

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



EVAC 3C

Evacuation module

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 Validity

This instruction manual applies to:
evacuation module from the series:EVAC 3C
from software version: 3.08

1.2 Meaning of the operating instructions

These operating instructions help you to work safely on and with the frequency inverter EVAC 3C. They contain safety instructions that must be complied with as well as information that is required for failure-free operation of the frequency inverter.

The operating instructions are to be stored together with the frequency inverter. It must be ensured that all persons who have to perform activities on the frequency inverter can consult the operating instructions at any time. Instructions for use in accordance with the German Occupational Safety and Health Act and the German Work Equipment Ordinance must be provided in addition to the operating instructions.

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

1.3 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.

The operating instructions contain the following information:

- Device description
- Mechanical and electrical installation
- Operation and parameterising
- Commissioning
- Parameter list
- Diagnostic
- Enclosure

1.4 Exclusion of liability

It has been established that the content of these operating instructions is concurrent with the frequency inverter hardware and software described.

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.

1.5 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 EVAC 3C is a evacuation module developed exclusively for elevator machines. The device is allowed to be used solely in connection with the ZETADYN 3, the ZAdyn4C or the ZAdynpro frequency inverter according to the wiring suggestion. The device is not intended for any uses other than those listed here; that would be considered incorrect use.

Reading these operating instructions and complying with all contained instructions – especially the safety instructions contained therein – are considered part of intended use. Furthermore, carrying out all inspection work in the prescribed scheduled intervals is part of intended use.

The operator of the ZAdyn4C is liable for any personal harm or material damage arising from non-intended use! The manufacturer shall bear no liability for such damages.

2.3 Pictographs

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

	Danger! General hazardous area. Death or severe injury or significant property damage can occur if the corresponding precautions are not taken!
	Attention! Risk of moderate or minor injury if the corresponding precautions are not taken!
	Attention! Material damage is possible if the corresponding precautions are not taken!
	Danger! Danger by dangerous, electric voltage! Death or severe injury can occur if the corresponding precautions are not taken!
	Information Important information and advice for user

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, resonances, 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-STOP functions must be in working order
- The mechanical safety brakes must be installed and in working order
- Commissioning is only permitted with compliance to the EMC directive 39/336/EEC

2.7 Working on device / Hazards through residual voltage

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



Danger!

Through use of capacitors, danger of death exists even after switching off the device through directly touching the energized parts or due to parts that have become energized due to faults.

Wait **at least 3 minutes** before working on the device.

The safe isolation from the supply must be checked using a **two-pole** voltage detector.



Danger!

It is generally forbidden to carry out work on electrical live parts. Protection class of the device when open is IP 00! 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.

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 (cmp. chapter "Product overview" 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 is frequently carried out by external personnel who are often unfamiliar with the specific circumstances and the resulting hazards.

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 Application

The EVAC 3C is a evacuation module developed for elevator machines. It can be used for asynchronous and synchronous motors.

In connection with the control system and a battery-set you can do an evacuation-drive at an mains failure, with reduced speed, in motor-driven or generator-driven direction.

3.2 Functional description

The EVAC 3C monitors the three-phase supply mains for the ZETADYN/ZAdyn. The failure of one or several mains phases is detected by the EVAC 3C and the ZETADYN/ZAdyn is separated from the supply mains by a contactor. A battery supply voltage is time-delayed connected to the frequency inverter by a second contactor.

With a power inverter the battery voltage will be converted to a voltage of 1~ 230 VAC. Which is used to supply:

- elevator control system
- Cabin light
- Door drive
- motor brakes

The power failure is signalled to the elevator control and the frequency inverter via a floating contact. Both devices now carry out an evacuation trip based on the configuration.

3.2.1 Brake control

The evacuation module and the elevator control communicate with each other through inputs and outputs.

The elevator control must be capable of performing an evacuation trip in case of a failure in the supply voltage.

3.2.2 Battery set

A battery set with a voltage of 120...216 VDC is connected to the EVAC 3C.

The batteries are charged according to the IU charging method. At the start of charging, the batteries are charged with a constant current, controlled by the evacuation module (max. 2 A). When the charging end voltage has been reached, a switchover is made from current to voltage control and the battery continues to be charged with a constant voltage. During this, when the voltage in the battery increases, the charge current independently decreases. When the minimum charge current is reached, charging is ended.

3.2.3 Parameterization

Commissioning and configuring the EVAC 3C is performed with the text dialogue in the ZETAPAD operating terminal.

3.3 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 if necessary

3.4 Transport

- The device is packed ex factory to suit the transport method previously agreed.
- Always use the original packaging materials when transporting the device
- Avoid shocks and impacts to the device during the transport

3.4.1 Storage duration:

The storage duration depends particularly on the electrolytic capacitors because the oxide coating in the capacitor deteriorates.

Storage duration:

- 12 months at -20...+50 °C
- 24 months at -20...+45 °C
- 36 months at -20...+40°C

3.5 Disposal/Recycling

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



- ▷ Separate the materials by type and in an environmentally-friendly way.
- ▷ If necessary, commission a specialist company with the waste disposal.



WEEE marking

Disposal of waste electrical and electronic equipment (applicable in the European Union)

Equipment affected by this is indicated by the corresponding symbol.

You can find further information on this on our website.

4 Mechanical installation

4.1 General notes

The Evacuation module EVAC 3C is a closed compact device, which is developed for wall-mounting in a machine-room or in a lift shaft.



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:

Before installation

- Remove the device from the packing and check for any possible shipping damage
- Carry out installation only on a clean, level and stable foundation
- Assemble the device outside of the traffic area

During installation

- Mounting position: vertical, cable glands bottom
- Mount the device in a torsion free conditions
- Mount the device in a torsion free conditions
- Avoid that drilling chips, screws and other foreign bodies reach the interior of the device
- Maintain the stated minimum clearances to ensure unobstructed cooling- air feed as well as unobstructed outgoing air discharge (see fig.)

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

4.1.1 Switch cabinet installation

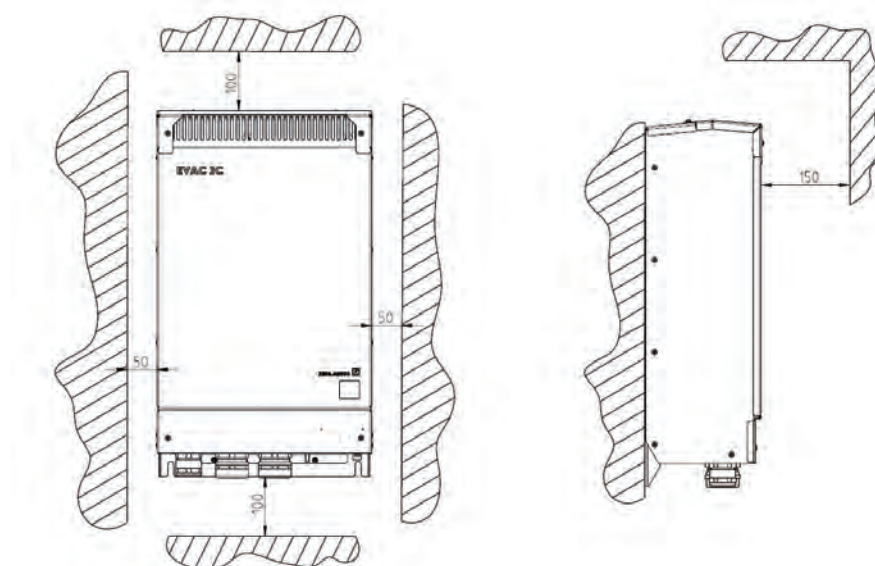
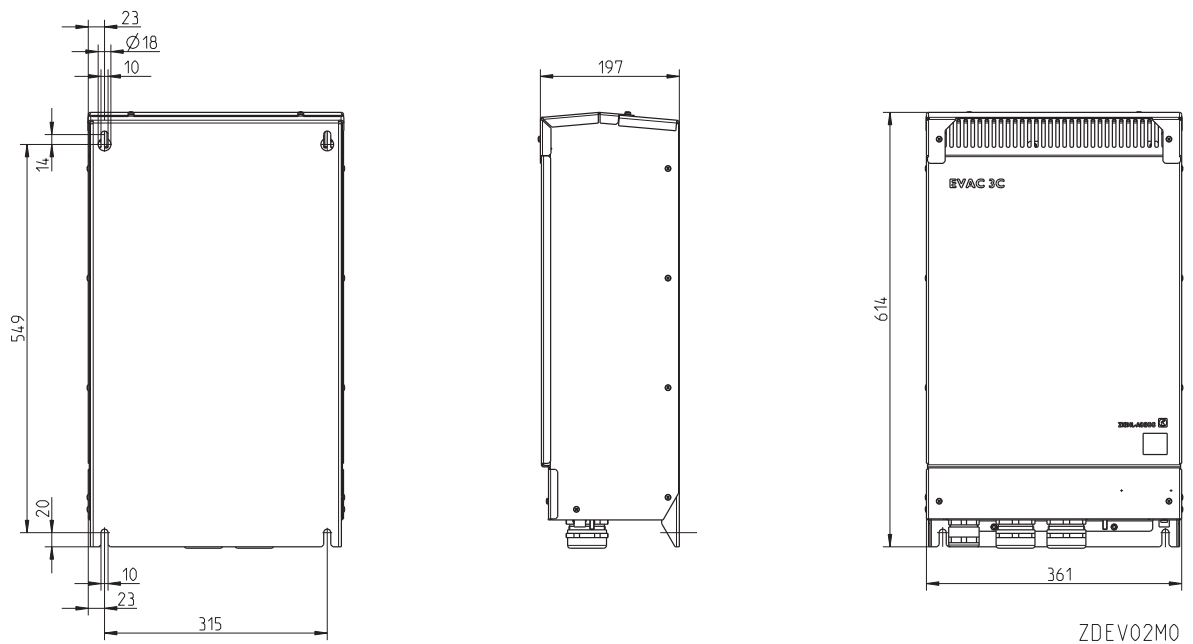
CAUTION!

Attention!

The device is designed for wall mounting in the machine room or lift shaft. An adequate cooling must be ensured for assembly in the switch cabinet. The power loss of the device (see chapter "Technical Data") must be taken into account here.

The specified installation position and the minimum distances must be observed when assembling in the switch cabinet.

4.2 Dimensions



5 Electrical installation



Danger!

It is forbidden to carry out work on electrically live parts.
Even after disconnection, the battery connection (terminals X1: Ub+ / X1: Ub-) are still under voltage.
Wait at least 3 minutes before working on the device



Danger!

Operating the EVAC 3C with the housing cover removed is prohibited because energized, exposed parts are present inside the device. Disregarding this regulation can lead to severe personal injury.

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.

5.1 Cables

5.1.1 Types of cable

Both rigid and flexible lines can be utilized. The use of wire-end sleeves is recommended for flexible lines.

The mains line does not have to be shielded.

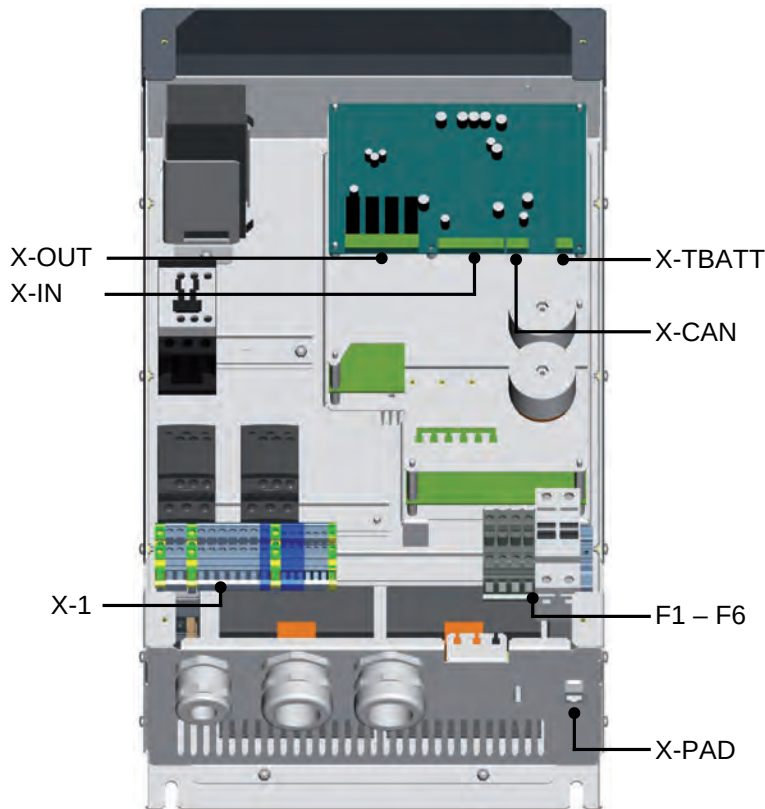
5.1.2 Line cross-sections:

The line cross-section must be specified dependent on the ambient conditions (e.g. temperature, wiring method) in accordance with DIN VDE 0100

5.1.2.1 Connections

The mains connection is implemented with screw terminals. To prevent damage to the terminals and to ensure good contact, the terminals must be tightened with the torque as stated in the technical data.

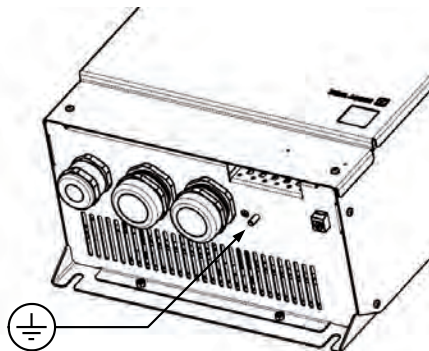
5.2 Terminal positions



Terminal positions
X-1 Mains / ZETADYN/ZAdyn / Battery / Control system
X8 DIG_OUT Digital inputs
X9 DIG_IN Digital outputs
X10 CAN CAN
X11 PAD ZETAPAD
X12 TBATT Battery temperature monitoring

5.3 Protective ground connection

The device has a defined leakage current of 3.5 mA according to DIN EN 60990. For this reason its connection has to be fix. According to EN50178 point 5.2.11 or 5.3.2.1 the earth conductor has to have a cross section of 10mm² or more. If an earth conductor with a cross section less than 10mm² is used, there has to be a second earth conductor. For the connection of the earth conductors there are threaded bolts M6 at the frequency inverter (see picture).



Earth conductor connection EVAC 3C032 - EVAC 3C074

5.4 Mains connection (X-1)



Danger!

Before connecting to mains you have to check if the technical Datas on the rating plate of the device are according to the required connecting values.

CAUTION!

Attention!

The neutral conductor "N" necessarily has to be connected to the evacuation module. If it won't be connected, internal components will be damaged. This will cause a damage of the complete evacuation module.

5.4.1 Network form

The mains filter and frequency converter are designed for use in an earthed supply system. Permissible network forms are:

- TN network
- TT network



Information

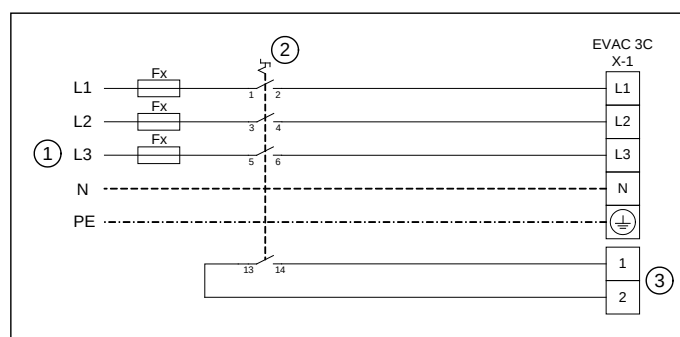
The mains filter and frequency converter are unsuitable for use in the IT network!

5.4.2 Mains fuse

The mains fuse is implemented in accordance with the line cross-section used, but it mustn't be smaller than recommended in "technical data".

5.4.3 Main switch

Integrate a 4-pole main switch in the mains line. This main switch disconnects the EVAC 3C from the mains as well as from the UPS.



EVAC 3C mains connection

Mains 3~ 400V/N/PE/50Hz

2 Main switch (not integrated to EVAC 3C)

3 Main switch monitoring

Fx Mains fuse

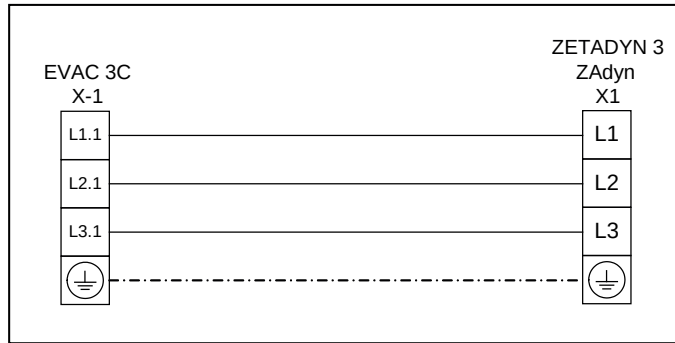


Information

With the main switch - contacts 13 and 14 the battery can be disconnected from the EVAC 3C.

5.5 Connection ZETADYN/ZAdyn (X-1)

Connect the frequency inverter in accordance with the specifications in the operating instructions.



Connection ZETADYN/ZAdyn

5.6 Battery connection (X-1)

To ensure constant battery charging is prevented, it must be connected directly to the EVAC 3.



Dangerous voltage

Even when the main switch is switched off, when the battery is connected the connection terminals X-Batt are live!

5.6.1 Fuse protection

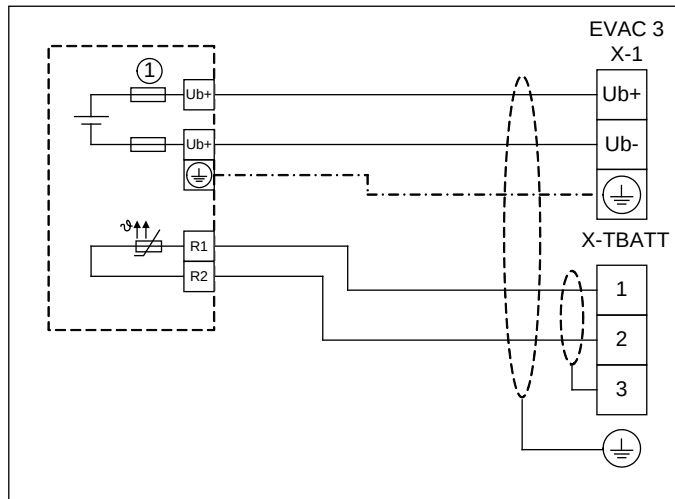
The fuse protection is implemented in accordance with the line cross-section used

5.6.2 Type of cable

The connection line to the evacuation module EVAC 3C has to be carried out shielded.

5.6.3 Cable length

Maximum cable length between EVAC 3 and battery: **10 m.**

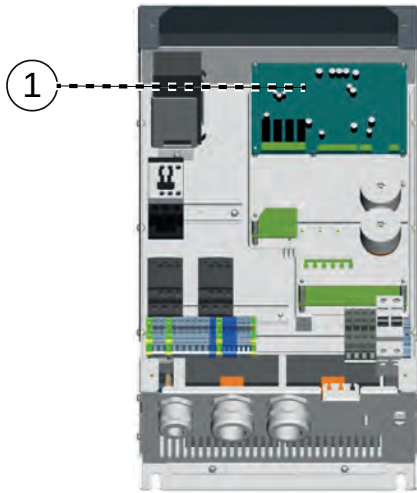


Connection of the battery

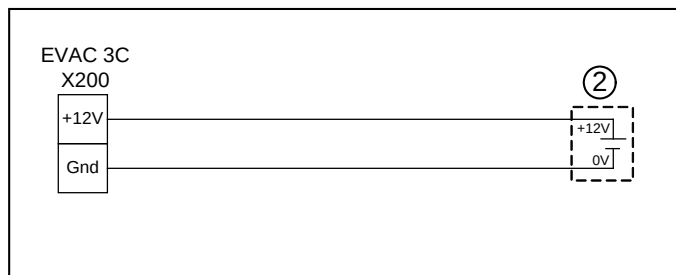
1 Fuse (select according to chapter **Accessories**)

5.7 Internal 12V-Battery (X-200)

In case of a voltage failure the internal 12V battery switches a contactor (K13) which supplies the EVAC 3C with the battery voltage of 120 to 216 V. To prevent a deep discharge, the internal 12V battery is not connected at delivery. Before start-up you have to plug in the battery at X-200 (+12V). When the elevator will be put out of service for a longer time, the plug of the internal battery has to be disconnected from X-200 (+12V) to prevent a deep discharge.



Position of the connection terminal X-200
1 X-200



Connection 12V-Battery
2 12V-Battery

5.8 Digital inputs (X-IN)

The connector X-IN provides 4 digital inputs. These inputs are pre-parametred, but you can program these inputs by changing the parameters.

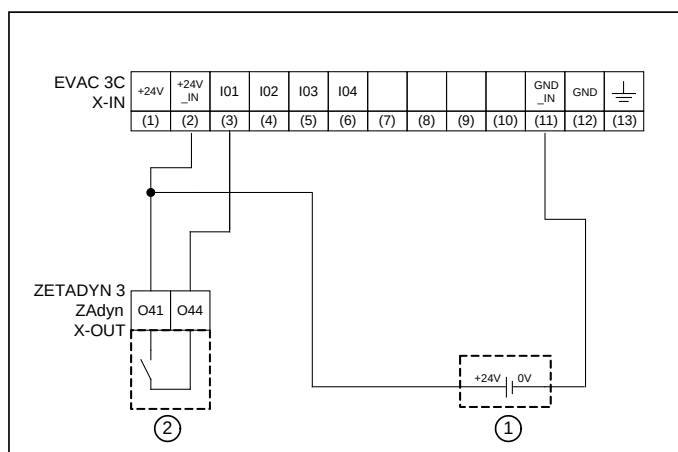
The inputs can be activated galvanically isolated by an external 24 V power supply in the control system or by the internal 24 V supply in the frequency inverter.



Information

Use shielded cables for the connections. The shielding must be connected to the terminal X-IN shielding connection.

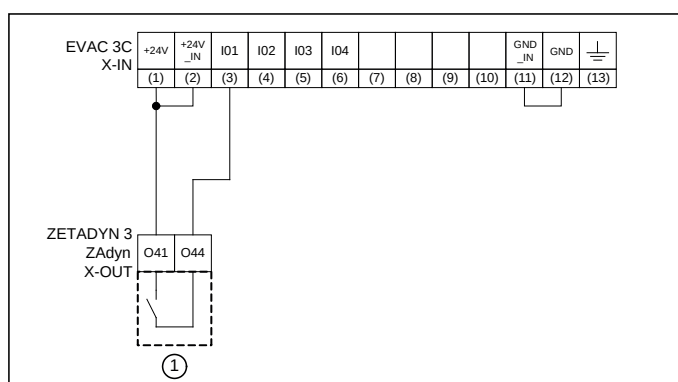
5.8.1 Connection with external power supply



Connection of digital input with external power supply

- 1 External power supply
2 Digital output adjusted to the function "ST-Fault" (Preferred to output "O4")
() terminal designation of connector

5.8.2 Connection with internal power supply



Connection of digital input with internal power supply

- 1 Digital output adjusted to the function "ST-Fault" (Preferred to output "O4")
() terminal designation of connector



Information

When using the internal power supply, you must make a bridge between both 24V terminals and both 0V terminals.

CAUTION!

Attention!

The internal 24V power supply is provided solely for the digital inputs. Switching consumer load with this voltage is prohibited!

5.8.3 Technical data

The digital inputs comply with the IEC61131-2 TYPE 2 industry standard.

Voltage range	+22 ... 26 VDC
Switching level low/high	<5 VDC / >11 VDC
Current consumption at 24 V	typ. 12.6 mA
Clamping range	max. 1,5 mm ²

5.8.4 Terminal assignment X-IN

Input I01 is defaulted fixed at "ST - fault."

The configuration of the inputs I02... I04 is configurable.

Implement configuration of the digital inputs in the **Control system** menu.

Configuration of the digital inputs:

	Inputs			
	I01	I02	I03	I04
Function	ST			

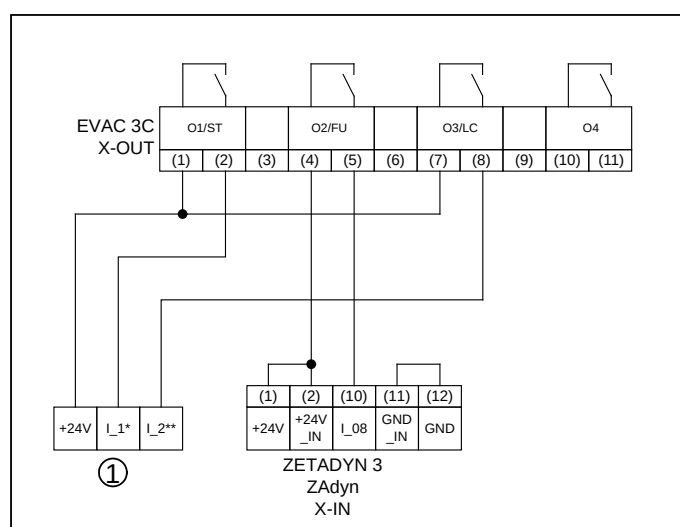
5.8.4.1 Description of the input functions

Function	Designation
ST	Fault indication ZETADYN/ZAdyn

5.9 Digital outputs (X-OUT)

The connection terminal X-OUT is equipped with 4 digital outputs as zero potential relay contacts with normally open function. The functions of the outputs are pre-parameterised but can be assigned other functions by changing the parameters.

5.9.1 Connection X-OUT



Connection of the digital outputs X-OUT

1 elevator control system

I_1* Digital Input "Fault EVAC 3C"

I_2** Digital input for "Voltage loss"

() terminal designation of connector

5.9.2 Technical data X-OUT

Short-circuit-proof	no*
Min. switching capacity	5 mA / 12 VDC
Max. switching capacity	2 A / 250 VAC
Cable cross section	max. 2,5 mm ²

CAUTION!

* In order to protect the relay contacts, switched inductivities must be provided with an external suppressor circuit (suppressor diode, RC element).

5.9.3 Terminal assignment X-OUT

The outputs O1 ... O3 have a fix preset.

Output O4 is configurable.

Implement configuration of the digital output O4 in the **Control system** menu.

Configuration of the digital outputs:

	Inputs			
	O11-O14	O21-O24	O31-O34	O41-O44
Function	ST	FU	LC	-

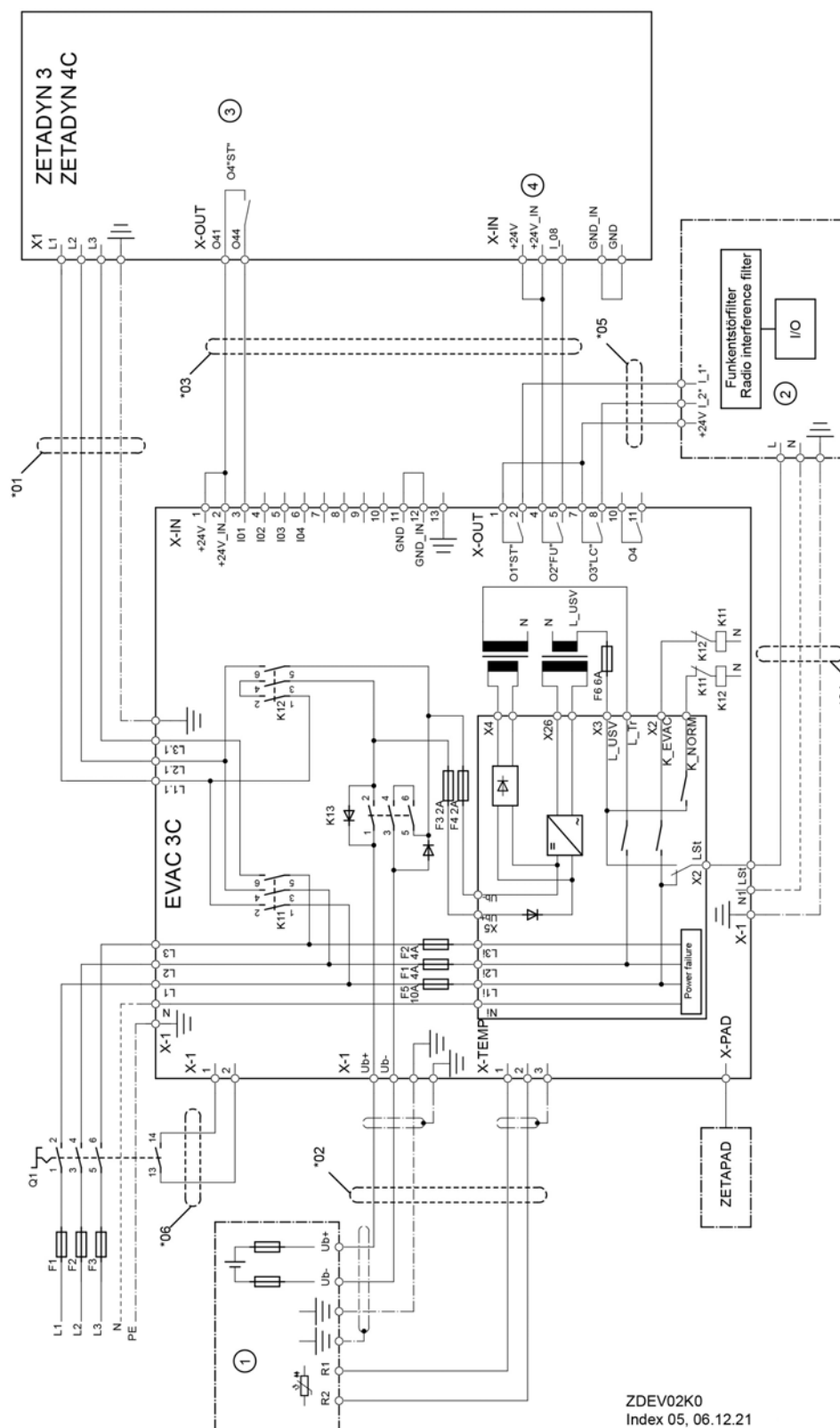
5.9.3.1 Description of the output functions

Function	Designation
ST	Fault indication EVAC 3C to the control system
FU	Indication voltage loss at ZETADYN/ZAdyn
LC	Indication voltage loss at control system

5.10 device internal fuses

Contactor	Type	Rated current	Function
F1	Fusible cut-out	T4A	Supply EVAC L2
F2	Fusible cut-out	T4A	Supply EVAC L3
F3	Fusible cut-out	M5A	Voltage converter / charging connection U_Batt +
F4	Fusible cut-out	M5A	Voltage converter / charging connection U_Batt -
F5	automatic circuit breaker	B10	Supply EVAC L1, supply of the control during normal operation
F6	automatic circuit breaker	B6	Supply of the control during evacuation mode

5.11 Connection suggestion



6 System components

6.1 Batteries

To be able to operate the frequency inverter during a power failure together with the EVAC 3, a set of batteries is required.

6.1.1 Battery selection

Battery type

Solely the use of lead-gel rechargeable battery sets are permitted because these do not liberate gas during charging or under load.

A set of batteries must always contain only batteries of identical types. It is prohibited to combine different types!



Attention!

Ventilation in accordance with the battery data sheets must be provided.

Battery voltage

The battery set must contain individual 12 V rechargeable batteries.

The level of battery voltage depends on the motor type and the desired travelling speed during the evacuation process.

Voltage range: 120...216 VDC

Calculating the required battery voltage:

$$U_{DC} = (2,45 \times R_{80^\circ} \times I_{Nenn}) + (1,81 \times \text{PSI} \times N_{EVAC})$$

R_{80°} Stator resistance at 80 ° (ask motor manufacturer)

I_{Rated} Motor rated current (ask motor manufacturer)

PSI Flux linkage (ask motor manufacturer)

N_{EVAC} Motor rotational speed during evacuation (calculate dependent on the desired evacuation speed)



Information

The calculation of the battery voltage U_{DC} is made with a precision of $\pm 10\%$!

Battery capacity

The battery capacity needed is determined by the rated current of the motor and the duration of the evacuation trip. The battery must be capable of making available 1.3 times the motor rated current for the duration of the trip and for the duration of the acceleration 2.6 times the motor rated current. The current peaks for the acceleration can be disregarded for most batteries as this current only flows for a very brief time.

6.2 Temperature sensors

To protect the batteries from excess temperature and for ideal charge voltage regulation it is recommended to equip the battery set with a temperature sensor.



Information

The temperature sensor is included in delivery with ZIEHL-ABEGG SE battery sets.

Technical data

Sensor type	NTC resistor
Resistance at 10 °C	20.00 kΩ
Resistance at 25 °C	10.00 kΩ
Resistance at 50 °C	3.496 kΩ
Ambient temperature	-10...+125 °C

6.3 Fuses

The fuse protection for the line between the battery and ZETADYN/ZAdyn is to be configured in accordance with DIN VDE 0298-4 to match the following criteria:

- Rated current for motor x 1.3
- Type of cable
- Cable length
- Ambient temperature
- Type of routing

The table displays by way of an example, the choice of fuses under the following conditions:

Type of cable: NYM
 Ambient temperature: max. 30 °C
 Type of routing: B2
 Cable lengths: max. 5 m

Frequency inverter	Motor current [A]	Conductor cross section [mm²]	Rated fuse current [A gL]
ZETADYN/ZAdyn 011	11	1,5	16 A
ZETADYN/ZAdyn 013	13	2,5	20 A
ZETADYN/ZAdyn 017	17	4,0	25 A
ZETADYN/ZAdyn 023	23	6,0	35 A
ZETADYN/ZAdyn 032	32	10,0	50 A
ZETADYN/ZAdyn 040	40	16,0	63 A
ZETADYN/ZAdyn 050	50	16,0	80 A
ZETADYN/ZAdyn 062	62	25,0	80 A
ZETADYN/ZAdyn 074	74	35,0	100 A

Fuse type

Full range fuses for the wiring and line protection **Type gL**

6.4 Ziehl-Abegg battery sets

Ziehl-Abegg provides various battery sets comprising the batteries, fuses, temperature sensors and housings for wall mounting.

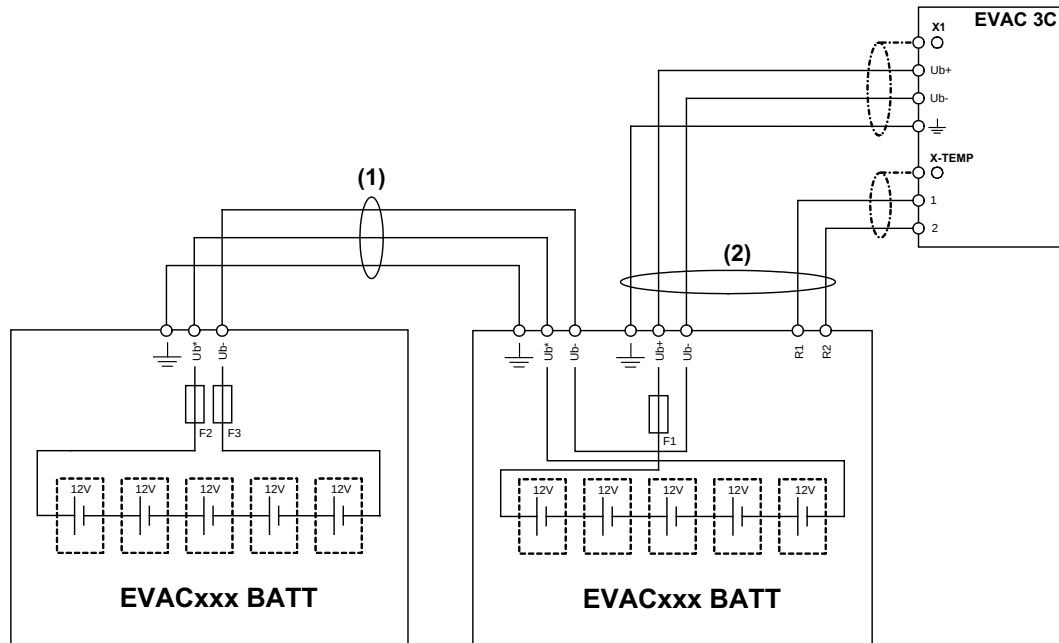
6.4.1 Connection of the Ziehl-Abegg battery sets



Dangerous voltage

Even when the main switch is switched off, when the battery is connected the connection terminals X-Batt are live!

Connection of the Ziehl-Abegg battery sets 120V / 24Ah

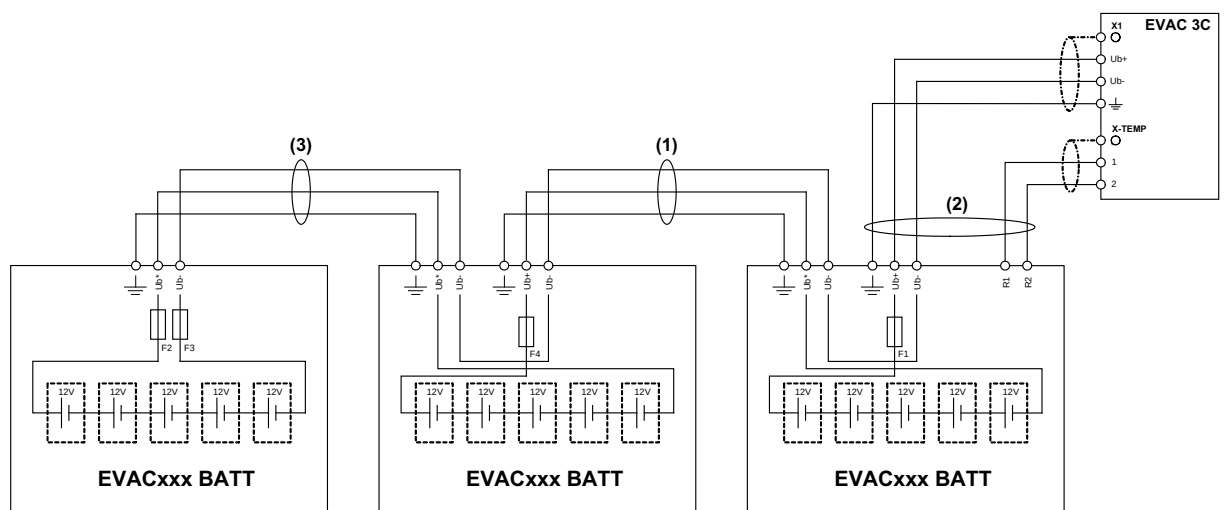


The individual battery packs are wired in series.

(1) Cable contained in the battery set

(2) Cable contained in the cable set (see (2) in chapter 6.6 Cable Sets)

Connection of the Ziehl-Abegg battery sets 180V / 24Ah



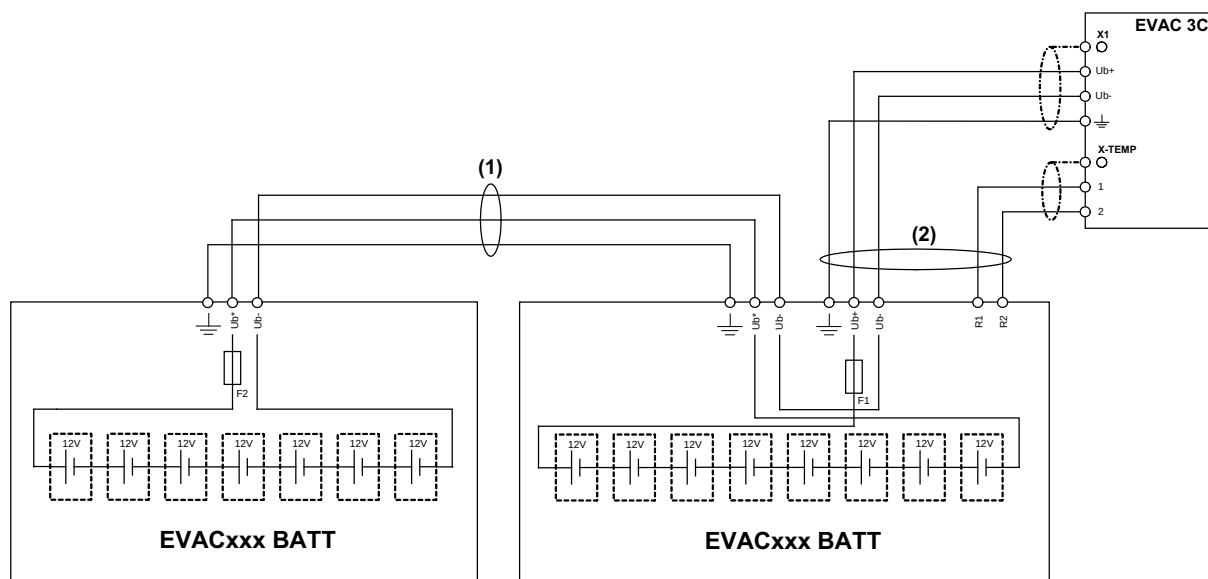
The individual battery packs are wired in series.

(1) Cable contained in the battery set

(2) Cable contained in the cable set (see (2) in chapter 6.6 Cable Sets)

(3) Cable contained in the battery set

Connection of the Ziehl-Abegg battery set 180V / 7.2Ah



The individual battery packs are wired in series.

(1) Cable contained in the battery set

(2) Cable contained in the cable set (see (2) in chapter 6.6 Cable Sets)

6.4.2 Technical data Ziehl-Abegg battery sets

Technical data Ziehl-Abegg battery sets 120V

		EVAC BATT 032-120-24	EVAC BATT 050-120-24	EVAC BATT 074-120-24
Electrical data				
Rated voltage	[VDC]	120 (2 x 60)		
Rated capacity	[Ah]	24		
Rated current	[A]	32	50	74
Integrated fuse	[A gL]	50	63	100
Ambient conditions				
Ambient temperature for operation	[°C]	0 ... +40 (0 ... +20*)		
Ambient conditions storage	[°C]	-15 ... +40 (-15 ... +30*)		
rel. humidity	[%]	20 ... 85		
Max. installation height	[m]	2500		
Protection rating		IP20		
Physical conditions				
Battery type		Panasonic LC-X1224-APG		
Number of individual rechargeable batteries	[Stk.]	2 x 5 (je Batteriesatz)		
Dimensions w x h x d	[mm]	1180 x 194 x 130 (per battery set)		
Weight	[kg]	2 x 50,0	2 x 50,0	2 x 50,0
max. line cross-section	[mm ²]	10,0	10,0	25,0

* For best service life

Technical data Ziehl-Abegg battery sets 180V

		EVAC0 BATT 032-180-24	EVAC BATT 050-180-24	EVAC BATT 074-180-24
Electrical data				
Rated voltage	[VDC]	180 (3 x 60)		
Rated capacity	[Ah]	24		
Rated current	[A]	32	50	74
Integrated fuse	[A gL]	50	63	100
Ambient conditions				
Ambient temperature for operation	[°C]	0 ... +40 (0 ... +20*)		
Ambient conditions storage	[°C]	-15 ... +40 (-15 ... +30*)		
rel. humidity	[%]	20 ... 85		
Max. installation height	[m]	2500		
Protection rating		IP20		
Physical conditions				
Battery type		Panasonic LC-X1224-APG		
Number of individual rechargeable batteries	[Stk.]	3 x 5 (je Batteriesatz)		
Dimensions w x h x d	[mm]	1180 x 194 x 130 (per battery set)		
Weight	[kg]	3 x 50,0	3 x 50,0	3 x 50,0
max. line cross-section	[mm ²]	10,0	10,0	25,0

* For best service life

Technical data Ziehl-Abegg battery set 180V - 7.2Ah

		EVAC BATT 032-180-7.2
Electrical data		
Rated voltage	[VDC]	180 (1 x 84, 1 x 96)
Rated capacity	[Ah]	7.2
Rated current	[A]	32
Integrated fuse	[A gL]	50
Ambient conditions		
Ambient temperature for operation	[°C]	0 ... +40 (0 ... +20*)
Ambient conditions storage	[°C]	-15 ... +40 (-15 ... +30*)
rel. humidity	[%]	20 ... 85
Max. installation height	[m]	2500
Protection rating		IP20
Physical conditions		
Battery type		Panasonic LC-P127R2P1
Number of individual rechargeable batteries	[Stk.]	(1 x 7, 1 x 8)
Dimensions w x h x d	[mm]	1180 x 194 x 130 (per battery set)
Weight	[kg]	1 x 50,0
max. line cross-section	[mm ²]	10,0

* For best service life

6.4.3 Mechanical installation and safety information

6.4.3.1 Safety instructions

Maintenance of the battery set

The batteries are maintenance-free and closed; maintenance of the battery is not possible. The housing of the battery set may not be dismantled. Only the plastic cover may be pushed back to connect the cable or remove the fuse. Only the manufacturer is allowed to change the battery or safety precautions must be taken in accordance with EN 50272-2.



Information

Maintenance of the battery is restricted to a function check and visual inspection for damage.

Connection

The fuses contained in the battery set may only be inserted after connecting the evacuation device. Then the plastic cover of the housing must be fixed. The main switch may only be switched on afterwards.

Battery room

Battery rooms must be dry, clean, well aired, cool if possible and free from vibrations. Great temperature fluctuations should not occur.

A closed, electrical operating site is not urgently prescribed. Accommodation in a separate operation area or battery compartment within an electrical operating site is recommended, however.

This area should not be accessible to unauthorised persons.

Ventilation

Ventilation is prescribed for safety reasons. Hereby, any evolving gas mixture must be diluted to the extent that it loses its explosiveness.

Since the voltage and current are monitored during charging and the batteries are closed, practically no explosive gases are produced. A ventilation cross-section of 1.4 cm² per cell and 1A charging current must be provided.

Natural ventilation must be provided preferably. If only technical ventilation is possible (e.g. by a fan in a switch cabinet), the function of the ventilation must be monitored.

The room may not be closed; an opening of approx. 200 cm² is sufficient.

In addition, no naked flames or heaters with a surface temperature greater than 200°C are allowed in the vicinity of the battery.

Operating equipment in which igniting sparks may occur must be 500 mm away from the cell openings (e.g. switches, sockets, contactors, lamps etc.). When working with welding gear, grinding machines or similar equipment, the evacuation device must be switched off.

6.4.3.2 Mechanical installation



Information

Comply with the regulations in EN 50272 "Safety requirements for secondary batteries and battery installations" when installing the battery sets.



Information

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:

Before installation

- Remove the device from the packing and check for any possible shipping damage
- Carry out installation only on a clean, level and stable foundation
- Assemble the device outside of the traffic area

During installation

- Mount the device in a torsion free conditions
- Mount the device in a torsion free conditions
- Avoid that drilling chips, screws and other foreign bodies reach the interior of the device
- Comply with the stated minimum clearances

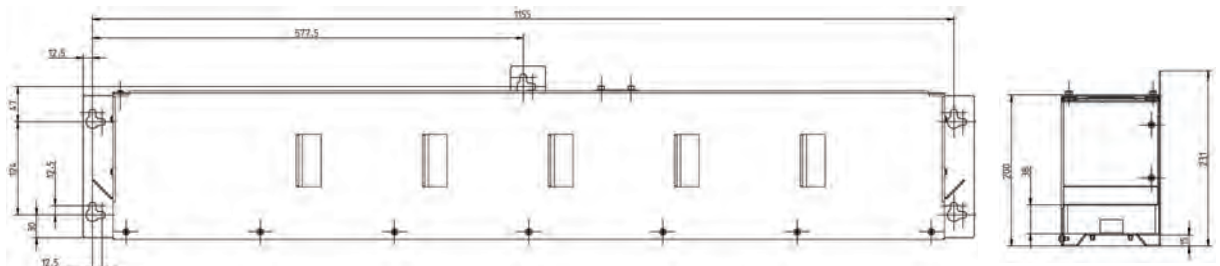
Ambient conditions

- Prevent humidity
- Avoid aggressive and conductive materials in the environment

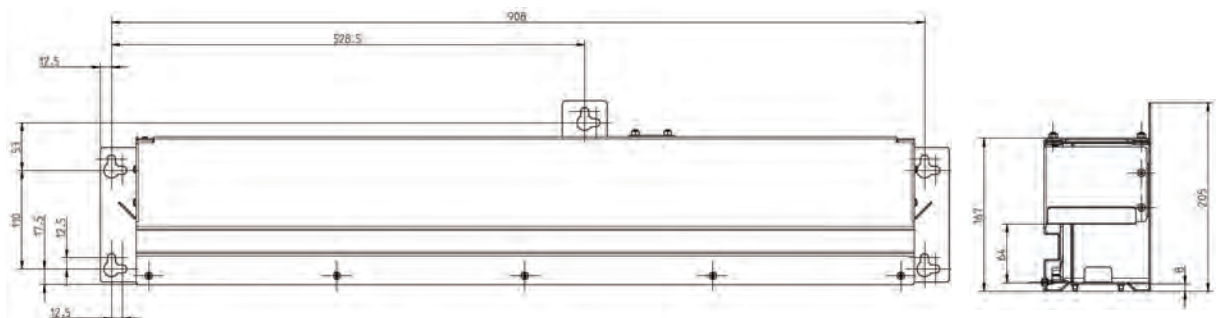
Installation position

- Horizontal and vertical installation position
- The cable outlet must face down in vertical installation.
- A clearance of 500 mm must be maintained to operating equipment in which ignitable sparks could occur (e.g., switches, contactors, receptacles, ...)
- Comply with the stated minimum clearances

6.4.4 Dimensions



Dimensions battery set 120V / 180V - 24Ah



Dimensions battery set 180V - 7.2Ah

6.4.5 Function test of the batteries

The internal 12V battery and the externally connected battery set can be subjected to a function test to ensure the evacuation operation.

6.4.5.1 Cyclic battery test

Started by the EVAC 3C

The internal 12V battery is checked under load at the intervals parameterised for "CHK_INT". If the battery voltage drops below the value parameterised for **Battery / LIM_INT** (factory setting = 10.0 V), the error 338 "Batt. int Limit" is entered and the relay pulls up at output O338.



Information

- The external battery set (voltage supply for the control) is not checked under load.
- The time between the tests corresponds to the days count set for "CHK_INT".
- A possible line failure is detected and the corresponding evacuation run performed also during a function test.

Parameterization

```
Battery
↳ ACC_CHK Auto
  ↳ Auto
Battery check
```

Switch on automatic battery check
Menu **Battery** ◀ Parameter **ACC_CHK**



```
Battery
↳ CHK_INT 3 d
  ↳ 5
Range Accu-check
```

Enter battery check range (in days)
Menu **Battery** ◀ Parameter **CHK_INT**



```
Control system
↳ f_O4 Off
  ↳ Warning
Function of O4
```

Parameterise output O4 to "Warning"
Menu **Control** ◀ Parameter **f_O4**

6.4.5.2 Automatic battery test - simulation of an evacuation run

Started by the control

This test is started by the control with a 24 V signal at input I03.

Then the EVAC 3C switches the system to evacuation mode, the control can now perform a test run.

The relay at output O4 pulls up when either the voltage of the internal 12V battery drops below the value of the parameter **Battery / LIM_INT** (factory setting = 10.0 V) or the voltage of the external battery set drops below the value of the parameter **Battery / LIM_EXT** (factory setting = 100.0 V). Then either error 337 "Batt. ext Limit" or 338 "Batt. int Limit" is entered into the error memory.



Information

Both the internal 12V battery and the external battery set is checked under load.
The test time and drive cycle must be initiated by the control.



Information

The signal at input I03 may not be interrupted when switching over. Because the supply to the control will be interrupted briefly when switching over to evacuation mode.

Either the control electronics are buffered or an NC contact of the control is used which always remains pulled up in normal operation.

Parameterization

Battery
↳ ACC_CHK Off
 ↳ Off
Battery check

Switch off battery check
Menu **Battery** ◀ Parameter **ACC_CHK**



Control
↳ f_I03 Off
 ↳ Test Phase
Function I03

Parameterise I03 to "Test Phase"
Menu **Control** ◀ Parameter **f_I03**



Control system
↳ f_O4 Off
 ↳ Warning
Function of O4

Parameterise output O4 to "Warning"
Menu **Control** ◀ Parameter **f_O4**

6.5 Operating terminal ZETAPAD

The operation and parametration of the unit takes place by the terminal ZETAPAD. The ZETAPAD is independent from the Evacuation module. It can be used for operating and parametrating of the Evacuation module type EVAC 3C and for the frequency inverters from the ZETADYN/ZAdyn Series. When using longer connection lines, remote control of the device is feasible.

6.5.1 Mounting / Fastening

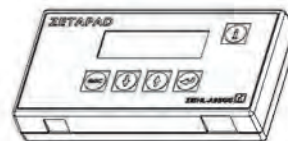
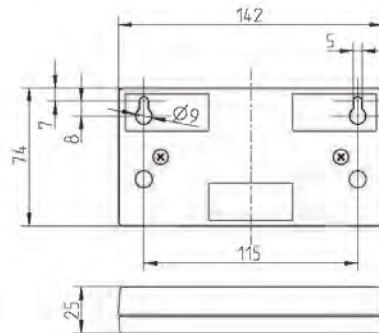
You can fasten the ZETAPAD to all magnetic surfaces using the magnetic strips on the rear.

Two keyhole notches are available on the rear for mounting the ZETAPAD to non-magnetic surfaces (see Fig.).

6.5.2 Dimensions



ZETAPAD



ZETAPAD dimensions

6.5.3 Connection

The connection has to be effected on the RJ45-female plug of the operating terminal and the EVAC 3C (X-PAD).

Connection

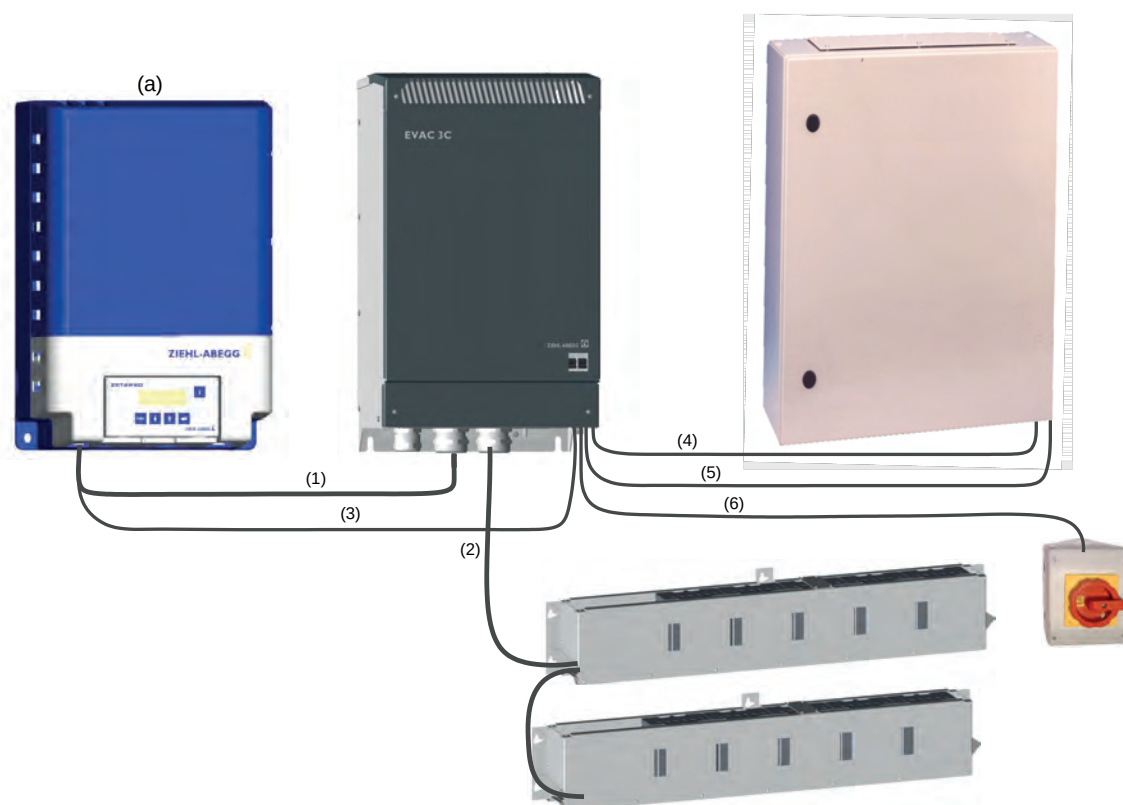
CAT5 network cable, 8-core
both sides RJ-45 plug, 8-pole
maximum line length: 50 m
line cross-section $\geq$ AWG26



ZETAPAD connection

6.6 Cable assembly

The following cable assemblies are at the disposal of the EVAC 3C. For details, see chapter 5.10 (Connection suggestion).



- (1) Connecting cable EVAC 3C - ZETADYN/ZAdyn (power supply)
- (2) Connecting cable EVAC 3C - Batterie
- (3) Connecting cable EVAC 3C - ZETADYN/ZAdyn (Control cables)
- (4) Connecting cable EVAC 3C - Control system (power supply)
- (5) Connecting cable EVAC 3C - Control system (Control cables)
- (6) Connection cable EVAC 3C - Control system (Main switch monitoring)

(a) alternatively ZETADYN 3C

6.6.1 Description of the cable assembly

Part no.	Designation	Type / Length	Number in the circuit proposal
357239	Cable assembly EVAC 3C032 - ZETADYN/ZAdyn / Batterie	EVAC 3C032 / 3m	1-3
357240	Cable assembly EVAC 3C050 - ZETADYN/ZAdyn / Batterie	EVAC 3C050 / 3m	1-3
357241	Cable assembly EVAC 3C074 - ZETADYN/ZAdyn / Batterie	EVAC 3C074 / 3m	1-3
357247	Cable assembly EVAC 3C - Control system	EVAC 3C / 3m	4-6
357248	Cable assembly EVAC 3C - Control system	EVAC 3C / 10m	4-6

6.6.2 Connection and positioning

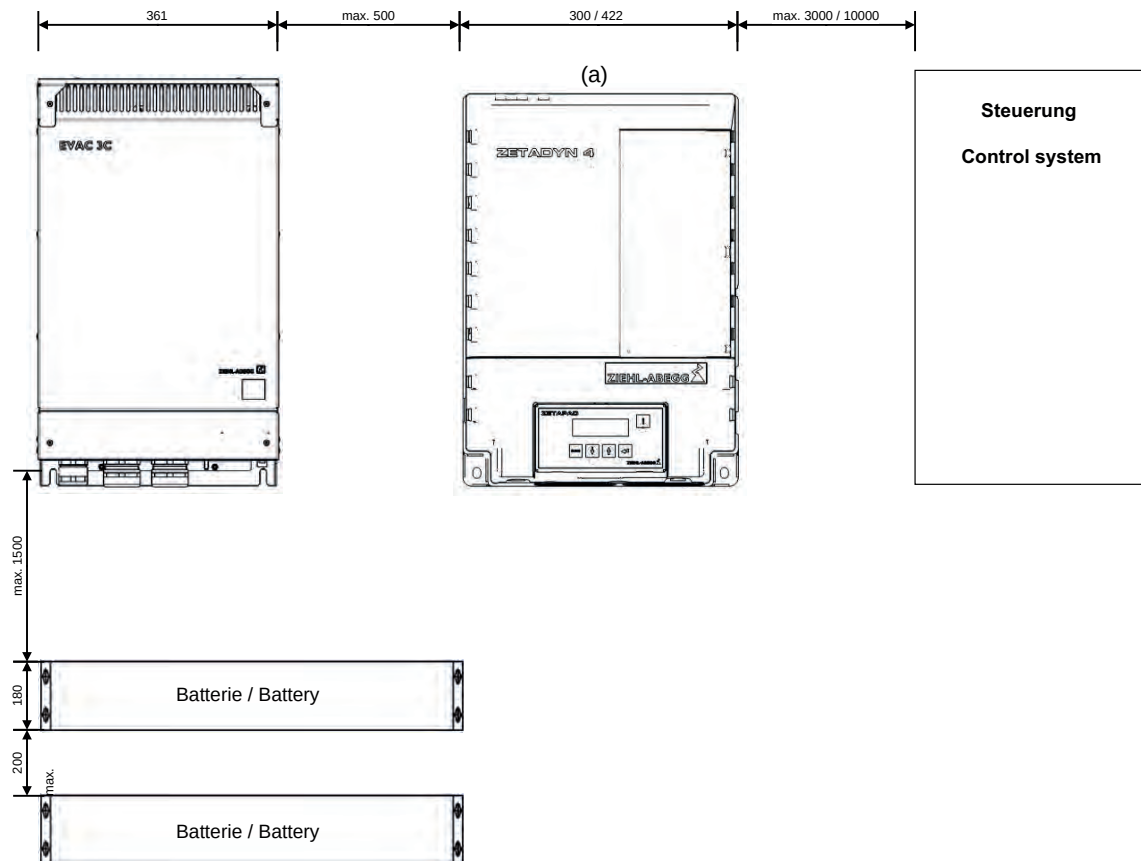
The evacuation module has to be connected like it is shown in the connection suggestion (chapter "Electrical installation/Connection suggestion").

The control cables have to be passed separate from the motor- or brake chopper cable. All controll-inputs and controll-outputs of the evacuation module are built for relay- or programmable controls and come with plug or screw connections.

When connecting the evacuation module, a comply with the **specifications** (Enclosure) should be taken.

The allocation of the ready-made wires should be as flexible as possible. The allocation might be something like the one shown in figure ZDPO01J01 and ZDPO01J02. If the allocation is different from this one it is necessary to check if the conductor lengths are sufficient.

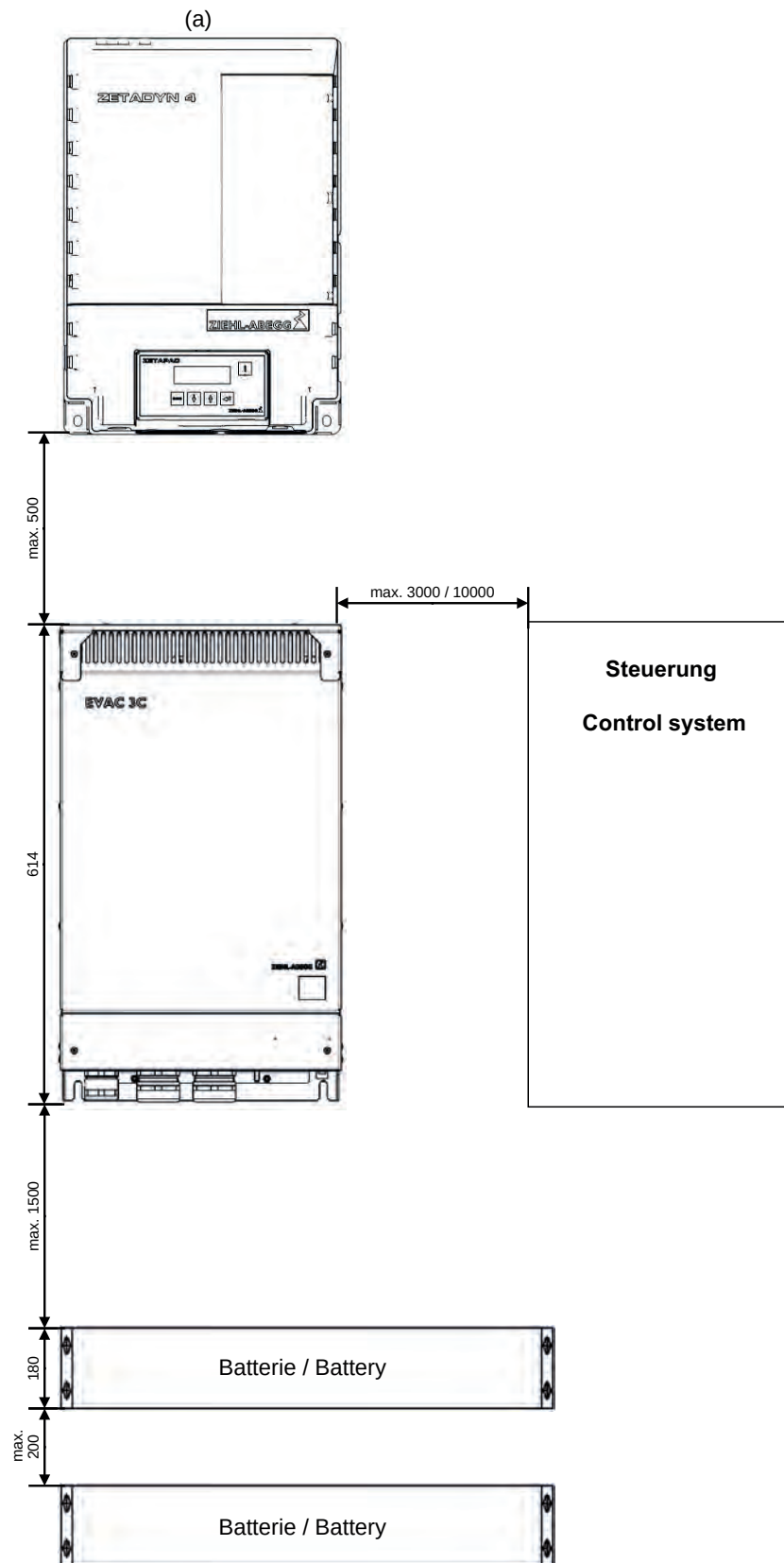
6.6.2.1 Positioning suggestion 1



Positioning suggestion 1

(a) alternatively ZETADYN 3C

6.6.2.2 Positioning suggestion 2



Positioning suggestion 2

(a) alternatively ZETADYN 3C

7 Operation and parameterising

7.1 Operating terminal ZETAPAD

The operation and configuration of the unit is made using the ZETAPAD operating terminal. With the ZETAPAD operating terminal, the following operations can be performed on the evacuation module:

- The parameters needed for commissioning can be set
- Simple measurement and control functions can be carried out
- Service conditions can be recorded

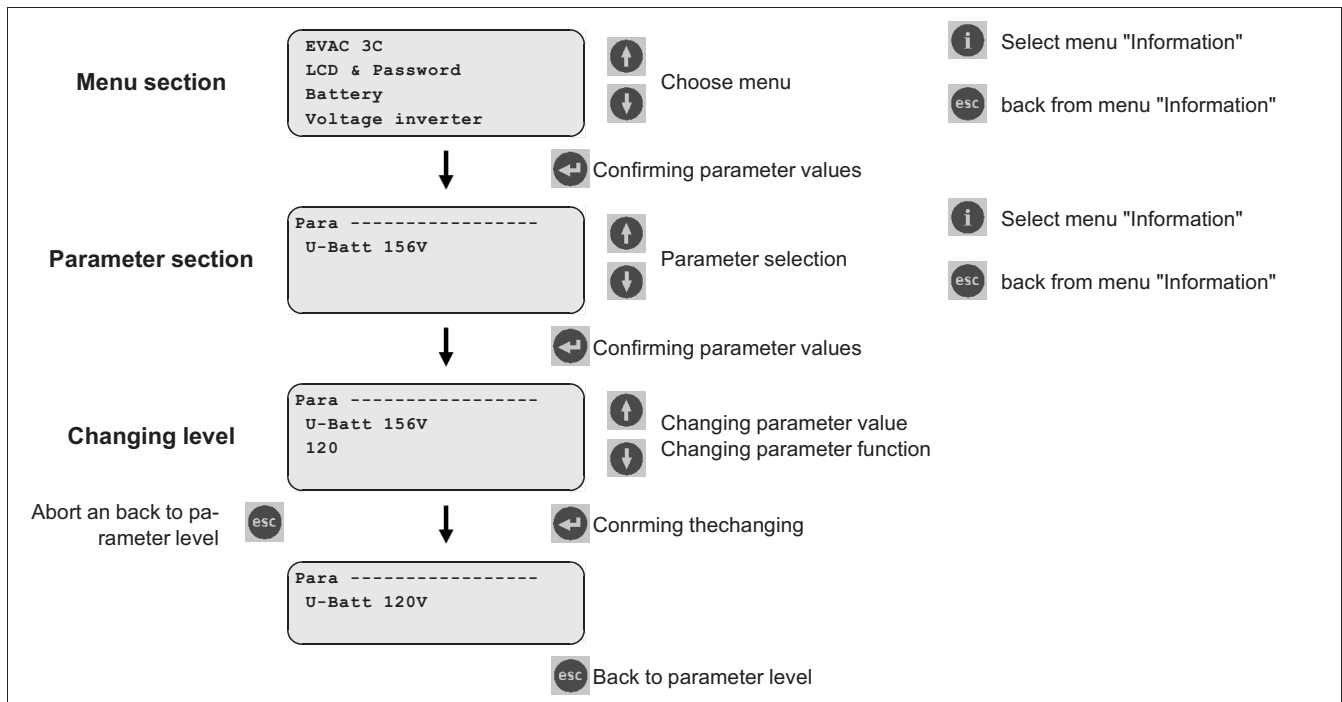
7.2 Control key functions



ZETAPAD user interface

	• Back to parameter selection • Negation of yes-no queries
	• Confirming parameter values • Confirming parameter values • Affirmation of yes-no queries
	• Parameter selection • Increasing parameter values
	• Parameter selection • Reducing parameter values
	• Display of current operational states

7.3 Menu and parameter navigation



8 Commissioning



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:

- Only suitably qualified personnel are to be entrusted with the commissioning of the device. They must comply with the safety instructions.
- Before starting work, make sure all tools and external parts have been removed from the machine.
- Activate all safeguards and the emergency-off switches 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 the chapter "General Safety Instructions".



Information

This commissioning assumes that the factory presets on the digital inputs and outputs have not been changed!

Requirements for error-free commissioning:

- Mains line is connected
- Battery connected
- Contactors for switching from mains to battery operation connected
- Controller and monitoring inputs are connected

8.1 Switch on the evacuation module

When the mains voltage is applied, the evacuation module switches on after a self test. The display shows the following:

```
EVAC 3C
LCD & Password
Battery
Voltage inverter
```

8.2 Configure evacuation module EVAC 3C

```
Battery
↳ U_ACCU 120      V
↳      180
Non. voltage battery
```

Parametrize the nominal voltage of the battery
Menu **Battery** ◀ Parameter **U_Batt**



```
Battery
↳ Cap_B 24      Ah
↳      22
Nom. cap. batterie
```

Parametrize the nominal capacity of the battery
Menu **Battery** ◀ Parameter **Cap-Batt**



```
Battery
↳ T_SENS On
↳      Off
Temperature sensor
```

Activate / deactivate temperature monitoring of the battery
Menu **Battery** ◀ Parameter **Temp.-Sens**

8.3 Configure ZETADYN/ZAdyn frequency inverter

```
Control system
↳ f_I08 12: PARA2
    ↳ 12: PARA2
Function of input I08
```

In **Control system** menu, configure the input on the frequency inverter (preferably I08) connected to Output O2 (O21-O24) to the function **PARA2**

```
Control system
↳ f_O4 Fault
    ↳ Fault
Function of output O4
```

In **Control system** menu, configure the frequency inverter output connected with Input I1 (preferably O4) to the function **Malfunction**

```
Parameter set 2
↳ F_PARA EVAC 3C
    ↳ EVAC 3C
Function parameter set 2
```

Menu **Parameter set 2** ◀ Parameter **F_PAR2=EVAC 3**

```
Parameter set 2
↳ U_ACCU 120V
    ↳ 180
Accu nominal voltage
```

Menu **Parameter set 2** ◀ Parameter **U_ACCU** (Enter nominal voltage of the battery)

```
Parameter set 2
↳ COPY Off
    ↳ PARA1*2
Copy parameter
```

Menu **Parameter set 2** ◀ Parameter **COPY=Para1->2**

The parameters needed for the evacuation trip are calculated and saved in Parameter set 2.

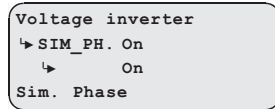
8.4 Carry out a functional test



Attention!

Before the functioning of the evacuation module is tested, you must ensure flawless normal operation of the installation.

The function test is performed by simulating a power failure. The simulation can be activated in this way:

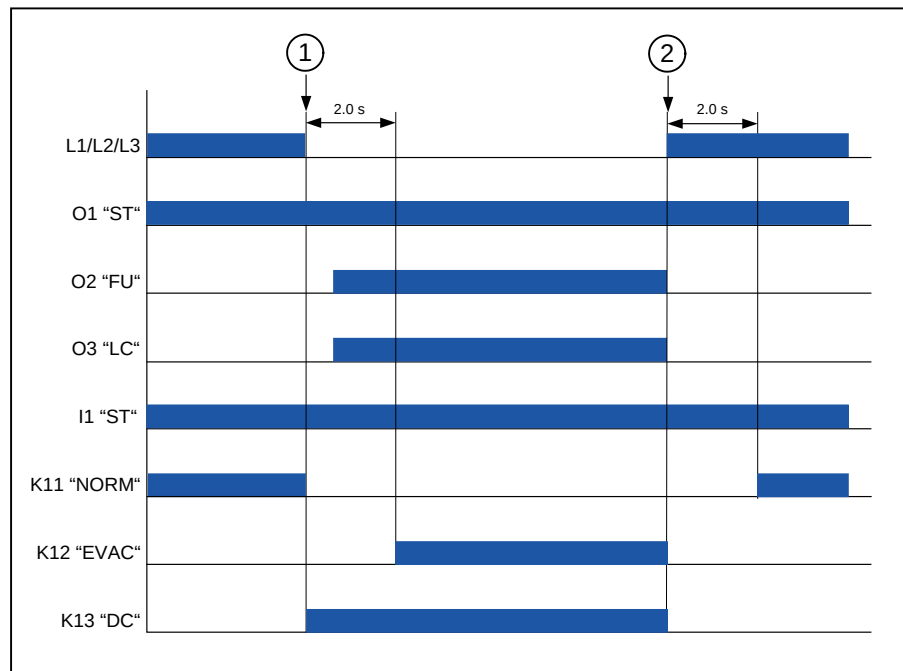


Menu **Voltage converter**
Parameter **Sim-Phase=On**

After starting the simulation of the power failure, the following actions are carried out:

- Output O2 reports a voltage drop on the frequency inverter
- Output O3 reports voltage drop on the elevator controller
- Mains contactor K11 will be deactivated
- Battery contactor K12 will be activated
- DC contactor "K13" is delayed activated (2s)
- The frequency inverter resets and loads Parameter set 2, needed for the evacuation mode
- The controller starts the evacuation trip

States on the inputs and outputs if a phase fails



- 1 Supply voltage defective
 2 Supply voltage correct
 L1/L2/L3 Phase
 O1 "ST" EVAC 3C is connected to the control system
 O2 "FU" Voltage loss at the ZETADYN/ZAdyn
 O3 "LC" Voltage loss at the control system
 I1 "ST" Fault indication ZETADYN/ZAdyn
 K11 "NORM" Network contactor K11
 K12 "EVAC" Battery contactor K12
 K13 "DC" DC contactor K13

9 Parameter list



Information

Not all of the described parameters are freely accessible. The indication of the parameters depends on the chosen functions and the adjustments of the frequency inverter.

The individual parameters are subdivided into various menus based on their functions.

9.1 LCD & Password menu

Selection the desired operating language. Protects the frequency inverter from access by third parties by assigning a password. Modifying the parameters is only possible after entering the password. A password is not factory set.

Parameter	Designation	Value range	Factory setting
LCD	Select the desired operating language. The operating languages German and English are integrated into the device as standard.	Deutsch English	Deutsch
PASSWD	Enter password.	0 ... 9999 0 = no password	0
PW_NEW	New password A number between 0 and 9999 can be used as a password	0 ... 9999	0
PW_COD	Displays the password in coded form. If you lose the password, please contact the manufacturer.	Cannot be set	21689
PW_CLR	Deleting the password The password has to be entered correctly before ON: Delete password Off: no function	On Off	Off

9.2 Menu Battery

Parameter	Designation	Value range	Factory setting
U_ACCU	Nominal voltage battery	120 ... 216 V	120 V
CAP_B	Nominal capacity of the battery	7 ... 48 Ah	24 Ah
ACC_CHK	Battery check Off: Battery check not active Start: Start manual Auto: Check in range "CHK_INT"	Off Start Auto	Aus
CHK_INT	Range of automatic battery check in days	3 ... 30 d	10 d
LIM_EXT	Testing voltage ext. battery	50 ... 200 V *	100V
LIM_INT	Testing voltage int. battery	5.0 ... 15.0 V	10V
UB_MIN	Discharging-end voltage of the battery	70 ... 180 V *	70 V
UB_DEF	Battery is defective or missing To fall below the limit, means that the battery is defective or missing	50 ... 150 V *	50 V
T_SENS	Temperature monitoring battery On: Temperature monitoring is active Off: no function	On Off	On
TB_MAX	Maximum temperature of the battery	30 ... 50 °C	40°C
CHARGE	Battery charger	On Off	On
TE_KO	Temperature coefficient battery	On Off	On

* Value is adapted automatically when changing the rated battery voltage

9.3 Menu Voltage converter

Parameter	Designation	Value range	Factory setting
U_OUT	Output voltage EVAC_3C	Cannot be set	230 V
f_OUT	Output frequency EVAC_3C	nicht einstellbar	50 Hz
UI_MIN	Minimal output voltage of the power inverter	150 ... 210 V	190 V
SIM_PH	Functional test ON: A failure of a mains phase or the operating voltage is simulated and the elevator machine is switched over to battery operation. Off: no function	Ein / Aus	Aus

9.4 Control system menu

Parameter	Designation	Value range	Factory setting
EVA_ON	EVAC_3C activate / deactivate On: EVAC_3C is active Off: EVAC_3C has no function, a phase failure won't be detected	On Off	Ein
f_I01	Function input I01 The function of the input I01 has a fixed preset for ST - Fault indication ZETADYN/ZAdyn	Cannot be set	ST
f_I02	Function input I02 Off: Input is deactivated Standby FU: switches off the Frequency inverter with the input I02 This function should only be used to switch off over night or at the weekend. Switching off after every run would exert too great a load on the frequency inverter!	Aus Standby FU	Aus
f_I03	Function input I03 Off: Input is deactivated Test Phase: simulates a line failure with the input I03	Aus Test Phase	Aus
f_I04	Function input I04 Off: Input is deactivated End Sig: Travel end - Signal The emergency supply to the control and the frequency inverter can be ended at the end of the evaluation run by removing the signal to save the battery. The frequency inverter and the control are supplied by the line again when it is recovered.	Aus End Sig	Aus
f_O1	Function Output O1 The function of the output O1 has a fixed preset for ST - Fault indication EVAC 3C to the control system	Cannot be set	ST
f_O2	Function Output O2 The function of the output O2 has a fixed preset for FU - Indication voltage loss at ZETADYN/ZAdyn	Cannot be set	FU
f_O3	Function Output O3 The function of the output O3 has a fixed preset for LC - Indication voltage loss at control system	Cannot be set	LC
f_O4	Function Output O4 Off: Output is deactivated Evac: Output evacuation Warning: Output Info LIM_INT / LIM_EXT dropped below, in automatic function test or evacuation mode	Aus Evac Attention!	Evac
EVA_TI	Maximum evacuation time	10 ... 60 min	20 min
EVA_WT	Wait time until evacuation	1 ... 20 sec	1 s

9.5 Monitoring menu

Configuring the monitoring functions

Parameter	Designation	Value range	Factory setting
MASK1	Error mask 1...3	Error no.	0
MASK2	Suppression of up to three error messages through configuring the corresponding error number in an error mask		0
MASK3			0

9.6 S0:Statistic menu

All statistical data can be called up in the **Statistic** menu. The data remain saved even after the frequency inverter has been switched off. Reading out the error list and deleting the error memory are described in the "Error diagnosis" chapter.

Parameter	Designation	Value range	Factory setting
ST_LST	Error list	Cannot be set	-
ST_H	Operating hours	Cannot be set	0
ST_DRV	Travel number	Cannot be set	0
ST_CLR	Delete error memory	Ein / Aus	Aus
RESET	Deletes parameters, counter levels and error lists, preassigning parameters with standard values.		0

9.7 S2:Memory Card menu

Contains the parameters for the various functions in association with a memory card.

Parameter	Designation	Value range	Factory setting
SAV_ALL	Saves data to memory card with serial number allocation Off: no function ON: Data will be saved to the memory card. After copying, the parameter jumps back to "Off"	On Off	Off
UPDATE	Starts the software update from a memory card. The most current software will always be loaded from the memory card. Enter 27: Software will be loaded from the /3BF/Update/Software-version directory into the inverter	27	0

9.8 S3:MMC-Recorder CARD menu

With the assistance of the memory card it is possible to make measurements on the frequency inverter without notbook. the measurement will be configured in the MMC-Recorder menu.

Parameter	Designation	Value range	Factory setting
REC_MOD	Recorder settings Off: Recorder is switched off ON: Recorder ist active, the operating curves are saved to the memory card Stop&Shot: Manual stopping and saving of a measurement which was started with MOD=ON". After saving the data on the memory card, REC_MOD will set to "Off". ZETAMON: Mode for using ZETAMON software The settings for REC_MOD can only be changed with REC_CFG=0	Off On Stop&Shot ZETAMON	ZETAMON
REC_CFG	Configuration 0 = freely adjustable		1
REC_NUM	Number of the target folder		0
TRIG_BY	Trigger-source		Error

Parameter	Designation	Value range	Factory setting
T_REC	Record-time		5 s
T_DLY	Trigger Delay		0.5 s
CHN1	Recorder channel 1		1
CHN2	Recorder channel 2		2
CHN3	Recorder channel 3		7
CHN4	Recorder channel 4		10
CHN5	Recorder channel 5		9
S&H1	Type of recording of measured values for the different measuring channels Single: The measurement values are recorded without filter Average: The average within the sampling time will be recorded Peek max: The minimum value within the sampling time will be recorded Peek max: The maximum value within the sampling time will be recorded	Single Average Peek min. Peek max.	Single
S&H2			Single
S&H3			Single
S&H4			Single
S&HM			Single
CPY_Z2M	Copying the recorder settings With activating the parameter, the setting of the measurement channels made with the ZETAMON-Software will be taken over. The PC/notebook has not to be switched or connected with the inverter.	Off On	Off

9.9 Menu S7: Power section menu

Configuring the tolerances of the internal power stage.

Parameter	Designation	Value range	Factory setting
UDC_N	DC voltage for the DC-link	200 ... 300 V	260 V
UDC_MIN	Minimum limit value of the DC-link voltage	200 ... 250 V	200 V
Temp_MX	Maximal permissible temperature on the power stage heat sink	50 ... 80 °C	70 V

9.10 Menu S8: CAN

Configuration of EVAC 3C for operating the evacuation module with CAN input signal.

Parameter	Designation	Value range	Factory setting
BD_RATE	Baudrate	0	25 kBd

9.11 Menu S9: ZA-Intern

Parameterisation of internal measuring and monitoring functions

Parameter	Designation	Value range	Factory setting
PW_S9	Password for the indication of additional parameter	0	0

9.12 INFO menu

The INFO menu provides an easily accessible overview of:

- Current measurements
- actual operating mode of the evacuation module
- Current switching states of the inputs and outputs
- Internal measurements
- Information about the internal components

The individual pages are numbered for increased clarity.

Info -----i01 SN:01005897/0001 3.01 - 30070	Page 01: Serial-No. Line 3: Series number Line 4: Software version
Status-----i02 Stat: 01 Batt: 01 L123 XS F: ●●● ●. . U-Batt: 92V DC	Page 02: Status Displays the battery state of the evacuation module and the internal charger Line 2: Stat: actual operating mode of the evacuation module 10 ... 60: System start 70: internal power supply switched-on 80: DC-link is loaded 95: Mains operation with defective battery 98: EVAC 3C deactivated, battery defective (Parameter EVAC_ON=Off) 99: EVAC 3C deactivated (Parameter EVAC_ON=Off) 100: Mains operation 110 ... 140: Switch to Evacuation-Mode 150: Evacuation mode, internal power inverter activated 900: Error 907: Power section missing 998: Waiting for switch-off Batt: actual operating state of the battery or the internal charger 00: System start 01: Charging function being started 20: Charging current is constant 30: Charge voltage is constant 40: Charger has switched over to trickle charge 50: Battery is completely charged 60: Battery being refreshed 70: EVAC is waiting (max. 60 s) 80: Battery mode, frequency inverter is being supplied by batteries 90: Charge fault; battery might be defective Line 3: States of phases L1 L2 and L2 on the X-1 connection terminal 3 dots for L1 L2 and L3 ●: Phase okay .: Phase failed 1 dot for phase shifting ●: no phase shifting .: phase shifting 1 dot for function-check by parameter SIM_PH ●: function-check active .: function-check not active 1 dot for phase failure ●: phase failure detected .: no phase failure Line 4: Battery voltage

<pre> Info-Batt.-----i03 U-Batt: 120V I-Batt: 1.9Pa. T-Batt 23 C S100 </pre>	Seite 03: Info-Batt Online display of battery measurements Line 2: U-Batt: actual battery voltage Line 3: I-Batt: actual charge current Line 4: T-Batt: Temperature batterie S: actual operating state of the battery or the internal charger
<pre> Info-Inverter-----i04 U-Inv.: 230V T-Inv.t: 26 C </pre>	Page 04: Inverter Online-display of measured values of the power inverter Line 2: U-Inv: actual output voltage of the power inverter Line 3: T-Inv: actual temperature of the power section
<pre> Outputs 1-----i05 ST LC FU O1 KN KE KF • </pre>	Page 05: Outputs 1 Online display of digital outputs Line 2: ST: Output fault indication EVAC 3C LC: Message voltage loss on control system FU: Message voltage loss on frequency inverter O1: not connected KN: internal contactor mains operation KE: internal contactor battery operation KF: Contactor internal power supply Line 3: A ● below the description displays the output is active
<pre> Outputs 2-----i06 KS DC KL WR PB </pre>	Page 06: Outputs 2 Online display of digital outputs Line 2: KS: internal switching function, switch over to UPS supply DC: internal switching function, intermediate circuit relay KL: charging relay for internal voltage supply on WR: Voltage converter active PB: internal switching function, K13 on, negated Line 3: A ● below the description displays the output is active
<pre> Inputs-----i07 I1 I2 I3 I4 IH </pre>	Page 07: Inputs Online display of digital inputs Line 2: I1: Input 01 (X-IN) I2: Input 02 (X-IN) I3: Input 03 (X-IN) I4: Input 04 (X-IN) IH: Input, Monitoring of contactor K13 Line 3: A ● below the description displays the input is active
<pre> Info-Test-----i08 T-Batt: 25 C T-Inv.: 0 C T-Int.: 28 C </pre>	Page 08: Info-test Online-display of internal measuring values Line 2: T-Batt: Temperature batterie T-Inv: Temperature power inverter T-Int: Internal temperature

ZA-Intern-----i09 Stat: 100 DM NM fN . • .	Page 09: ZA-Intern Display device internal information Line 2: Stat: actual operating mode of the evacuation module Line 3: DM: debug mode NM: Power section missing fN: Flag NMI
ZA-Intern 2-----i10 U-DC: 258 V DC U-Batt2: 13.0V DC AF: 180 LP: 50	Page 10: ZA-Intern 2 Display device internal information Line 2: U-DC: internal DC-link voltage Line 3: U-Batt2: Battery voltage Line 4: AF: Internal control display Voltage converter LP: Internal control display battery charger
ZA-Intern 3-----i11 CH 0 GS 0 CL 0 CK 0 CE 0 iO 667	Page 11: ZA-Intern 3 Display device internal information Line 2: CH: Time, the battery was charged in constant current mode (min) GS: Time past, since the last charging of the battery (h) Line 3: CL: Time, the battery was charged in constant voltage mode (min) CK: Amount of energy charged into the battery at the last charging process (Ah) Line 4: CE: Time, the battery was charged in trickle charge mode (min) iO: internal display, offset value current measurement

10 Error diagnosis

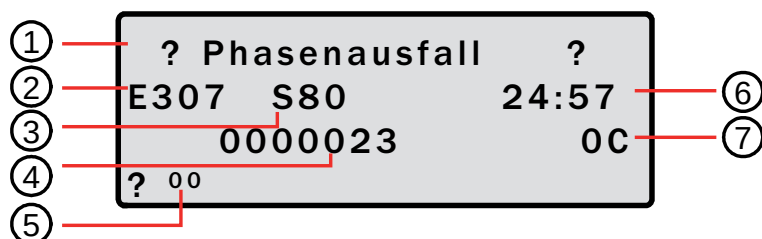
10.1 Light emitting diodes

The battery state of the evacuation module is displayed with two LEDs.

Error (red)	Run (green)	Operation condition
Off	On	Error-free operation
on	Off	Fault

10.2 Fault memory

The fault list can be found in menu **S0:Statistik/ST_LST**. Up to 64 error messages can be managed. Once the number of 64 messages has been reached, the oldest entry in each case is deleted for each new error message which arises. When the fault list is called up, the last fault which occurred is displayed with the following information:



- 1 Error description
- 2 Error no.
- 3 Operation condition (S=status)
- 4 Travel number
- 5 Consecutive error number
- 6 Operating hours
- 7 Temperature power stage

Please refer to the Chapter **error list** for a description of the error numbers.

10.3 Error list

Error no.	Error cause
303 / 304	Overtemperature of heat sink or power section
306	Short circuit in the undervoltage supply
307	One mains phase is failure, switch-over to evacuation mode
308	A phase failure was simulated with the parameter SIM_PH
309	External battery detected as defective, voltage too low
310	External battery detected as defective, voltage too high on battery charger
311	Battery voltage of the external battery too low
330	USV-Voltage not reached
332	Evacuation time (20min.) reached
333	Missing monitor pin at the contactor, internal 12V-battery discharged, main switch pin at X-1/1 and X-1/2 not closed
334	U voltage inverter, output voltage too low, overload voltage inverter
335	Failure indication relay doesn't energize
336	Internal battery defective or not connected
337	Voltage of the external battery drops below "LIM_EXT"
338	Voltage of the internal battery drops below "LIM_INT"
920	Short circuit of the power section

10.4 Operation conditions evacuation module

status	Operating conditions evacuation module
10 ... 60	Switch on
70	Switch-on power supply
80	DC-link loaded, DC-relay ON
95	Mains operation with defective battery
96	Frequency inverter in standby mode
98	Evacuation passive, battery defective (Parameter EVAC_ON OFF)
99	Evacuation passive (Parameter EVAC_ON OFF)
100	Normal mode, mains ON
110 ... 140	Switchover to evacuation mode
150	Evacuation mode, voltage inverter ON
700	Evacuation module passive by parameter ...
900	Error
907	NMI - Error
998	Waiting for switch-off

10.5 Operation conditions battery / battery charger

status	Condition of battery / battery charger
00	After switch-on
10	Start
20	Constant current - mode
30	Constant voltage - mode
40	Trickle charge - mode
50	Battery charged
60	Refreshing - mode
70	EVA in waiting loop, max. 60 sec.
80	EVA active, supplied by batteries
90	Error at battery charger

11 Service

11.1 Maintenance work

In the normal course of servicing the following checks are performed:

- General visual inspection for dust etc.
- Check if the connections are still fix
- Check the entries of the error memory **Menu S0: Statistik/ST_LST**, if there were any errors since the last maintenance.
- Check battery voltage in the **INFO-Menü: Page 03**
- Simulation of a phase failure and the act of an evacuation drive (see chapter "Carry out a functional test").
- Check battery voltage again, in **INFO-Menü: Seite 03**.

11.2 Trouble shooting

Due to the digital assembling of the evacuation module, lots of possible causes of error will be shown as clear text. Generally the error can be found with the help of the error list and the connection suggestion.

At this point, we recommend the following procedure:

1. If there's an error (display flashing and showing the error number and error text), please check the error list.
2. When the display shows no error, look into the error memory **Menu S0: Statistik/ST_LST** and check if there was any error since the last maintenance. The last shown error is the most actual error.

11.3 Repairing

With removing the cpu-pcb or similar workings at the unit you loose the warranty of the manufacturer. Workings in this vein have to be approved by the manufacturer.



Danger!

The contactor K11 and the main switch are energised. Even in switched-off state, the input of the main switch is energised. Also the output for the cabine light is energised at switched-off main switch.

12 Enclosure

12.1 Technical data EVAC 3C

Electrical data		EVAC 3C032	EVAC 3C050	EVAC 3C074
Mains connection voltage	[V AC]	3~ 360 ... 440 absolut		
Mains frequency	[Hz]	50 / 60 (±1,5 Hz)		
Battery voltage	[V DC]	120 ... 216		
Battery type		Lead-gel rechargeable battery		
Heat dissipation	[W]	< 20		
Power consumption	[W]	max. 300		
Charging mode	[W]			
Evacuation mode time limit	[min]	20		
Ambient conditions				
Protection rating		IP20		
Ambient temperature for operation	[°C]	0 ... 55 from 40°C power reduction of 1.66% / 1K temperature increase		
Relative humidity	[%]	90 / condensation prohibited		
Installation height	[m above sea]	up to 2000		
Storage and shipping temperature	[°C]	-20 ... +60		
Physical data				
Weight	[kg]	33.2	34.7	38.4
Dimensions w x h x d	[mm]	361 x 614 x 197		
Max. protection fuse of the feeder	inert [A]	35	50	80
Technical data power inverter				
Power	[W]	500		
Short-time power (2 min)	[W]	700		

12.2 Part numbers

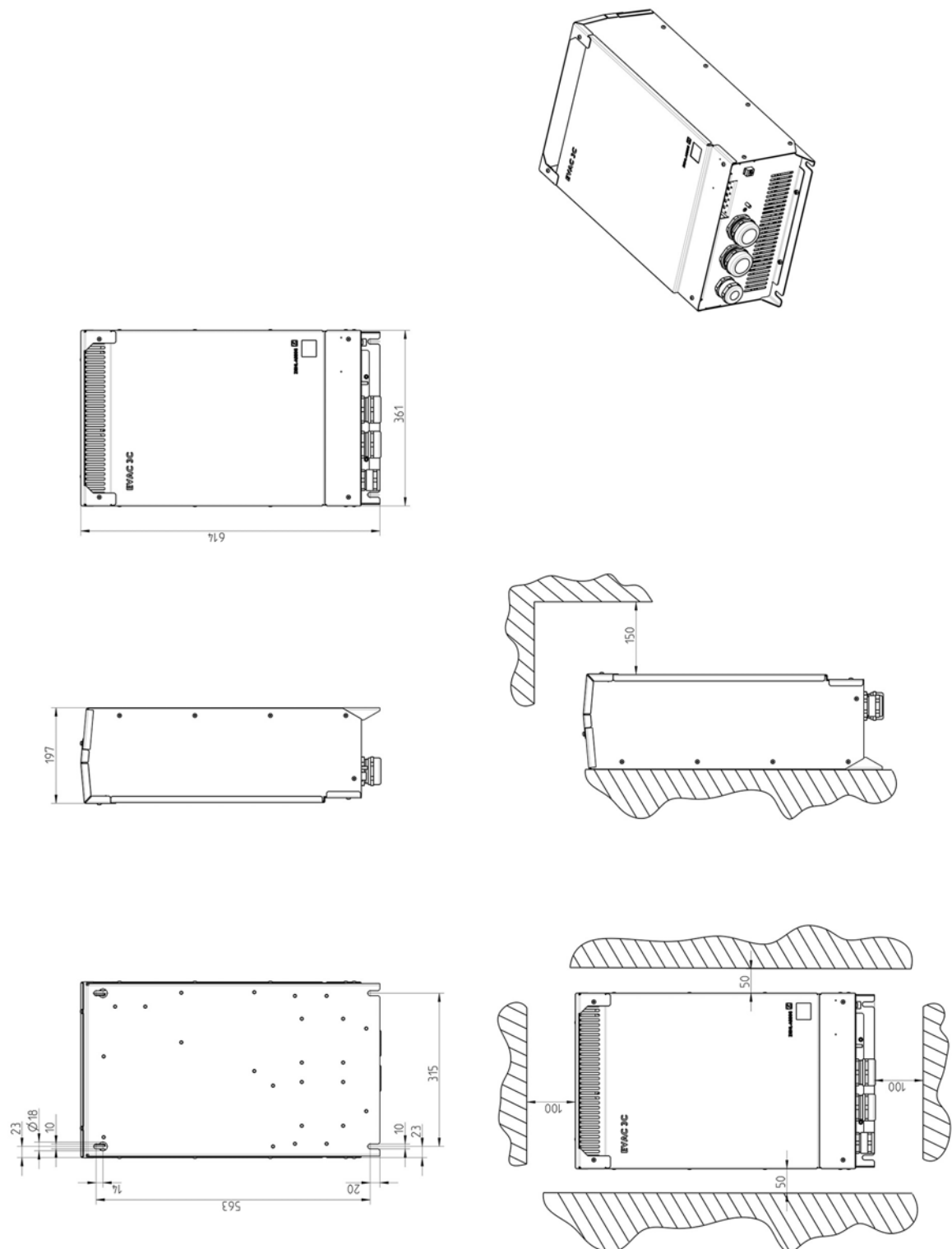
Evacuation module	Part no.
EVAC 3C032	357231
EVAC 3C050	357232
EVAC 3C074	357233

Battery set	Part no.
EVAC BATT 032-120-24	357234
EVAC BATT 050-120-24	357235
EVAC BATT 074-120-24	357236
EVAC BATT 032-180-24	357242
EVAC BATT 050-180-24	357243
EVAC BATT 074-180-24	357244
EVAC BATT 032-180-7.2	357238

Cable assembly	Part no.
LS-EV-03-HX-032 / AE	357239
LS-EV-03-HX-050 / AE	357240
LS-EV-03-HX-074 / AE	357241
LS-EV-03-HX-ST / AE	357247
LS-EV-10-HX-ST / AE	357248

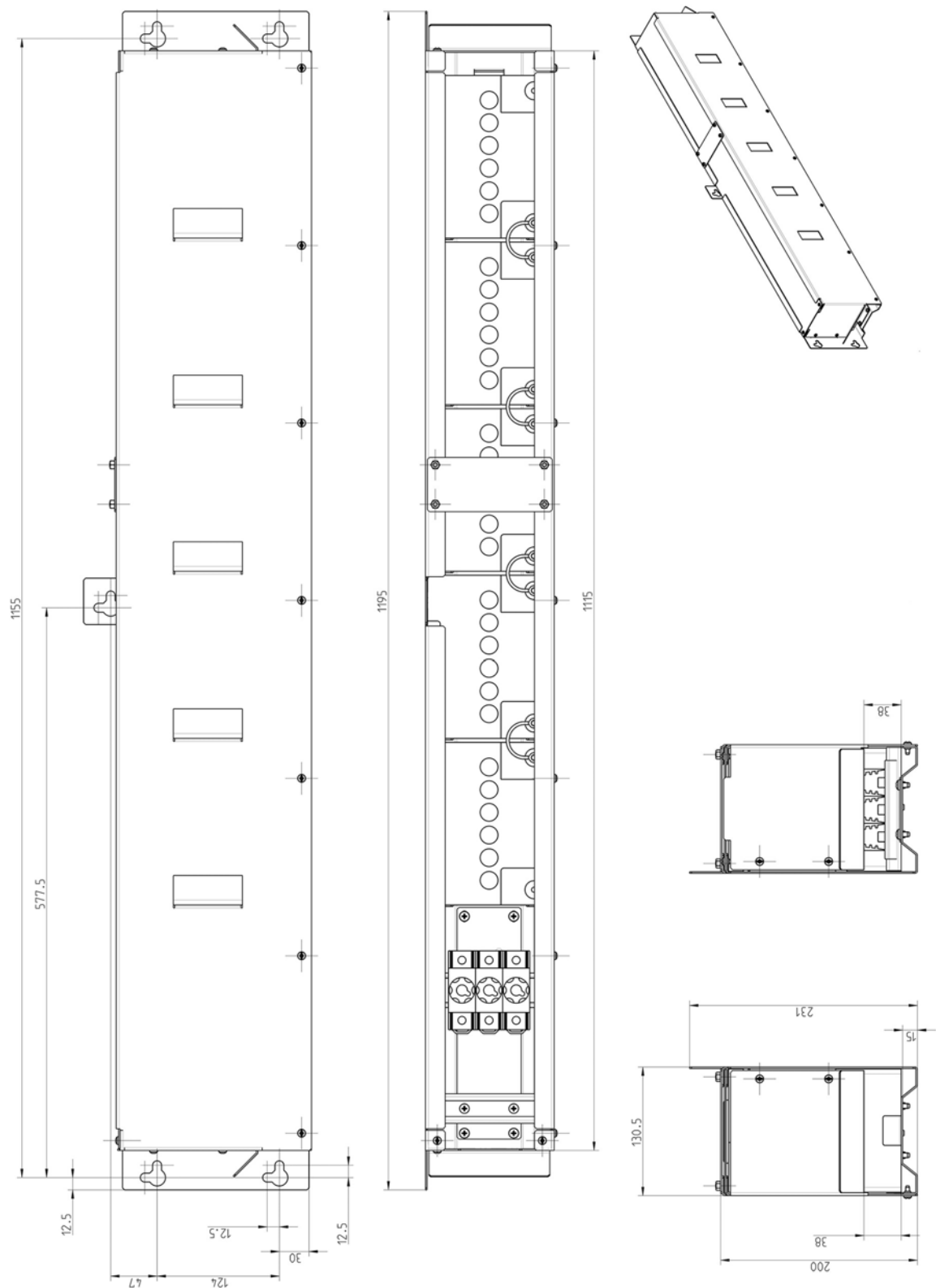
12.3 Dimension sheets

12.3.1 Dimension sheet EVAC 3C



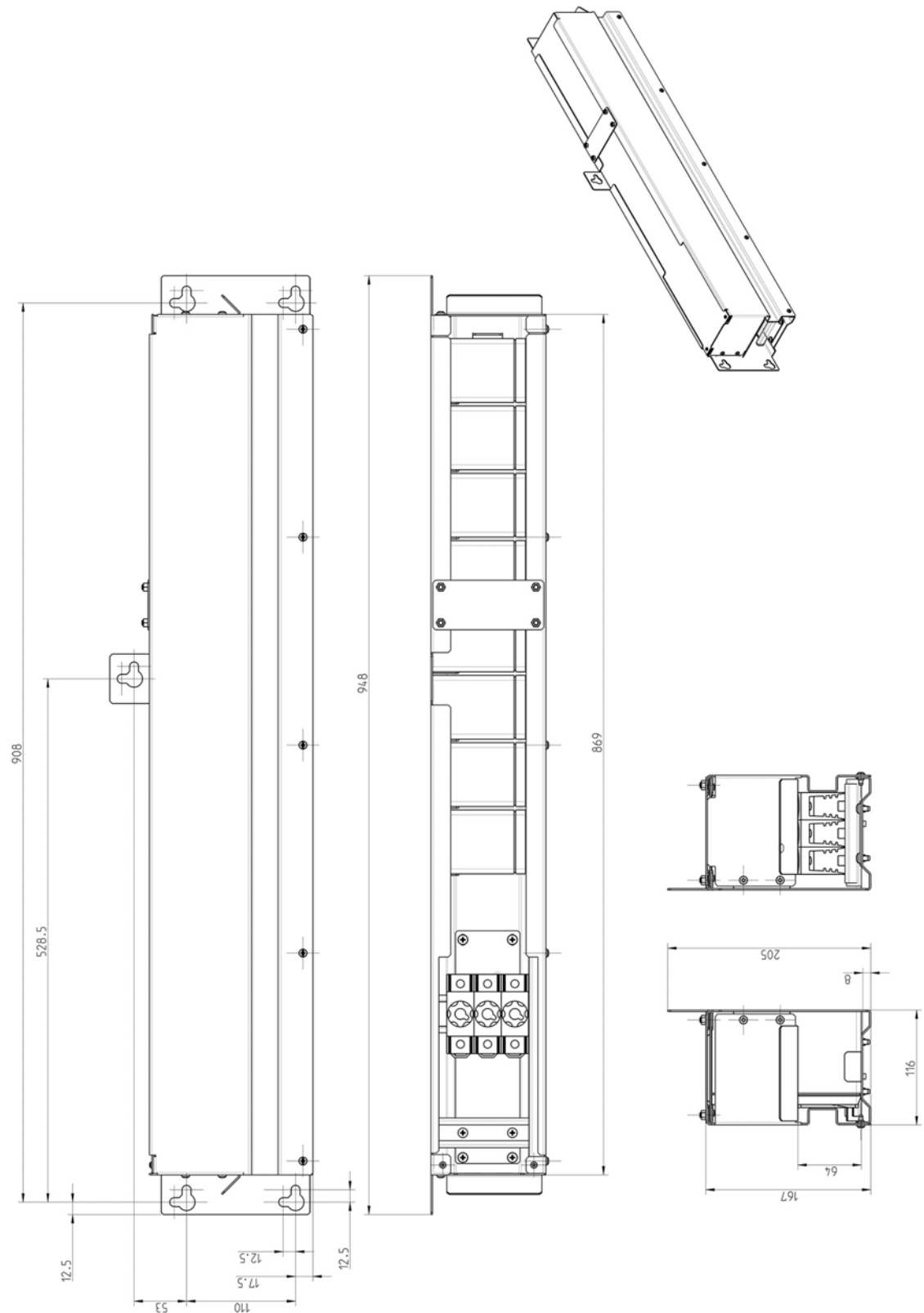
ZDEV02M0

12.3.2 Dimension sheet battery sets 24Ah



UMZD02X22

12.3.3 Dimension sheet battery set 7.2Ah



UMZD02X20

12.4

EU declaration of conformity

- Translation -
(english)

A-KON16_13-GB
1633 Index 002

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

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

Product description: Evacuation module EVAC for elevator machines

Type: EVAC 3C032 EVAC 3C050 EVAC 3C074

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

Low Voltage Directive 2014/35/EU

EMC Directive 2014/30/EU

The following harmonized standards have been applied:

EN 61800-5-1:2007	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
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

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, 09.08.2016
(location, date of issue)

ZIEHL-ABEGG SE
Werner Bundscherer
Director Drive Division
(name, function)



(signature)

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



(signature)

12.5

UK Declaration of conformity

- Translation -
(english)

A-KON16_13-GB-UK
2021/43 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 Evacuation module EVAC for elevator machines

Type EVAC 3C032 EVAC 3C050 EVAC 3C074

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

Electrical Equipment (Safety) Regulations 2016 (SI 2016/1101)

Electromagnetic Compatibility Regulations 2016 (SI 2016/1091)

The following designated standards have been used:

EN 61800-5-1:2007	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
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

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. Roland Hoppenstedt (see above for address).

Künzelsau, 29.10.2021
(place and date of issue)

ZIEHL-ABEGG SE
Werner Bundscherer
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(signature)

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