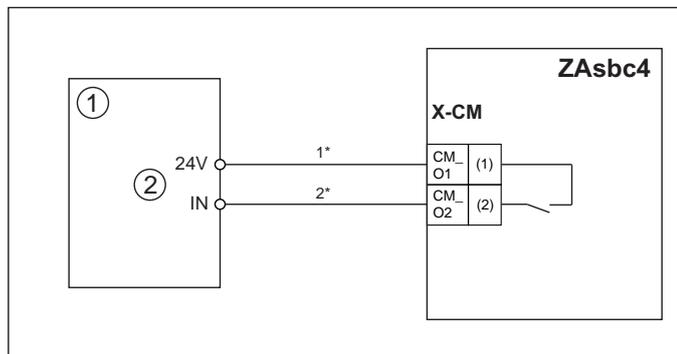


Connection of motor contactors

- 1 Electrical safety chain
 - 2 Frequency inverter or elevator control system
 - 3 Output 1 (ZAdyn: “MotContact” function)
 - 4 Output 2 (ZAdyn: “MB” function)
 - 5 Safety chain neutral conductor
 - 6 “Brake control error” output
 - 7 Motor contactors
- () terminal designation of connector

6.9 Brake control monitoring output (X-CM)

- The CM_O output at the X-CM connection shows the status of the brake control.
- The output must be monitored by the elevator control system.
- For details on the required monitoring by the lift control system, see chapter "Function description/-brake control monitoring".
- **ZAsbc4C**:ZIEHL-ABEGG SE offers the prefabricated cable set LS-SBC4-...-HX-ST.



Brake control monitoring connection

1 elevator control system

2 Digital input

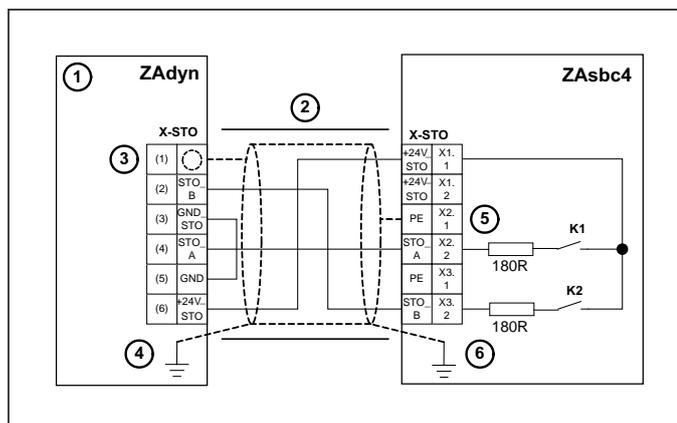
() terminal designation of connector

* Wire number of the pre-assembled connecting cable with the designation X-CM from the cable set LS-SBC4-...-HX-ST

6.10 Safe Torque Off control (X-STO) outputs

6.10.1 ZAsbc4 with ZAdyn frequency inverter

- Use of the relay outputs STO_A and STO_B to control the "Safe switch-off" (STO) function.
- Refer to the "Electrical installation / STO interface (X-STO)" chapter in the ZAdyn operating instructions.
- The cable must generally be shielded and earthed at both ends. This also applies when mounting the ZAsbc4 in the control cabinet.
- With ZAsbc4C the cable for connection to the terminal X-STO of the ZAdyn4C is already connected.



Safe Torque Off (X-STO) control connection with protected wiring

1 Frequency inverter type ZAdyn with safe disconnection (STO)

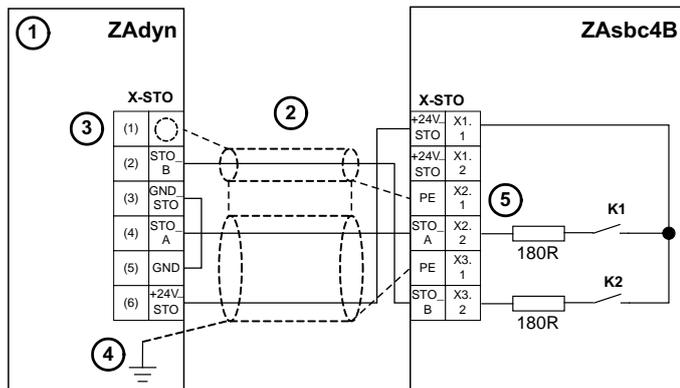
2 Protected wiring

3 Shielded connection via terminal on ZAdynpro frequency inverter

4 Shielded connection via clamp on ZAdyn4C frequency inverter

5 Shielded connection via terminal on ZAsbc4B

6 Shield connection via clamp on ZAsbc4C



Safe Torque Off (X-STO) control connection when using two separate jacketed cables

- 1 Frequency inverter type ZAdyn with safe disconnection (STO)
- 2 Without protected wiring, STO_A and STO_B run in separate jacketed cables
- 3 Shielded connection via terminal on ZAdynpro frequency inverter
- 4 Shielded connection via clamp on ZAdyn4C frequency inverter
- 5 Shielded connection via terminal on ZAsbc4B

6.10.2 ZAsbc4B with frequency inverters from other manufacturers

Two coupling relays (K1, K2) are integrated in the ZAsbc4. Activation may only be possible when the safety chain is closed.



Danger! **Misuse**

Risk of death, severe injury and/or significant material damage.

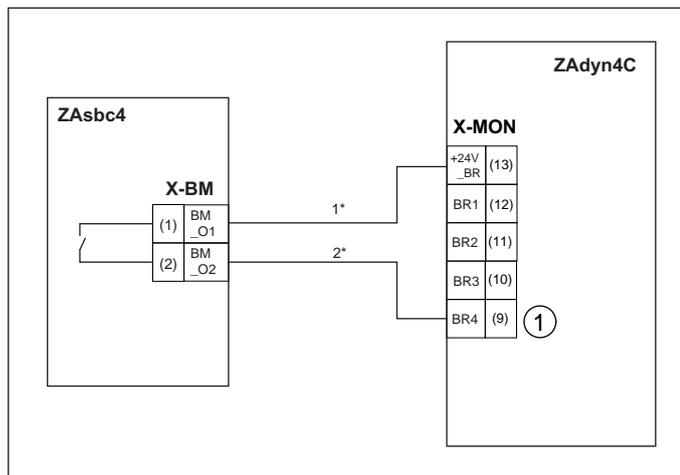
- ▷ When using the relays K1 and K2 to control a function for safely switching off the torque (Safe Torque Off, STO) it is essential to check whether the relays comply with the frequency inverter manufacturer's specifications.
- ▷ Integration of the relays K1 and K2 into the "Safe Torque Off" (STO) function is to be carried out in line with the relevant manufacturer's operating instructions.

6.11 Feedback output (X-BM)

- Informative output for connection to the frequency inverter or the elevator control system.
- The relay contact is closed if no error is present on the ZAsbc4.

6.11.1 ZAsbc4 with ZAdyn frequency inverter

- It is recommended to connect the output to enable an error diagnosis by the ZAdyn.
- The output can be connected to one of the following inputs on the ZAdyn:
 - Input BR1...BR4 (BR3/BR4 preferred)
 - Inputs I01...I08
- The input used of the ZAdyn must be parameterised to the "46:SBC_RDY" function (see chapter "Commissioning/parameterisation of the ZAdyn4").
- The cable marked X-BM is already connected to the ZAsbc4C.

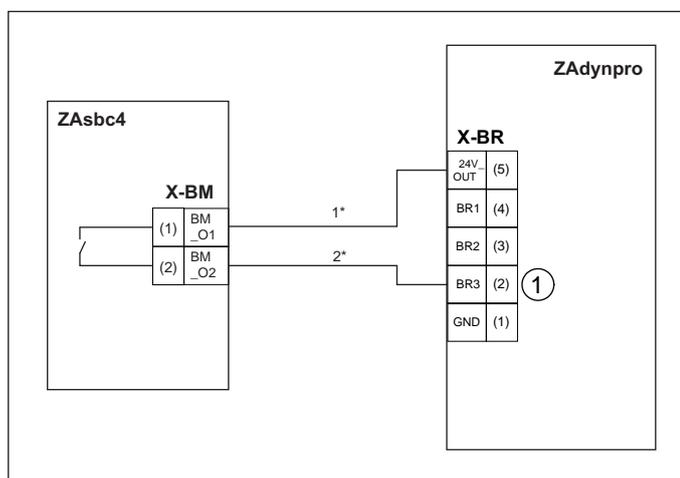


Feedback output connection, using BR4 as an example

1 Digital input with the "46:SBC_RDY" function

() terminal designation of connector

* Core number of the pre-assembled connection cable designated X-SP from the cable set



Feedback output connection, using BR3 as an example

1 Digital input with the "46:SBC_RDY" function

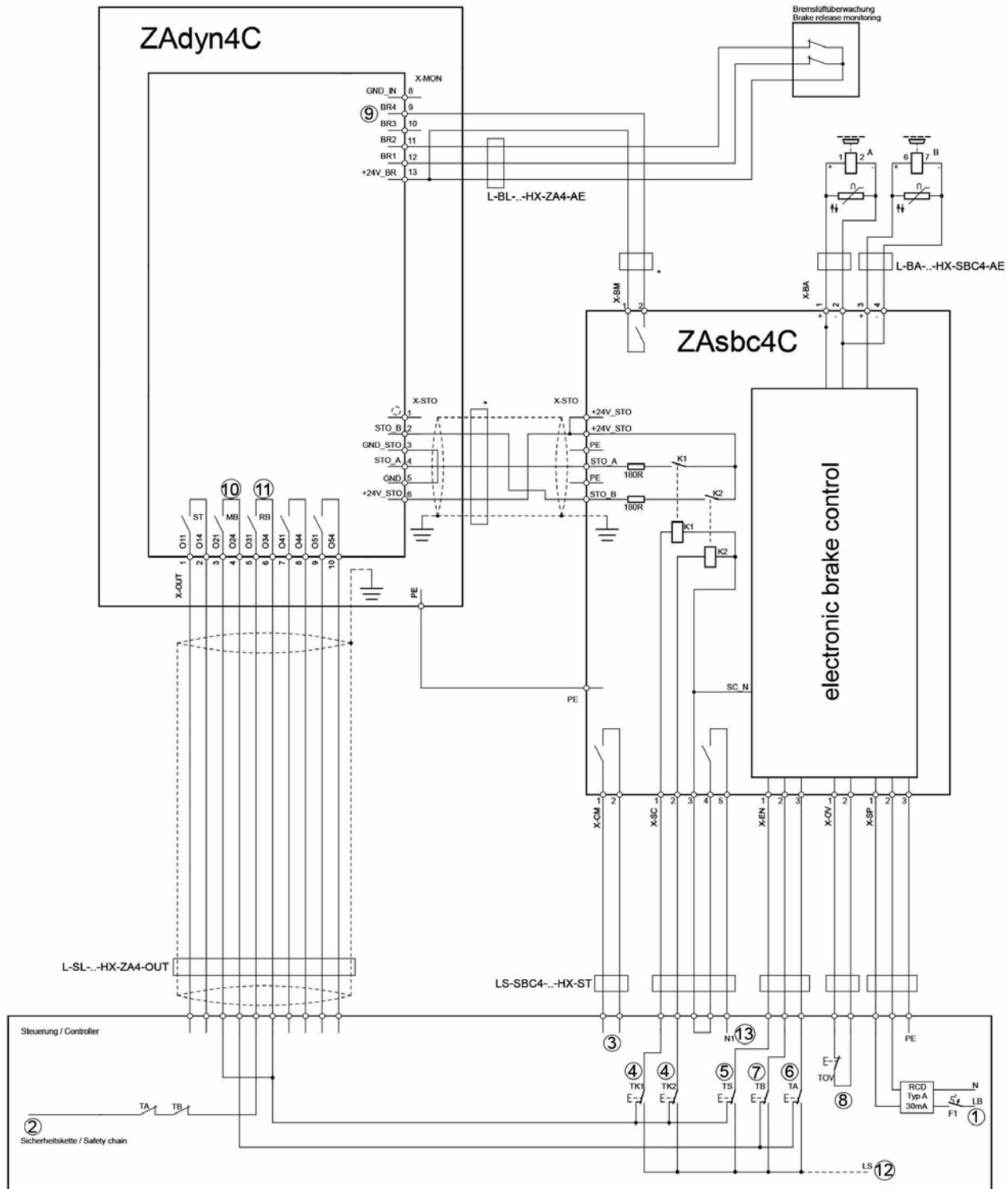
() terminal designation of connector

* Core number of the pre-assembled connection cable designated X-SP from the cable set

6.11.2 ZAsbc4B with frequency inverters from other manufacturers/elevator control system

We recommend evaluating the output X-BM to allow fault diagnosis.

6.12 Circuit suggestion, ZAsbc4C and ZAdyn4C



ZDSB02K0
 Index 06, 26.11.19

- 1 Power supply brakes
 - 2 Safety chain
 - 3 Brake control monitoring
 - 4 STO function test
 - 5 Emergency operation - two-circuit test
 - 6 manual brake release A
 - 7 manual brake release B
 - 8 Overvoltage protection function test
 - 9 Digital input parameterised to the "SBC_RDY" function
 - 10 Digital output parameterised to the "MB" function
 - 11 Digital output parameterised to the "RB contactor" function
 - 12 Auxiliary voltage for function tests
 - 13 Safety chain neutral conductor
- * Cables included in the delivery of the ZAsbc4C

The suggested circuit components for performing function tests and the emergency rescue (TK1, TK2, TS, TA, TB switches) are examples, and must be implemented so that external shorts on the safety chain are ruled out.

The operator is liable for the safe design and integration into the overall system.



Danger!

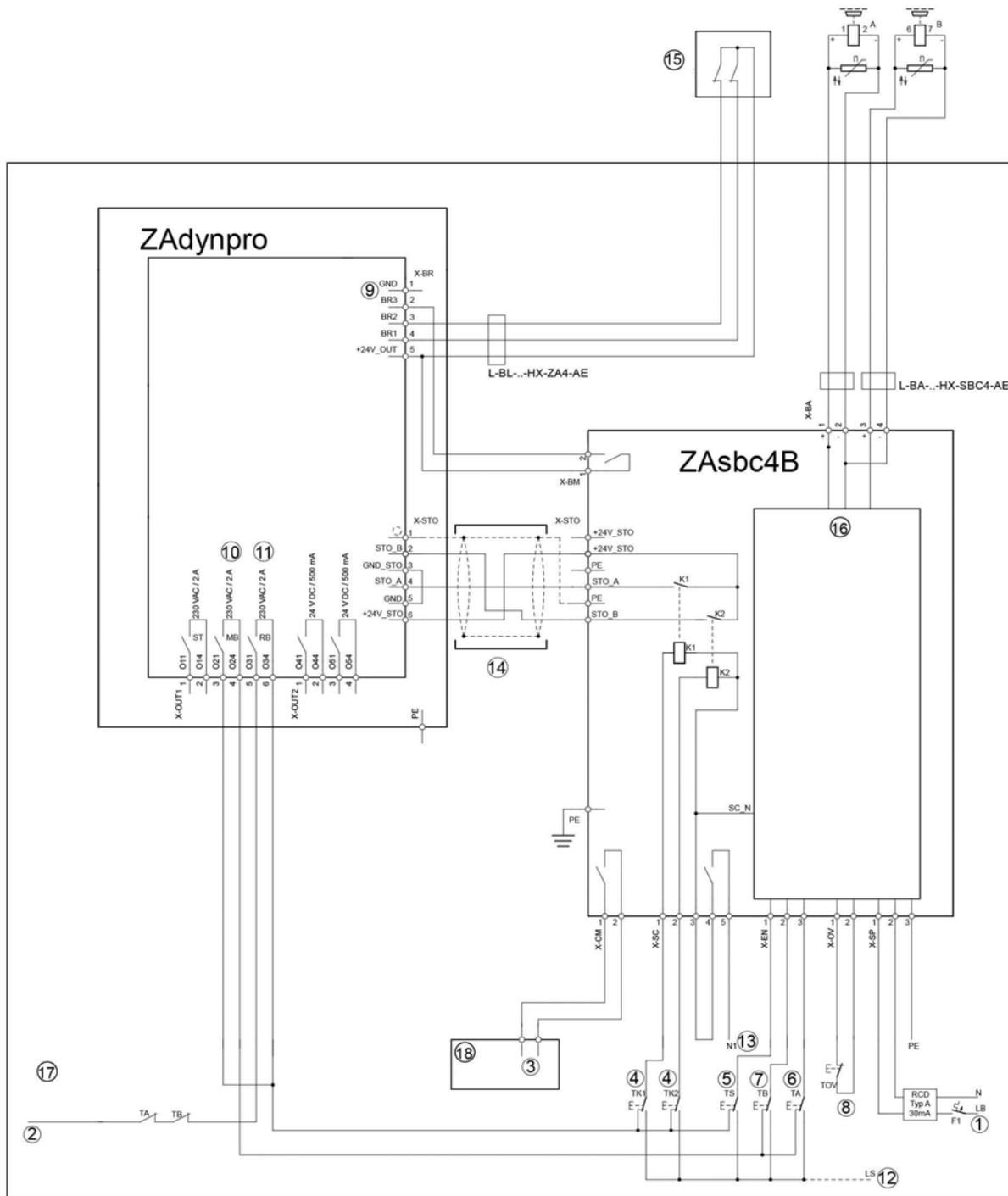
Safety chain bypass

Risk of death, severe injury and/or significant material damage.

▷ Remove the connection to the auxiliary voltage (12) after carrying out the tests.

6.13 Circuit suggestions, ZAsbc4B

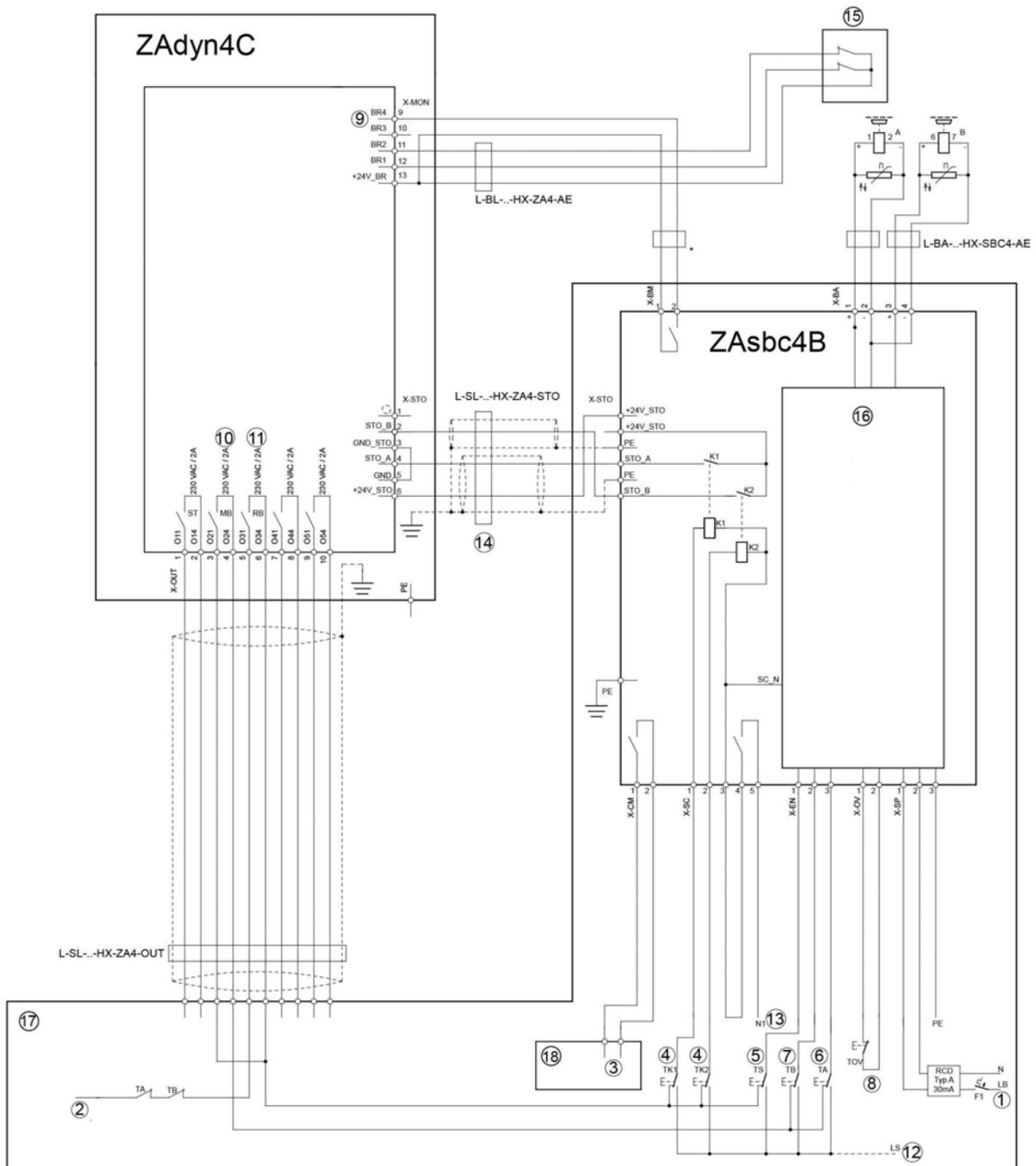
Circuit suggestion for ZAsbc4B and ZAdynpro



ZDSB03K1
 16.10.2017

- | | |
|---|--|
| 1 Power supply brakes | 10 Digital output parameterised to the "MB" function |
| 2 Safety chain | 11 Digital output parameterised to the "RB contactor" function |
| 3 Brake control monitoring | 12 Auxiliary voltage for function tests |
| 4 STO function test | 13 Safety chain neutral conductor |
| 5 Emergency operation - two-circuit test | 14 Double jacketed cable or protected wiring |
| 6 manual brake release A | 15 Brake release monitoring |
| 7 manual brake release B | 16 Electronic brake control |
| 8 Overvoltage protection function test | 17 Elevator control system switch cabinet |
| 9 Digital input parameterised to the "SBC_RDY" function | 18 Brake control |

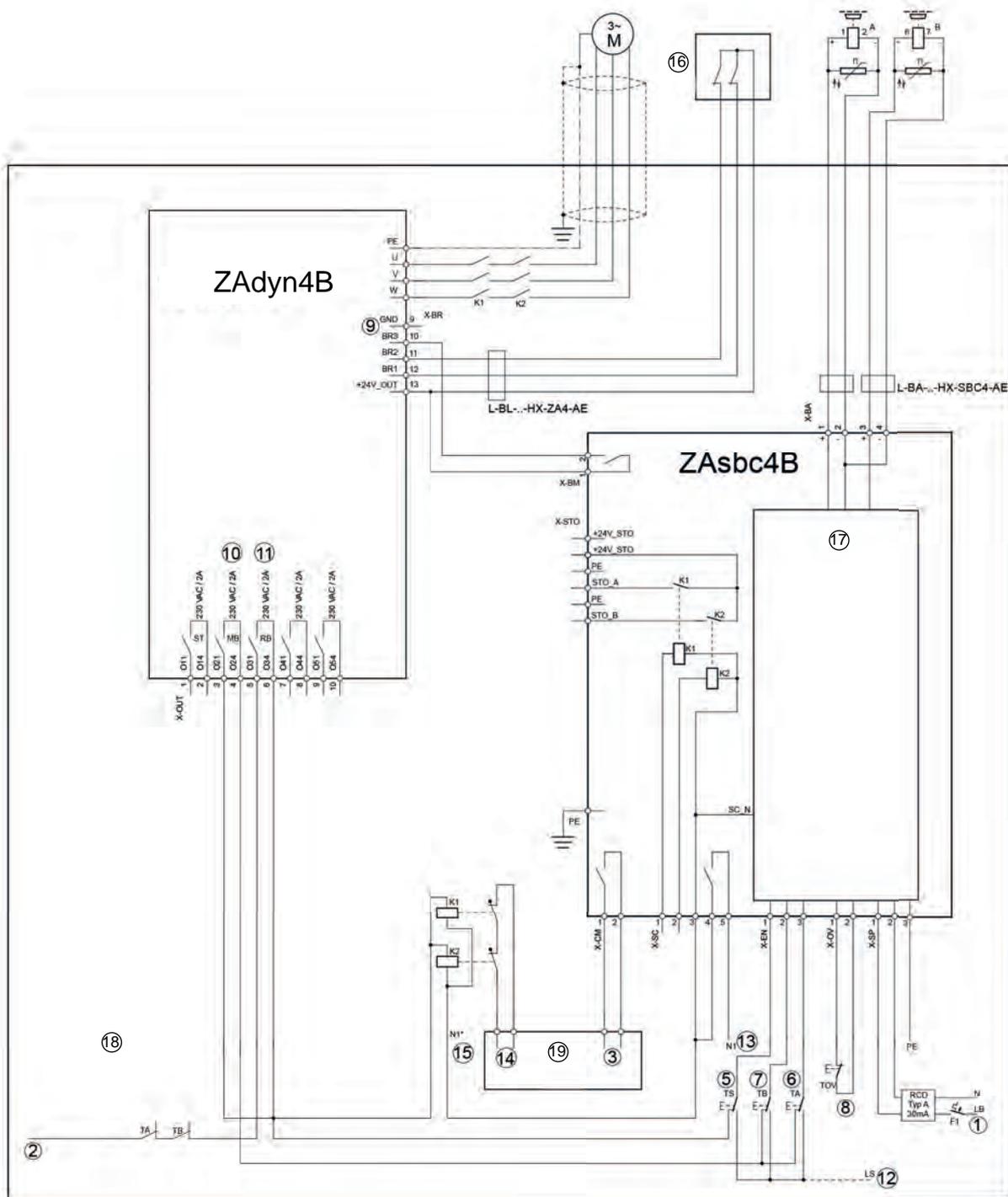
Circuit suggestion for ZAsbc4B and ZAdyn4C



ZDSB03K0
 16.10.2017

- | | |
|---|--|
| 1 Power supply brakes | 10 Digital output parameterised to the "MB" function |
| 2 Safety chain | 11 Digital output parameterised to the "RB contactor" function |
| 3 Brake control monitoring | 12 Auxiliary voltage for function tests |
| 4 STO function test | 13 Safety chain neutral conductor |
| 5 Emergency operation - two-circuit test | 14 Double jacketed cable or protected wiring |
| 6 manual brake release A | 15 Brake release monitoring |
| 7 manual brake release B | 16 Electronic brake control |
| 8 Overvoltage protection function test | 17 Elevator control system switch cabinet |
| 9 Digital input parameterised to the "SBC_RDY" function | 18 Brake control |

Circuit suggestion for ZAsbc4B and ZAdyn4B



ZDSB03K2
 16.10.2017

- | | |
|---|--|
| 1 Power supply brakes | 11 Digital output parameterised to the "RB contactor" function |
| 2 Safety chain | 12 Auxiliary voltage for function tests |
| 3 Brake control monitoring | 13 Safety chain neutral conductor |
| 4 STO function test | 14 Elevator control system contactor monitoring |
| 5 Emergency operation - two-circuit test | 15 Connect travel contactors to switched N1* |
| 6 manual brake release A | 16 Brake release monitoring |
| 7 manual brake release B | 17 Electronic brake control |
| 8 Overvoltage protection function test | 18 Elevator control system switch cabinet |
| 9 Digital input parameterised to the "SBC_RDY" function | 19 Brake control |
| 10 Digital output parameterised to the "MB" function | |

The suggested circuit components to perform function tests and the emergency rescue (TK1, TK2, TS, TA, TB switches) are by way of example, and must be implemented so that external shorts on the safety chain are ruled out.

The operator is liable for the safe design and integration into the overall system.



Danger!

Safety chain bypass

Risk of death, severe injury and/or significant material damage.

▷ Remove the connection to the auxiliary voltage (12) after carrying out the tests.

7 Start-up

**Danger!**

Faulty connections can cause uncontrollable conditions in the installation.

CAUTION!

Attention!

Incorrectly wired connections can destroy the electrical/electronic components. Electrostatic processes/electrical malfunctions can be hazardous to the electronic components and lead to errors in the software.

You must comply with the following points to prevent machine damage or life-threatening injuries when commissioning the machine:

- The start-up of the device may only be carried out by qualified persons under consideration of the safety instructions.
- Before starting for the first time, check that all tools and foreign parts have been removed from the ZAsbc4.
- Activate all the safety devices and emergency-off circuits before commissioning.
- Make sure no unauthorized persons are in the machine working area and that no other persons can be endangered when the installation is started up.
- Inspect the electrical connections before the first start.
- Pay special attention to the protective measures (e.g. grounding, ...) for the electrostatically endangered components.
- Also read chapter "General Safety Instructions".

Requirements for error-free commissioning:

- Mains supply line at the X-SP connection terminal.
- The connections OV_1 and OV_2 are connected at the connection terminal X-OV.
- Control inputs (connection terminals X-SC and X-EN) are connected to the frequency inverter or elevator control system contacts, which are supplied by the end of the safety chain.
- Brakes are connected to the X-BA connection terminal.
- The "Brake control monitoring" (X-CM) connection terminal is connected to the control system and the control system evaluation logic corresponds to the requirements as described in chapter "Function description/brake control monitoring".

7.1 DIP switch

With both S1 and S2 DIP switches, the following functions can be set:

- Reduction in output voltage to supply the brake circuits

**Information**

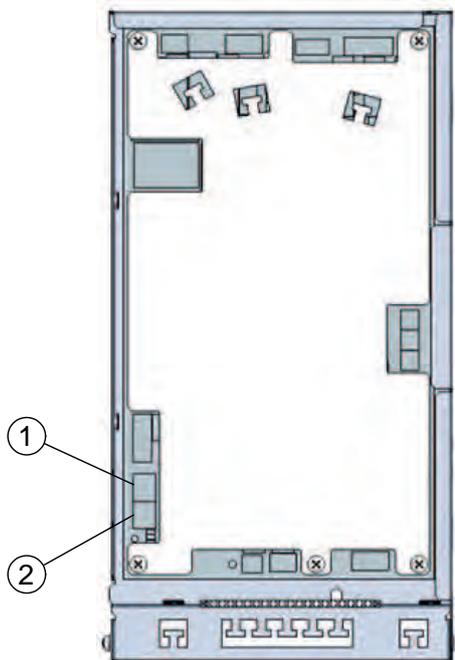
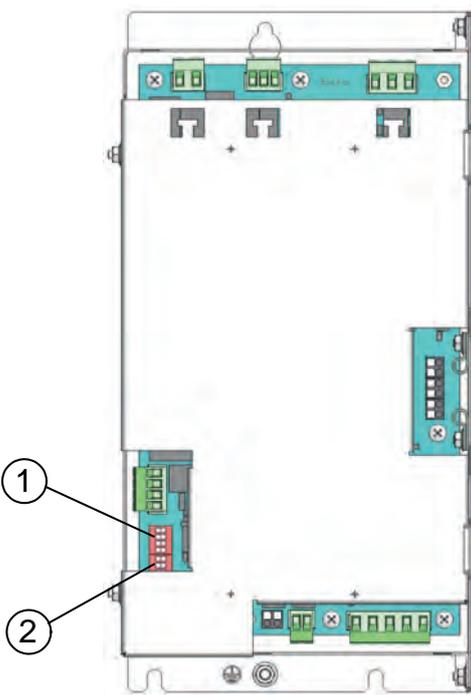
All the functions that can be set via DIP switch are not safety-related, e.g. in the event of an error a reduction in voltage might not take place after the overexcitation time.

**Danger!****Touching live parts**

Death or severe injury may occur.

▷ Do not operate the DIP switches when the ZAsbc4 is live.

7.1.1 Position of the DIP switches

ZAsbc4C	ZAsbc4B
<p>To be able to operate the DIP switches, you must remove the cover of the ZAsbc4C.</p>  <p>Position of DIP switch, ZAsbc4C 1 DIP switch S1 2 DIP switch, S2</p>	 <p>Position of DIP switch, ZAsbc4B 1 DIP switch S1 2 DIP switch, S2</p>

7.1.2 Functional description

- The position of the DIP switches is only read in when **switching on** the power supply.



Information

All the functions that can be set via DIP switch are not safety-related, e.g. in the event of an error a reduction in voltage might not take place after the overexcitation time.



Danger!

Touching live parts

Death or severe injury may occur.

▷ Do not operate the DIP switches when the ZAsbc4 is live.

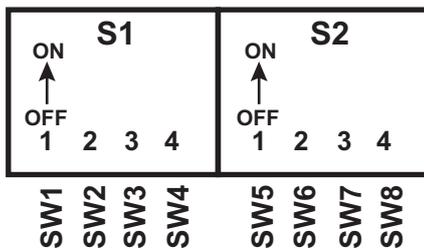


Diagram of the S1 and S2 DIP switches

SW1	Meaning
OFF	Brake circuit 1 without overexcitation (no reduction in the output voltage)
ON	Brake circuit 1 with overexcitation (reduction to the holding voltage after the overexcitation time)

SW2	Meaning
OFF	Brake circuit 2 without overexcitation (no reduction in the output voltage)
ON	Brake circuit 2 with overexcitation (reduction to the holding voltage after the overexcitation time)

SW3	SW4	Meaning
OFF	OFF	Overexcitation time: 2.0 s
ON	OFF	Overexcitation time: 1.5 s
OFF	ON	Overexcitation time: 1.0 s
ON	ON	Overexcitation time: 0.5 s

SW5	SW6	Meaning
OFF	OFF	Switching on brake circuit 2 is not delayed
ON	OFF	Switching on brake circuit 2 is delayed by 1.0 s
OFF	ON	Switching on brake circuit 2 is delayed by 1.5 s
ON	ON	Switching on brake circuit 2 is delayed by 0.5 s

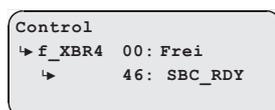
SW7	Meaning
OFF	Internal use, switches must be left "OFF".
ON	

SW8	Meaning
OFF	Internal use, switches must be left "OFF".
ON	

All switches are set to "OFF", ex works.

7.2 Parameterisation of the ZAdyn

- Parameterise the input on the ZAdyn to which the cable to the feedback output (X-BM) of the ZAsbc4C is connected (see chapter "Feedback output to (X-BM)"), in the **control** menu to the **46:SBC_RDY** function.



- If the ZAdyn outputs are used to control the ZAsbc4 inputs, they must be configured for the RB contactor and MB brake functions (control menu). With the factory setting, the output O31 - O34 is configured for the RB contactor function and the output O21 - O24 is configured for the MB brake function.

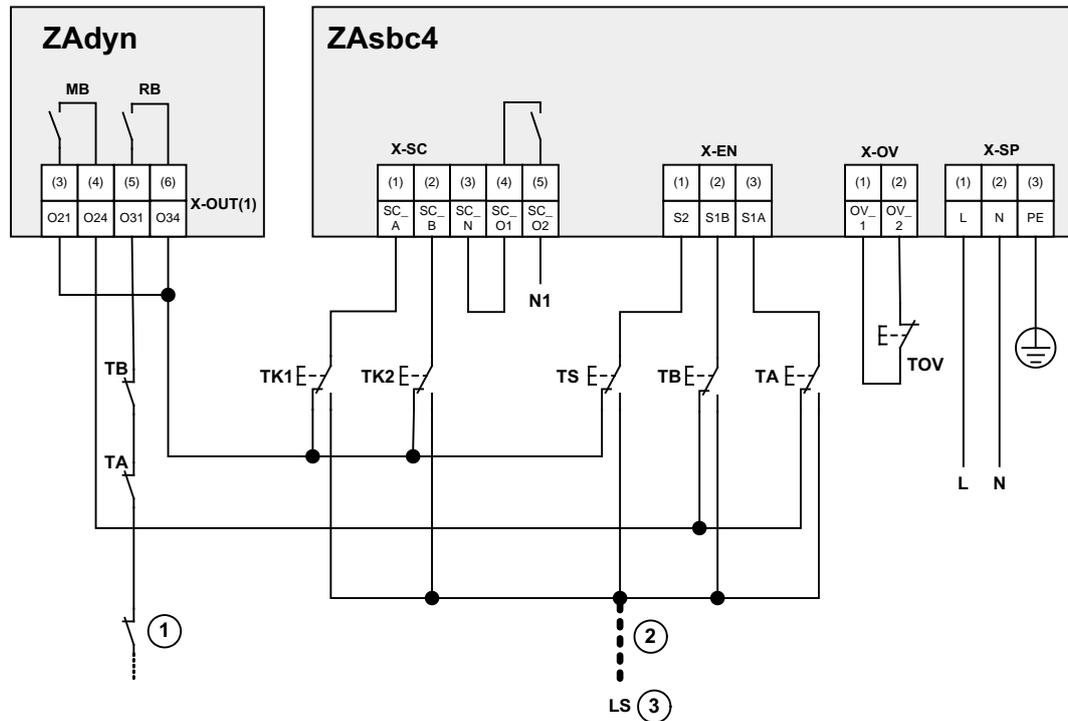
7.3 Test run

Perform a test run. If error messages occur, see chapter "Error diagnosis" for error diagnosis and troubleshooting.

7.4 Safety function test

In the course of commissioning, a safety function test must be carried out. The test must be repeated at regular intervals (e.g. annually as part of the regular inspection).

To carry out the tests, it is necessary to control/activate the inputs individually.
 This can be done as follows:



Circuit suggestion for the safety function test

- 1 End of electrical safety chain
- 2 Jumper: remove after test
- 3 Auxiliary voltage dependent on the variant 230 V or 110 V



Danger!
Safety chain bypass

Risk of death, severe injury and/or significant material damage.

▷ Remove the connection (2) to the auxiliary voltage (3) after carrying out the tests.

7.4.1 Test procedure with frequency inverters type ZAdyn4C and ZAdynpro

Proceed as follows to carry out the test:

no.	Test description	Expected response/subsequent action
1	<p>Carry out the safety function test concerning "Safe switch-off (STO)" in line with the ZAdyn operating instructions, chapter "Commissioning / Test of safety function "Safe switch-off (STO)".</p> <p>The STO_A and STO_B inputs can be activated via control of the K1, K2 relays of the ZAsbc4C at inputs SC_A or SC_B (X-SC connection).</p> <p>(See fig. "Circuit suggestion for the safety function test": TK1, TK2)</p>	<p>Refer to "Testing the "Safe switch-off (STO)" safety function" in the "Commissioning" chapter of the ZAdyn operating instructions.</p>
2	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No control signals at inputs S1A, S1B, S2 (X-EN connection) and SC_A, SC_B (X-SC connection) <p>Activate the SC_A and SC_B inputs (X-SC connection) at the same time, keeping these activated.</p> <p>(See fig. "Circuit suggestion for the safety function test": TK1, TK2)</p>	<p>On the ZApad of the ZAdyn, the STO_A and STO_B inputs must be marked as active with a big dot in the info menu on page 09 (see the ZAdyn operating instructions, in chapter "Parameter list").</p> <p>If an error message appears on the ZApad, press the Info key to display the info menu again.</p>
3	<p>In addition, activate input S2 (X-EN connection, terminal 1).</p> <p>(See fig. "Circuit suggestion for the safety function test": TS)</p>	<p>After a time of approx. 4 s, the displays for STO_A and STO_B change from a large dot to a small dot.</p> <p>Now deactivate the SC_A, SC_B, S2 inputs again. Then reset the ZAsbc by switching the line voltage off/on.</p>
4	<p>Re-activate the SC_A and SC_B inputs (X-SC connection) at the same time, keeping these activated.</p> <p>(See fig. "Circuit suggestion for the safety function test": TK1, TK2)</p>	<p>On the ZApad of the ZAdyn, the STO_A and STO_B inputs must be marked as active with a big dot in the info menu on page 09 (see the ZAdyn operating instructions, in chapter "Parameter list").</p> <p>If an error message appears on the ZApad, press the Info key to display the info menu again.</p>
5	<p>Disconnect the jumper between terminals OV_1 and OV_2 (X-OV connection).</p> <p>(See fig. "Circuit suggestion for the safety function test": TOV)</p>	<p>The displays for STO_A and STO_B must change immediately from a large dot to a small dot.</p> <p>Now reconnect the jumper between terminals OV_1 and OV_2.</p> <p>Acknowledge any elevator control system fault statuses or carry out a reset.</p>

6	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No control signals at inputs S1A, S1B, S2 (X-EN connection) and SC_A, SC_B (X-SC connection) • No lift control system error status exists <p>Activate input S2 (X-EN connection, terminal 1). Time: > 4 s and > tolerance time of the lift control system</p> <p>(See fig. "Circuit suggestion for the safety function test": TS)</p>	<p>At the end of the tolerance time of the lift control system, the latter must switch to an error status ("contactor monitoring", "brake control" or similar, dependent on the lift control system used), since the monitored CM_O relay output (X-CM connection) of the ZAsbc4C is de-energized.</p> <p>Now deactivate the S2 input again. Then reset the ZAsbc by switching the line voltage off/on. After switching off, remove the jumper (see fig. "Circuit suggestion for the safety function test": (2)) to control the inputs.</p> <p>Acknowledge any elevator control system fault statuses or carry out a reset.</p>
7	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No lift control system error status exists <p>Bridge the CM_O1 and CM_O2 signals of the ZAsbc4C (X-CM connection) on the lift control system and carry out a normal run.</p>	<p>The lift control system must switch to an error status before or after the start of movement ("contactor monitoring", "brake control" or similar, dependent on the lift control system used).</p> <p>Subsequently, remove the jumper at CM_O1 and CM_O2 and acknowledge lift control system error.</p>
8	<p>Carry out a normal run.</p>	<p>The run should be able to be carried out without error messages occurring</p>

If the results of the individual steps do not correspond to the description,

- check the wiring,
- switch the system off and on again, and repeat the test,
- exchange the device (only after consultation with ZIEHL-ABEGG SE).

7.4.2 Test procedure with frequency inverters type ZAdyn4B and frequency inverters from other manufacturers

Proceed as follows to carry out the test:

no.	Test description	Expected response/subsequent action
1	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No control signals at inputs S1A, S1B, S2 (X-EN connection) and SC_A, SC_B (X-SC connection) <p>Activate the input S2 (X-EN:1).</p>	<p>First of all, the output SC_O1/SC_O2 (X-SC:4/5) must be active (contact closed). The output must switch off after around 4 s.</p> <p>Deactivate the input S2 again. Then reset the ZAsbc4 by switching the mains voltage off/on. Acknowledge any elevator control system fault statuses or carry out a reset.</p>
2	<p>Disconnect the connection between terminals OV_1 and OV_2 (X-OV:1/2).</p> <p>(See fig. "Circuit suggestion for the safety function test": TOV)</p>	<p>First of all, the output SC_O1/SC_O2 (X-SC:4/5) must be active (contact closed). When the connection is opened, the output must switch off immediately.</p> <p>Restore the connection between terminals OV_1 and OV_2. Acknowledge any elevator control system fault statuses or carry out a reset.</p>

3	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No control signals at inputs S1A, S1B, S2 (X-EN connection) and SC_A, SC_B (X-SC connection) • No lift control system error status exists <p>Activate the input S2 (X-EN:1). Duration: > 4 s and > tolerance time of the elevator control system</p> <p>(See fig. "Circuit suggestion for the safety function test": TS)</p>	<p>At the end of the elevator control system tolerance time, it must switch to a fault status ("Contactor monitoring", "Brake control" or similar, depending on the elevator control system used), since the monitored relay output CM_O1/CM_O2 (X-CM:1/2) on the ZAsbc4 is de-energized.</p> <p>Now deactivate the input S2 again. Then reset the ZAsbc4 by switching the mains voltage off/on. After switching off, remove the jumper (see figure "Circuit suggestion for the safety function test": (2)) to control the inputs.</p> <p>Acknowledge any elevator control system fault statuses or carry out a reset.</p>
4	<p>Requirements:</p> <ul style="list-style-type: none"> • Lift standstill (no movement signals) • No lift control system error status exists <p>Bridge the CM_O1 and CM_O2 signals (X-CM:1/2) on the elevator control system and carry out normal travel.</p>	<p>The lift control system must switch to an error status before or after the start of movement ("contactor monitoring", "brake control" or similar, dependent on the lift control system used).</p> <p>Subsequently, remove the jumper at CM_O1 and CM_O2 and acknowledge lift control system error.</p>
5	Carry out a normal run.	The run should be able to be carried out without error messages occurring

If the results of the individual steps do not correspond to the description:

- Check the wiring.
- Switch the system off and on again, and repeat the test.
- Replace the device (only after consultation with ZIEHL-ABEGG SE).

7.5 Brake test

In order to keep a brake open for the brake test in the case of a run being aborted, keep the inputs activated that are required to energize the appropriate output if the run is aborted.

- Run aborted and keeping brake open at brake circuit 1:
Operate TS and TA switches.
- Run aborted and keeping brake open at brake circuit 2:
Operate TS and TB switches.

(See fig. "Circuit suggestion for the safety function test" : switches TS, TA, TB)



Danger!

Safety chain bypass

Risk of death, severe injury and/or significant material damage.

- ▷ Remove the connection (2) to the auxiliary voltage (3) after carrying out the tests.

7.6 Emergency rescue / UPS operation

For emergency rescue, the brakes can be manually released by activating the S1A, S1B, S2 inputs (see fig. "Circuit suggestion for the safety function test": TS, TB, TA).

The voltage supply for the brake control at the X-SP connection and the control inputs at X-EN and X-SC can be provided via an uninterruptible power supply (UPS).



Information

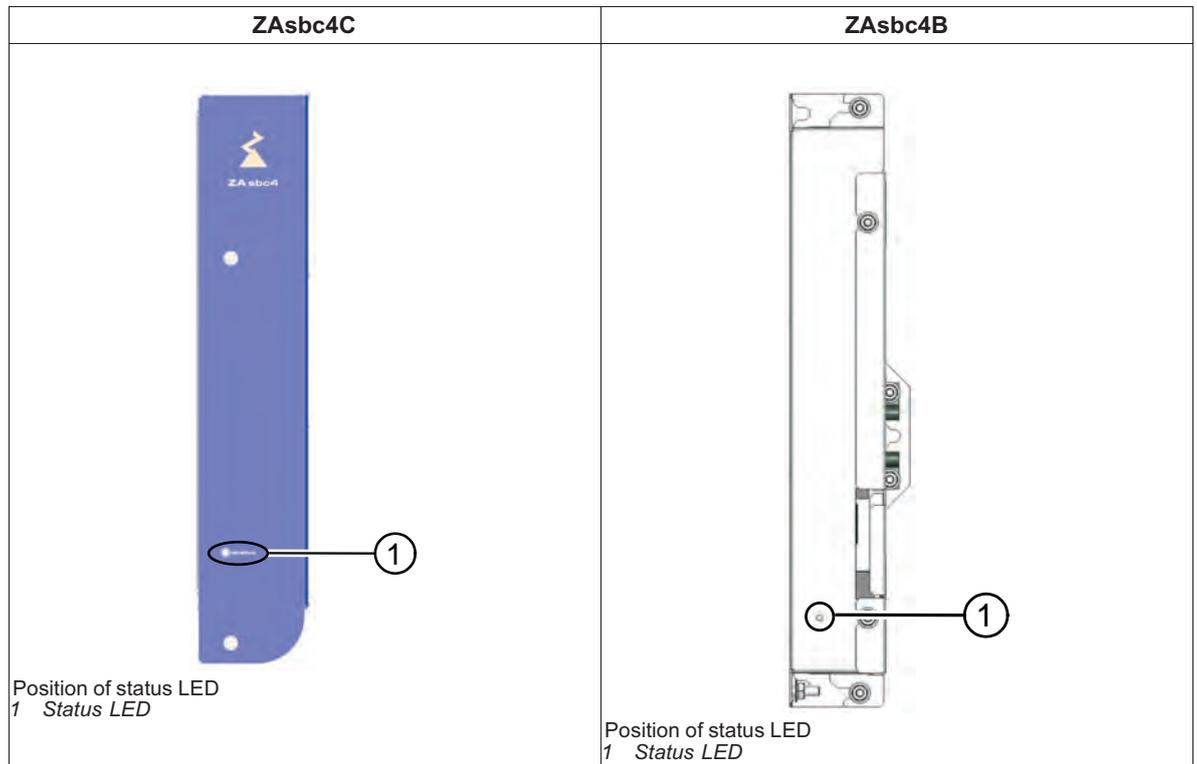
In order to ensure an error-free function during UPS operation, the power (in VA) of the UPS should be at least twice as high as the power (in W) of both brakes together.

If the brakes for manual release are to be supplied independently of the ZAsbc4, the connection for the brakes (X-BA) must be routed in an accessible position to enable the ZAsbc4 to be disconnected. The supply voltage must then be directly connected to the brakes.

8 Error diagnosis

8.1 LED

The status LED is available on the ZAsbc4 for error diagnosis.



LED colour	LED status	Operation condition
blue	flashing once per second	Test sequence after switching on
green	flashing once per second	Brake circuits at X-BA output closed
green	flashing five times per second	Transition from closed to energized brake circuits
green	On	Both brake circuits are energized.
white / red	white for one second, then short red flash pulses	Error status The error number is displayed by the number of red flash pulses (see chapter "Error diagnosis / Error list").
white / blue	white flash pulse, then short blue flash pulses	Error status Switch the device off and then back on. If it occurs again, change the device (after consultation of ZIEHL-ABEGG SE).

8.2 Error response and acknowledgement

If the ZAsbc4 detects an error, the brake circuits (outputs at X-BA) are locked and the following outputs are switched off (contacts are opened):

- SC_O (X-SC connection)
- CM_O (X-CM connection)
- BM_O (X-BM connection)

By integrating the SC_O output in the safety chain neutral conductor (see "Relay control for Safe Torque Off"), the frequency inverters ZAdyn4C and ZAdynpro are also disabled in the error status.

To acknowledge an error, the ZAsbc4 must be switched off and back on. Alternatively, the button on the X-OV connection can be used to reset the ZAsbc4 (see chapter "Electrical installation/test over-voltage protection/error acknowledgement (X-OV)").

8.3 Error list

Error No.	Error cause	Adjustment
1	Opening brake: control defective When opening the brakes, the S1A, S1B, S2 inputs have not all been set within 4 s.	<ul style="list-style-type: none"> • Check control
2	Brakes released too long After opening the brakes, the S1A, S1B, S2 inputs have been set for longer than 180 s	<ul style="list-style-type: none"> • Check control • Check duration of run
3	Operating temperature too high The permissible internal operating temperature was exceeded.	<ul style="list-style-type: none"> • Check the ambient temperature and ventilation • Check technical data of brakes
4	Overcurrent Maximum permissible output current was exceeded.	<ul style="list-style-type: none"> • Check technical data of brakes • Check the winding resistance of the connected brakes
5	Overload Maximum permissible continuous current was exceeded.	<ul style="list-style-type: none"> • Check technical data of brakes • Check the winding resistance of the connected brakes
6	Line failure The line voltage was briefly interrupted several times.	<ul style="list-style-type: none"> • Check supply voltage (230 V) at X-SP
7	Output voltage too low The output voltage measured at brake circuit 1 is too low.	<ul style="list-style-type: none"> • Check supply voltage (230 V) at X-SP
8	Output voltage too low The output voltage measured at brake circuit 2 is too low.	<ul style="list-style-type: none"> • Check supply voltage (230 V) at X-SP
9	Opening brake: control defective When opening the brakes, the S2 input has been set after input S1A or S1B.	<ul style="list-style-type: none"> • Check control
10-21	Hardware error Hardware error detected by the internal monitoring functions.	<ul style="list-style-type: none"> • Switch the device off and then back on • exchange the device if the error occurs again (after consultation with ZIEHL-ABEGG SE)

9 Enclosure

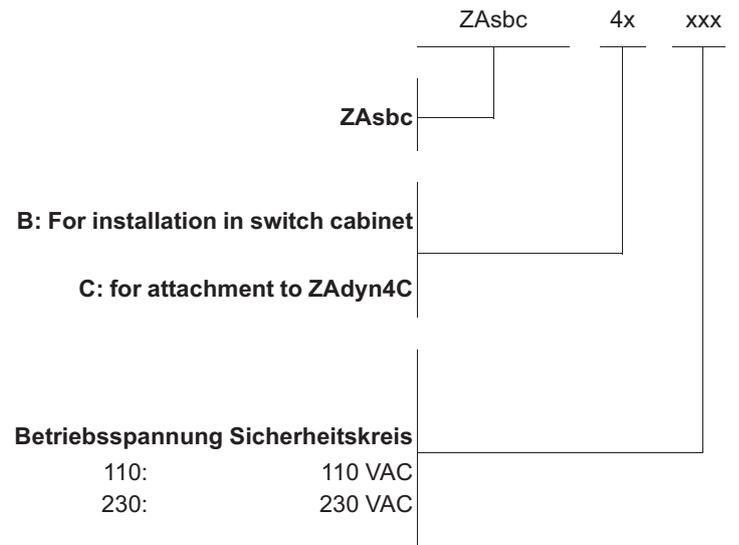
9.1 Technical data

		ZAsbc4	
		110	230
Electrical data			
Mains connection voltage U~ (X-SP)	[VAC]	1~ 230 V +10% / -15%	
Safety chain voltage (X-EN, X-SC)	[VAC]	1~ 110 (+10% / -15%)	1~ 230 (+10% / -15%)
Frequency	[Hz]	50 / 60	
Output voltage U _O	[VDC]	0.9 x U~	
Holding voltage U _H (after the overexcitation time)	[VDC]	0.45 x U~	
Rated output current	[A]	1.1 (for each brake connection)	
Rated power in the case of U _O	[W]	228 (for each brake connection)	
Rated power in the case of holding voltage U _H	[W]	114 (for each brake connection)	
Rated output current in the case of overexcitation for max. 2.0 sec.	[A]	2.2 (for each brake connection)	
Rated power in the case of overexcitation for 2.0 sec.	[W]	455 (for each brake connection)	
Rated input current	[A]	2.2	
Duty cycle	[%]	60 (in the case of 30 s medium cycle time)	
Max. heat dissipation	[W]	20	
Power losses during standstill	[W]	≤ 3	
Max. protection Mains connection (X-SP)	[A]	16 (Line protection switch, characteristics B)	
Inputs			
S1A, S1B, S2 (X-EN), STO_A, STO_B (X-SC)			
Maximum input voltage	[VAC]	110 + 10%	230 + 10%
Switching level "0" signal (inactive)	[VAC]	< 25	< 40
Switching level "1" signal (active)	[VAC]	> 93	> 195
Relay outputs			
CM_O (X-CM) BM_O (X-BM)			
Maximum switching voltage	[VDC]	30	
Maximum switching current	[A]	2	
Minimum switching capacity	[mW]	50 (min. 5 V / min. 10 mA)	
STO_A, STO_B (X-STO)			
Maximum switching voltage	[VDC]	30	
Maximum switching current	[mA]	26	
Minimum switching capacity	[mW]	50 (min. 5 V / min. 10 mA)	
SC_O (X-SC)			
Maximum switching voltage	[VAC]	250	
Maximum switching current	[A]	2	

Switching times			
(Max. response times in the case of an input signal change)			
Brake control (X-EN)			
Maximum switch-on time, S1A/S1B	[ms]	70	58
Maximum switch-off time, S1A/S1B	[ms]	81	71
Maximum switch-on time, S2	[ms]	49	38
Maximum switch-off time, S2	[ms]	28	23
Safe Torque Off control (X-SC)			
Maximum switch-on time, STO SC_A / SC_B relays	[ms]	59	58
Maximum switch-off time, STO SC_A / SC_B relays	[ms]	29	25
Connection terminal range			
X-SP, X-OV, X-EN, X-SC, X-CM, X-BA	[mm ²]	0.25...2.5 (core end sleeve with collar)	
X-BM, X-STO	[mm ²]	0.25...0.75 (core end sleeve with collar)	
Ambient conditions			
The user must ensure that the specified ambient conditions are observed.			
Protection rating		ZAsbc4C: IP20 ZAsbc4B: IP10 ¹⁾	
Ambient temperature for operation	[°C]	0 ... 55 from 40 °C reduction of the rated current/power levels by 0.6 % per 1 K of temperature increase	
Relative humidity	[%]	< 90 / condensation prohibited	
Max. installation height	[m über NN]	2000	
Storage and shipping temperature	[°C]	-20 to +60	
Degree of soiling (in acc. with DIN EN 61800-5-1)		2	
Physical data			
Weight	[kg]	ZAsbc4C: 2.0 ZAsbc4B: 1.5	
Dimensions h x w x d	[mm]	ZAsbc4C: 308 x 61 x 161 ZAsbc4B: 310 x 60 x 164	

¹⁾ Depending on the installation location, additional measures may required during installation to ensure protection against electric shock by direct contact.

9.2 Series



9.3 Part no.

ZAsbc4C 110	357292
ZAsbc4C 230	357293
ZAsbc4B 110	357290
ZAsbc4B 230	357291

9.4 EU declaration of conformity

- Translation -
 (english)

 A-KON16_12-GB
 2022/30 Index 004

Manufacturer: **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
74653 Künzelsau
Germany

The manufacturer is solely responsible for issuing this EU Declaration of Conformity.

Product description: Electronic brake control ZAsbc for lift drives

Safety circuit according to the Lift Directive 2014/33/EU, Annex III, No. 6 on the interruption of energy supply of electromechanical brakes according to EN 81-20, 5.9.2.2.2.3 a) 2).

Type: ZAsbc4B 110 ZAsbc4B 230
 ZAsbc4C 110 ZAsbc4C 230

Year of construction: from 2016

The above mentioned products of this declaration fulfil all relevant provisions of the following Directives of the Union:

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

The following harmonized standards have been applied:

EN 81-20:2020	Safety rules for the construction and installation of elevators - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger elevators
EN 81-50:2020	Safety rules for the construction and installation of lifts – Testing – Part 50: Construction rules, calculations and testing of lift components
EN 12015:2014	Electromagnetic compatibility- Productfamily standard for lifts, escalators and moving walks - Emission
EN 12016:2013	Electromagnetic compatibility- Productfamily standard for lifts, escalators and moving walks - Immunity
EN 61800-5-1:2007	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy

The EU type examination for safety components for lifts according to Annex IV Part A of the Lift Directive 2014/33/EU was carried out by TÜV SÜD [TÜV = German Association for Technical Inspection], with the EU type-examination certificate EU-ESD 046 attesting to this.

The assessment of design conformity will also be done by TÜV SÜD in the form of random testing according to Annex IX of the Lift Directive 2014/33/EU.

The identification number / address of the notified body is:

NB 0036
TÜV SÜD Industrie Service GmbH
Westendstraße 199
80686 München
Germany

This declaration relates exclusively to the product in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The authorised representative for the assembly of the technical file is:
Mr. Roland Hoppenstedt (see above for address).

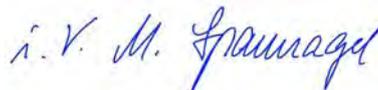
Künzelsau, 25.07.2022
(Location, date of issue)

ZIEHL-ABEGG SE
Roland Hoppenstedt
Technical Director Drive Technology
(name, function)

ZIEHL-ABEGG SE
Mathias Spannagel
Head of Department Technics Electronics
Drive Technology
(name, function)



(signature)



(signature)

9.5 UK Declaration of conformity

- Original -
 (english)

A-KON16_12-GB-UK
 2022/37 Index 001

Manufacturer **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
74653 Künzelsau
Germany

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product description Electronic brake control ZAsbc for lift drives

Safety circuit according to the the Lifts Regulations 2016, Schedule 3, No. 6 on the interruption of energy supply of electromechanical brakes according to EN 81-20, 5.9.2.2.2.3 a) 2).

Type ZAsbc4B 110 ZAsbc4B 230
 ZAsbc4C 110 ZAsbc4C 230

Serial number from 2016

The object of the declaration described above is in conformity with the relevant statutory requirements:

Lifts Regulations 2016 (SI 2016/1093)
Electrical Equipment (Safety) Regulations 2016 (SI 2016/1101)
Electromagnetic Compatibility Regulations 2016 (SI 2016/1091)

The following designated standards have been used:

EN 81-20:2020	Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger lifts
EN 81-50:2020	Safety rules for the construction and installation of lifts – Examinations and tests – Part 50: Design rules, calculations, examinations and tests of lift components
EN 12015:2014	Electromagnetic compatibility- Product family standard for lifts, escalators and moving walks - Emission
EN 12016:2013	Electromagnetic compatibility- Product family standard for lifts, escalators and moving walks - Immunity
EN 61800-5-1:2007	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy

The type examination for safety components for elevators according to Part A of Schedule 11 of the Lifts Regulations 2016 has been carried out by TUV SUD BABT and certified with the type examination certificate UK ESD 046.

The assessment of conformity to type is also carried out by TUV SUD BABT in the form of random checking according to Schedule 16 of the Lifts Regulations 2016.

The identification number / address of the approved body is:

TUV SUD BABT UNLIMITED
Octagon House
Concorde Way, Segensworth North
Fareham, Hampshire, PO15 5RL, UK
Identification No. 0168

This declaration relates exclusively to the product in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

The person authorised to compile the technical file is:
Mr. Mathias Spannagel (see above for address).

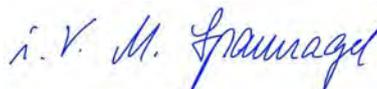
Künzelsau, 14.09.2022
(place and date of issue)

ZIEHL-ABEGG SE
Roland Hoppenstedt
Technical Director Drive Technology
(name, function)



(signature)

ZIEHL-ABEGG SE
Mathias Spannagel
Head of Department Technics Electronics
Drive Technology
(name, function)



(signature)

9.6 Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ CERTIFICADO ◆ CERTIFICAT



Industrie Service

EU-BAUMUSTERPRÜFBESCHEINIGUNG EU-TYPE EXAMINATION CERTIFICATE

gemäß Anhang IV, Absatz A der Richtlinie 2014/33/EU /
According to Annex IV, Part A of Directive 2014/33/EU

Bescheinigungs-Nr. / Certificate No.:	EU-ESD 046
Notifizierte Stelle / Notified Body:	TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 München - Germany Identification No. 0036
Bescheinigungsinhaber / Certificate Holder:	ZIEHL-ABEGG SE Heinz-Ziehl-Straße 74653 Künzelsau - Germany
Hersteller des Prüfmusters / Manufacturer of the Test Sample: <small>(Hersteller Serienfertigung - siehe Anlage / Manufacturer of Serial Production - see Enclosure)</small>	ZIEHL-ABEGG SE Heinz-Ziehl-Straße 74653 Künzelsau - Germany
Produkt / Product:	Elektrische Sicherheitseinrichtung – Sicherheitsschaltung mit elektronischen Bauelementen gem. EN 81-20, 5.11.2.3 Elektronische Bremsenansteuerung <i>Electric safety device – safety circuit with electronic components acc. to EN 81-20, 5.11.2.3</i> <i>Electronic brake control</i>
Typ / Type:	ZAsbc4B 110, ZAsbc4B 230, ZAsbc4C 110, ZAsbc4C 230
Richtlinie / Directive:	2014/33/EU
Prüfgrundlage / Reference Standards:	EN 81-20:2020 EN 81-50:2020
Prüfbericht / Test report:	EU-ESD 046 dated 2021-07-05
Ergebnis / Outcome:	Das Sicherheitsbauteil entspricht den wesentlichen Gesundheitsschutz- und Sicherheitsanforderungen der o.g. Richtlinie, sofern die Anforderungen des Anhangs dieser EU-Baumusterprüfbescheinigung eingehalten sind. <i>The product conforms to the essential health and safety requirements of the mentioned Directive if the requirements of the annex to this EU-type examination certificate are kept.</i>
Ausstellungsdatum / Date of Issue:	2021-07-23


Achim Janocha

Notifizierte Stelle LCC



TUV®

Anhang zur EU-Baumusterprüfbescheinigung
Annex to the EU-Type Examination Certificate

Nr. EU-ESD 046 vom 23.07.2021
No. EU-ESD 046 dated 2021-07-23



1 Anwendungsbereich / Scope of application

- 1.1 Die elektronische Bremsenansteuerungen Typ ZAsbc4 ist für den Einsatz in Personen- und Lastenaufzügen nach EN 81-20 zur Ansteuerung von zwei redundanten Bremskreisen konzipiert. Es ist eine Systemkomponente zur schützlosen Unterbrechung der Energiezufuhr von elektromechanischen Bremsen nach EN 81-20, 5.9.2.2.3 a) 2).
The electronic brake control type ZAsbc4 is designed for use in passenger and goods passenger lifts according to EN 81-20 for the control of two redundant brake circuits. It is a system component for the contactorless interruption of the energy supply of electromechanical brakes according to EN 81-20, 5.9.2.2.3 a) 2).

2 Bedingungen / Conditions

- 2.1 Bei Änderungen an der Sicherheitsschaltung mit elektronischen Bauelementen ist eine erneute EU-Baumusterprüfung durchzuführen.
In case of modifications to the safety-circuit with electronic components, a renewed EU-type examination has to be carried out.
- 2.2 Die Anweisungen in den Bedienungsanleitungen der Hersteller der eingesetzten Komponenten sind zu befolgen.
The instructions in the operating manuals of the component's manufacturers must be followed.
- 2.3 Die vom Hersteller der Bremsenansteuerung vorgegebenen Umgebungstemperaturen und die relativen Luftfeuchten sind zu beachten.
The ambient temperatures and relative humidity specified by the brake control manufacturer must be observed.
- 2.4 Die vom Hersteller der Bremsenansteuerung vorgegebenen Anforderungen zur Schutzart sind zu beachten.
The requirements specified by the manufacturer for the type of protection class must be observed.
- 2.5 Der Aufstellungsort der Bremsenansteuerung muss den Anforderungen des Verschmutzungsgrads II genügen.
The installation site of the brake control must meet the requirements of pollution degree II.
- 2.6 Die angeschlossenen Bremsen müssen für den jeweiligen Anwendungsbereich geeignet sein.
The connected brakes must be suitable for the respective area of application.
- 2.7 Alle angeschlossenen Komponenten (z.B. Aufzugssteuerung, Frequenzumrichter) muss für den jeweiligen Anwendungsbereich geeignet sein.
All connected components (e.g. elevator control, frequency converter) must be suitable for the respective area of application.
- 2.8 Die Vorgaben in der Betriebsanleitung für die Installation, die Inbetriebnahme sowie den Betrieb der Baugruppe ZAsbc4 sind zu beachten. Die Weiteren sind die relevanten nationalen Vorschriften und die EN 81-20 bei der Installation einzuhalten und es ist eine EMV-gerechte Verdrahtung zu gewährleisten.
The specifications in the operating manual for the installation, commissioning and operation of the ZAsbc4 module must be observed. Furthermore, the relevant national regulations and EN 81-20 must be observed during installation and EMC-compliant wiring must be ensured.
- 2.9 Die Verdrahtung der Leitungen an X-STO und X-BA sind entsprechend den Hinweisen der Betriebsanleitung kurzschlussicher auszuführen.
The wiring of the lines at X-STO and X-BA must be short-circuit-proof according to the instructions in the operating manual.
- 2.10 Durch die Wahl eines geeigneten Einbauorts muss sichergestellt sein, dass Umwelteinflüsse wie z.B. Wasser, leitfähige Stäube und Betauung keine negativen Auswirkungen haben.
The choice of a suitable installation site must ensure that environmental influences such as water, conductive dusts and condensation do not have any negative effects.

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

Seite 1 von 3

Anhang zur EU-Baumusterprüfbescheinigung
Annex to the EU-Type Examination Certificate

Nr. EU-ESD 046 vom 23.07.2021
No. EU-ESD 046 dated 2021-07-23



- 2.11 Der zu Verfügung gestellte Ausgang X-CM ist von der Aufzugssteuerung dynamisch zu überwachen. Bei Ausbleiben der Dynamik auf Basis der Erwartungshaltung (Relaiskontakt schließt nicht nach Fahrtende, Relaiskontakt öffnet nicht bei Fahrtbeginn oder öffnet während des Stillstands ohne Fahrbefehl) ist der Aufzug von der Aufzugssteuerung stillzusetzen.
The output X-CM provided is to be monitored dynamically by the elevator control system. In case of failure of dynamics on the basis of expectation (relay contact does not close after end of travel, relay contact does not open at start of travel or opens during standstill without travel command), the elevator is to be shut down by the elevator control.
- 2.12 Das ZAsbc4 ersetzt nicht die nach EN 81-20, 5.6.7.3 geforderte Überwachung der ordnungsgemäßen Funktion der Triebwerksbremse zum Schutz gegen unbeabsichtigte Bewegung des Fahrkorbs gem. EN 81-20, 5.6.7.
The ZAsbc4 does not replace the monitoring of the proper function of the drive brake required by EN 81-20, 5.6.7.3 to protect against unintentional movement of the car in accordance with EN 81-20, 5.6.7.
- 2.13 Die korrekte Funktion ist regelmäßig zu überprüfen. Im Rahmen der Erstinbetriebnahme und der wiederkehrenden Prüfungen des Aufzugs sind folgende Überprüfungen durchzuführen:
The correct function must be checked regularly. The following checks must be carried out as part of the initial commissioning and periodic inspections of the elevator:
- Prüfung der korrekten Installation,
Verification of correct installation,
 - Prüfung der Version (Typenschild),
Checking the version (label),
 - Prüfung der Sicherheitsfunktion und des Überspannungsschutzes gemäß Prüfanweisung in der Betriebsanleitung.
Check the safety function and the overvoltage protection according to the test instructions in the operating manual.
- 2.14 Für den Nachweis der Gesamtsteuerung (Applikation/Anlage) nach:
For the verification of the overall control (application/system) according to:
- EN 81-20:2020 (D)
 - EN 81-50:2020 (D)
- sind gesonderte Prüfungen und Nachweise erforderlich.
separate tests and verifications are required.
- 2.15 Die EU-Baumusterprüfbescheinigung darf nur zusammen mit dem dazugehörigen Anhang und der Anlage (Liste der Hersteller Serienfertigung) verwendet werden. Diese Anlage wird nach den Angaben des Bescheinigungsinhabers aktualisiert und mit neuem Stand herausgegeben.
The EU type-examination certificate may only be used in combination with the corresponding annex and enclosure (List of authorized manufacturer of the serial production). The enclosure will be updated immediately after any change by the certification holder.

3 Hinweise / Remarks

- 3.1 Diese EU-Baumusterprüfbescheinigung wurde in Anlehnung an bzw. auf Basis folgender Normen erstellt:

This EU type-Examination certificate has been issued on basis of the following standards:

- EN 81-20:2020 (D), Ziffer 5.9.2.2.2.3 a) 2)
- EN 81-20:2020 (D), Clause 5.9.2.2.2.3 a) 2)
- EN 81-50:2020 (D), Ziffer 5.6 und 5.15
- EN 81-50:2020 (D), Clause 5.6 and 5.15

Bei Änderungen bzw. Ergänzungen der oben genannten Normen bzw. bei Weiterentwicklung des Standes der Technik wird eine Überarbeitung der EU-Baumusterprüfbescheinigung notwendig.

In the event of changes or supplements to the above standards or in the case of enhancements to the state-of-the-art technology, a revision of the EU type-examination certificate may become necessary.

Anhang zur EU-Baumusterprüfbescheinigung
Annex to the EU-Type Examination Certificate

Nr. EU-ESD 046 vom 23.07.2021
No. EU-ESD 046 dated 2021-07-23



- 3.2 An der Bremsenansteuerung muss ein Schild mit den Angaben zur Identifikation des Bauteils mit Namen des Herstellers, EU-Baumusterprüfkennzeichen und Typenschild vorhanden sein
At the brake control, there shall be a label with the information necessary for the component's identification with the name of the manufacturer, EU type- examination and type identification plate.
- 3.3 Bei Änderungen oder Abweichungen von der hier dokumentierten Ausführung ist eine Überprüfung und gegebenenfalls die Anpassung der Ersatzmaßnahmen durch die Notifizierte Stelle erforderlich.
In case of changes or deviations from the version presented for the EU type-examination and documented here there has to be performed a review and (eventually with assessment of the adapted compensatory measures) by the Notified Body.
- 3.4 Die Prüfergebnisse beziehen sich nur auf das Sicherheitsbauteil „Sicherheitsschaltung mit elektronischen Bauelementen“ und die damit verbundene EU-Baumusterprüfung.
The test results refer only to the safety component "safety circuit with electronic components" and the associated EU type-examination.
- 3.5 Diese EU-Baumusterprüfbescheinigung beruht auf dem Stand der Technik, der durch die zurzeit gültigen harmonisierten Normen dokumentiert wird. Bei Änderungen bzw. Ergänzungen dieser Normen bzw. bei Weiterentwicklung des Standes der Technik kann eine Überarbeitung notwendig werden.
This EU type-examination is based on the state of the art which is documented by the relevant valid harmonized standards. In case of changes of the harmonized standards or an improvement of the state of the art, there may be performed a review (eventually with assessment of the adapted compensatory measures) by the Notified Body.

Anlage zur EU-Baumusterprüfbescheinigung
Enclosure to the EU Type-Examination Certificate
No. EU-ESD 046 of 2021-07-23



Industrie Service

Hersteller Serienfertigung – Produktionsstandorte (Stand: 2021-06-07):
Authorised Manufacturer of Serial Production – Production Sites (valid from: 2021-06-07)

Company	ZIEHL-ABEGG SE
Address	Heinz-Ziehl-Straße 74653 Künzelsau - Germany

- END OF DOCUMENT -



TYPE EXAMINATION CERTIFICATE

According to Lifts Regulations 2016, Schedule 11, Section A

Certificate No.:	UK-ESD 046
Approved Body:	TUV SUD B A B T UNLIMITED Octagon House Concorde Way, Segensworth North Fareham, Hampshire, PO15 5RL, UK Identification No. 0168
Certificate Holder:	ZIEHL-ABEGG SE Heinz-Ziehl-Straße 74653 Künzelsau - Germany
Manufacturer of the Test Sample: <small>(Manufacturer of Serial Production - see Enclosure)</small>	ZIEHL-ABEGG SE Heinz-Ziehl-Straße 74653 Künzelsau - Germany
Product:	Electric safety device – safety circuit with electronic components acc. to EN 81-20, 5.11.2.3 Electronic brake control
Type:	ZAsbc4B 110, ZAsbc4B 230, ZAsbc4C 110, ZAsbc4C 230
Regulation:	Lifts Regulations 2016
Reference Standards:	EN 81-20:2020 EN 81-50:2020
Test report:	UK-ESD 046 dated 2022-02-04
Outcome:	The product conforms to the essential health and safety requirements of the mentioned Regulation if the requirements of the annex to this type examination certificate are kept.
Date of Issue:	2022-02-25


Achim Janocha
TUV SUD B A B T UNLIMITED



**Annex to the Type Examination Certificate
No. UK-ESD 046 of 2022-02-25**



1 Scope of application

- 1.1 The electronic brake control type ZAsbc4 is designed for use in passenger and goods passenger lifts according to EN 81-20 for the control of two redundant brake circuits. It is a system component for the contactorless interruption of the energy supply of electromechanical brakes according to EN 81-20, 5.9.2.2.3 a) 2).

2 Conditions

- 2.1 In case of modifications to the safety-circuit with electronic components, a renewed Type examination has to be carried out.
- 2.2 The ambient temperatures and relative humidity specified by the brake control manufacturer must be observed.
- 2.4 The requirements specified by the manufacturer for the type of protection class must be observed.
- 2.5 The installation site of the brake control must meet the requirements of pollution degree II.
- 2.6 The connected brakes must be suitable for the respective area of application.
- 2.7 All connected components (e.g. elevator control, frequency converter) must be suitable for the respective area of application.
- 2.8 The specifications in the operating manual for the installation, commissioning and operation of the ZAsbc4 module must be observed. Furthermore, the relevant national regulations and EN 81-20 must be observed during installation and EMC-compliant wiring must be ensured.
- 2.9 The wiring of the lines at X-STO and X-BA must be short-circuit-proof according to the instructions in the operating manual.
- 2.10 The choice of a suitable installation site must ensure that environmental influences such as water, conductive dusts and condensation do not have any negative effects.
- 2.11 The output X-CM provided is to be monitored dynamically by the elevator control system. In case of failure of dynamics on the basis of expectation (relay contact does not close after end of travel, relay contact does not open at start of travel or opens during standstill without travel command), the elevator is to be shut down by the elevator control.
- 2.12 The ZAsbc4 does not replace the monitoring of the proper function of the drive brake required by EN 81-20, 5.6.7.3 to protect against unintentional movement of the car in accordance with EN 81-20, 5.6.7.
- 2.13 The correct function must be checked regularly. The following checks must be carried out as part of the initial commissioning and periodic inspections of the elevator:
- Verification of correct installation,
 - Checking the version (label),
 - Check the safety function and the overvoltage protection according to the test instructions in the operating manual.
- 2.14 For the verification of the overall control (application/system) according to:
- EN 81-20:2020 (D)
 - EN 81-20:2020 (D)
- separate tests and verifications are required.
- 2.15 The type examination certificate may only be used in combination with the corresponding annex and enclosure (List of authorized manufacturer of the serial production). The enclosure will be updated immediately after any change by the certification holder.

**Annex to the Type Examination Certificate
No. UK-ESD 046 of 2022-02-25**



3 Remarks

3.1 This type examination certificate has been issued in accordance with or on basis of the following standards:

- EN 81-20:2020 (D), Clause 5.9.2.2.2.3 a) 2)
- EN 81-50:2020 (D), Clause 5.6 and 5.15

A revision of this type examination certificate is inevitable in case of changes or additions of the above-mentioned standards or of changes of state of the art.

3.2 At the brake control, there shall be a label with the information necessary for the component's identification with the name of the manufacturer, type examination and type identification plate.

3.3 In case of changes or deviations from the version presented for the type examination and documented here there has to be performed a review and (eventually with assessment of the adapted compensatory measures) by the approved body.

3.4 The test results refer only to the safety component "safety circuit with electronic components" and the associated type examination.

3.5 This type examination is based on the state of the art which is documented by the relevant valid designated standards. In case of changes of the designated standards or an improvement of the state of the art, there may be performed a review (eventually with assessment of the adapted compensatory measures) by the approved body.

**Enclosure to the Type Examination Certificate
No. UK-ESD 046 of 2022-02-25**



Authorised Manufacturer of Serial Production – Production Sites (valid from: 2022-01-28):

Company	ZIEHL-ABEGG SE
Address	Heinz-Ziehl-Straße 74653 Künzelsau - Germany

- END OF DOCUMENT -

Based on: Application of Co. ZIEHL-ABEGG SE dated 2022-01-28

Page 1 of 1

Customer Service

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Headquarters

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