

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 information

1.1 Validity

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

1.2 Structure 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, commissioning and maintenance and servicing and who have the corresponding qualifications and skills for their job.

1.4 Structure of operating instructions

The operating manual has a systematic structure. The order of the individual chapters corresponds to the order of the work steps for first time installation of the device.

The operating instructions contain the following information:

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

1.5 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.

1.6 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 or the ZAdyn4 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.

| | |
|---|--|
|  | <p>Danger! General hazardous area. Death or severe injury or significant property damage can occur if the corresponding precautions are not taken!</p> |
|  | <p>Warning! Risk of moderate or minor injury if the corresponding precautions are not taken!</p> |
|  | <p>Caution! 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 installation due to defective adjustments, 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 implemented in operational practice if all measures necessary for this purpose are taken. The operator of the installation has the obligation of due diligence to plan these measures and monitor their implementation.

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 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 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 Modulation

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 Parameterisation

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 environmentally friendly in accordance with the legal stipulations.

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

- 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.)
- To ensure EMC-acceptable installation, mount the device on a galvanized or chrome-plated and grounded mounting plate. When using a painted mounting plate, the paint must be removed from the contact-surface areas.

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

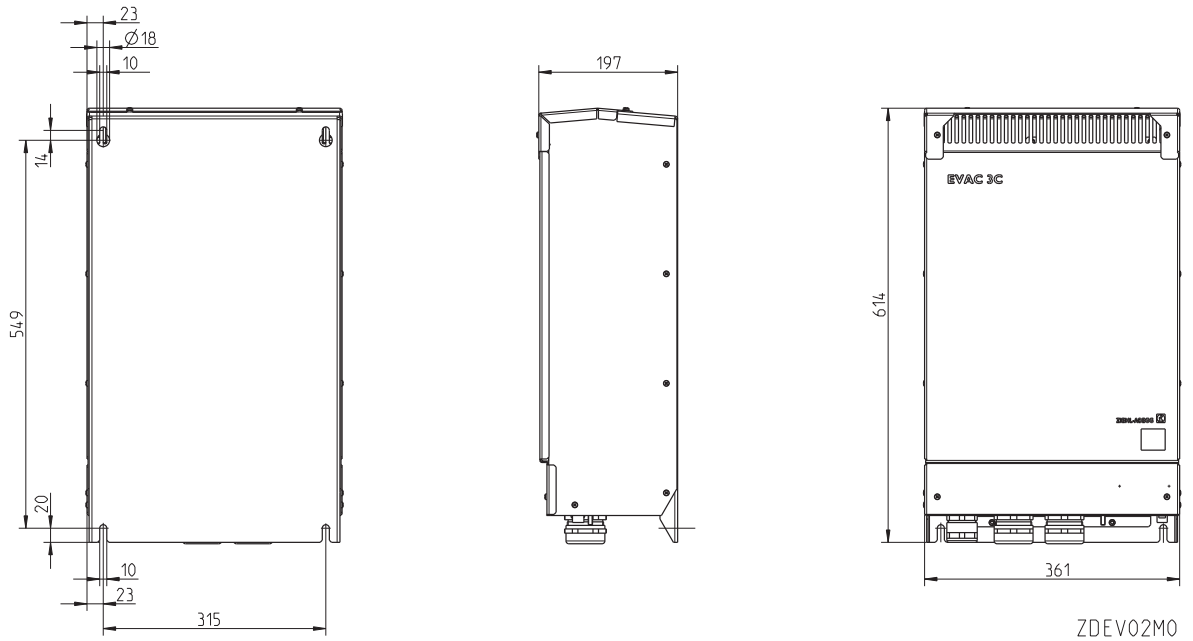
CAUTION!

Caution!

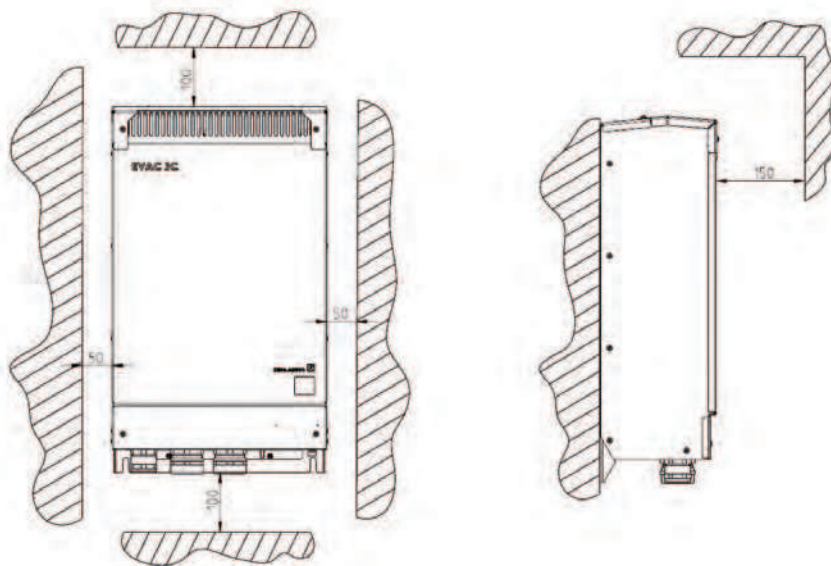
The device is designed for wall mounting in the machine room or lift shaft. An adequate cooling must be ensured for assembly in the switch cabinet. The power loss of the device (see chapter "Technical Data") must be taken into account here.

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

4.2 Dimensions



Dimensions EVAC 3C



Minimum clearances EVAC 3C

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.

Inspect electrical equipment periodically: retighten loose connections – immediately replace damaged lines and cables.

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.

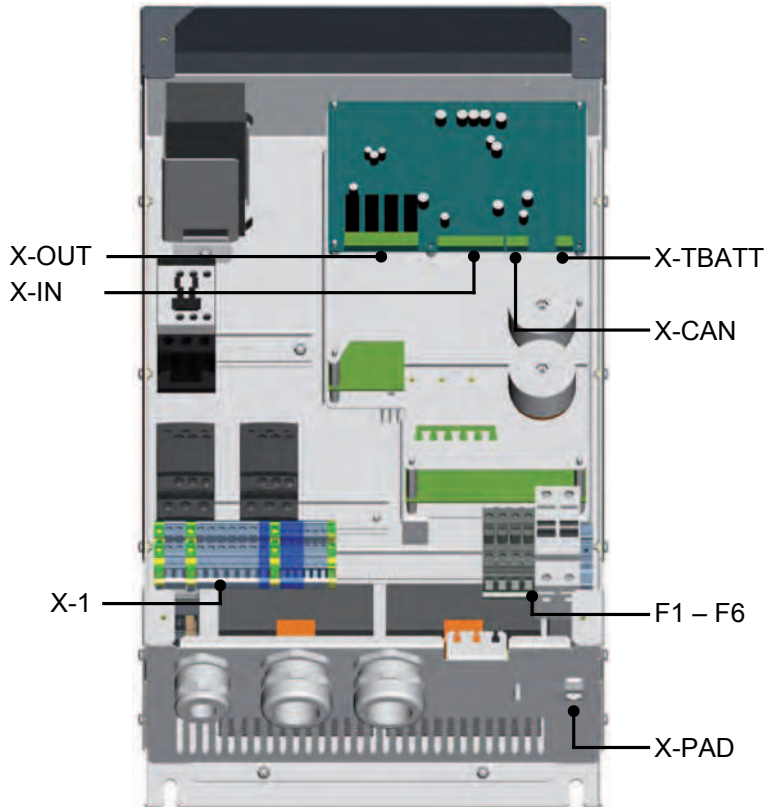
5.1.2 Cable cross section

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.

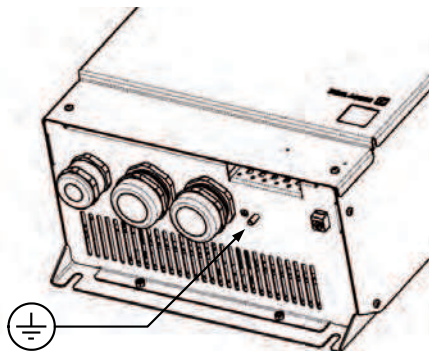
5.2 Terminal positions



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 fixed. 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!

Caution!

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

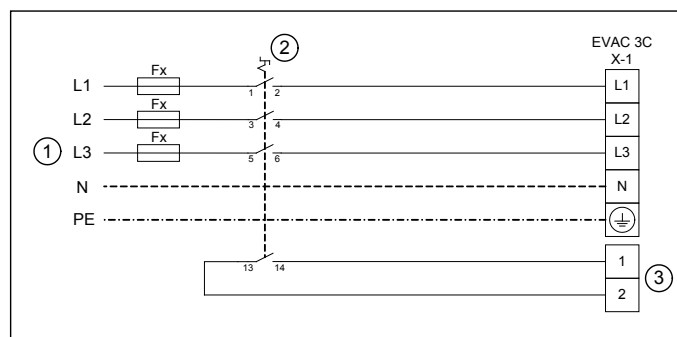
The mains filter and frequency converter are unsuitable for use in the IT network!

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

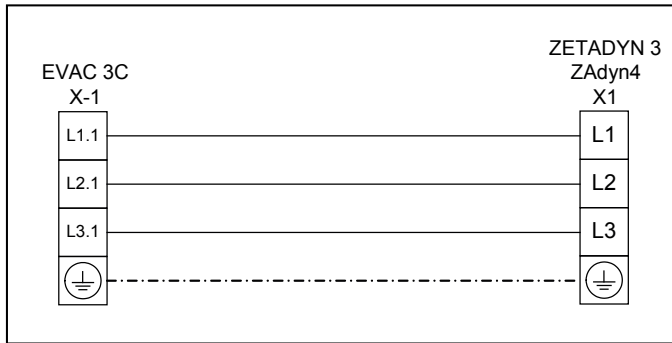


Information

With the main switch - contacts 13 and 14 the battery can be disconnectet 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

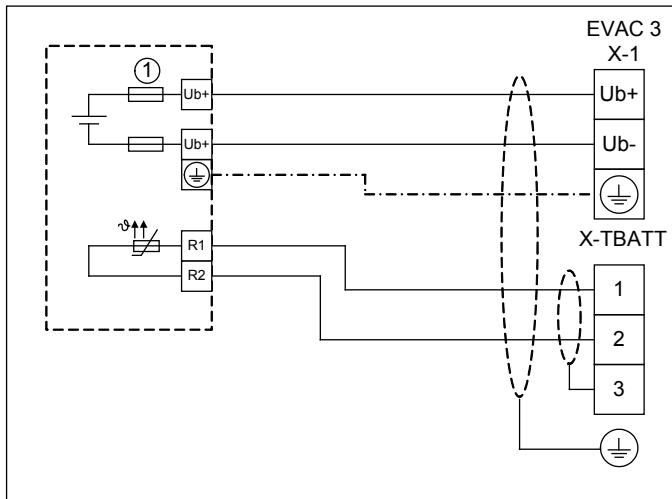
The fuse protection is implemented in accordance with the line cross-section used

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.**

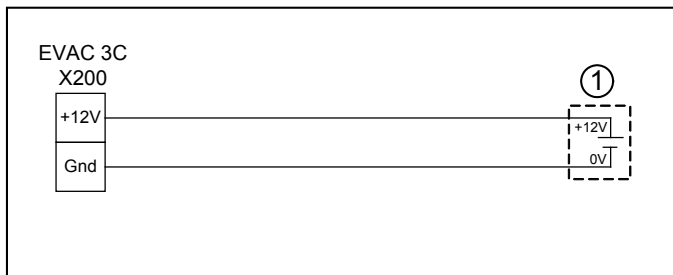


Connection of the battery

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.



Connection 12V-Battery

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.

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.

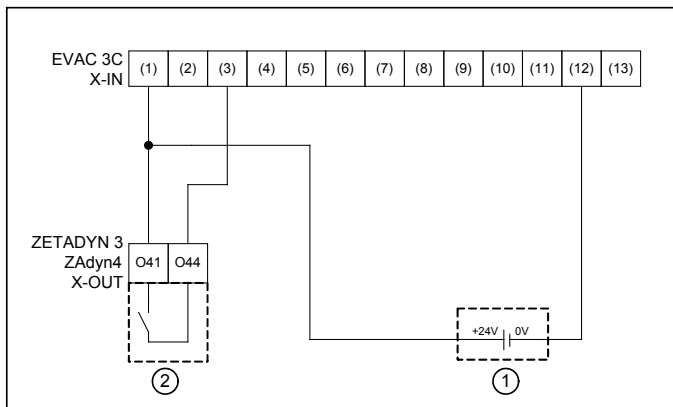
The inputs can be activated galvanically isolated by an external 24 V power supply in the control system or by the internal 24 V supply in the frequency inverter.



Information

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

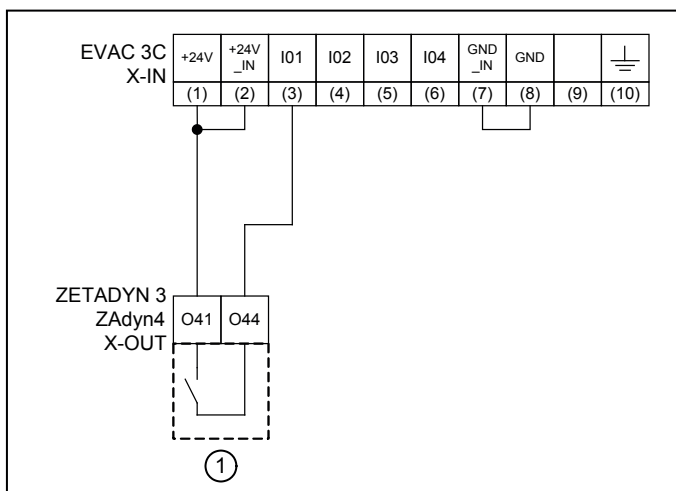
5.8.1 Connection with external power supply



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
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!

CAUTION!

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 | | | |

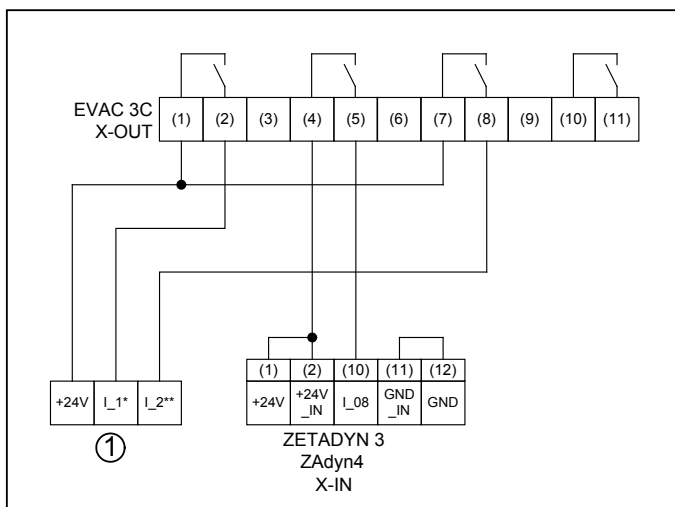
5.8.4.1 Description of the input functions

| Function | Description |
|----------|--------------------------------|
| 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 | - |

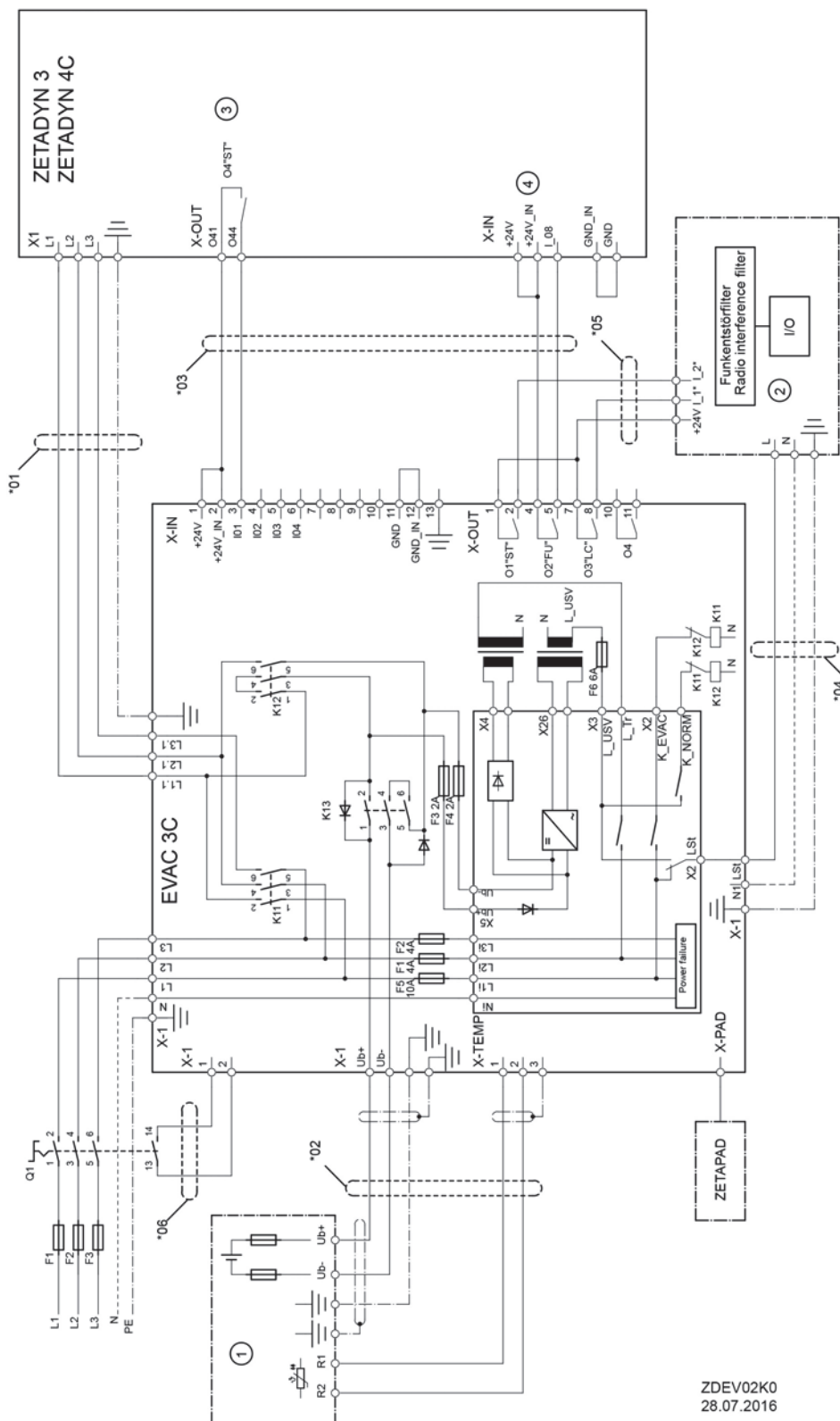
5.9.3.1 Description of the output functions

| Function | Description |
|----------|--|
| 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 |
| F4 | Fusible cut-out | M5A | Voltage converter / charging connection U_Batt + |
| F5 | 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 |
| F5 | automatic circuit breaker | B6 | Supply of the control during evacuation mode |

5.11 Connection suggestion



ZDEV02K0

- 1 Battery
- 2 elevator control system
- 3 Digital output adjusted to the function "ST-Fault" (Preferred to output "O4")
- 4 Digital input adjusted to the function "PARA2" (Preferred to Input "I_08")
- L_1* Digital Input "Fault EVAC 3C"
- L_2* Digital Input for "Voltage loss"
- *01 - *06 Contain to the two EVAC Cable-sets

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!



Caution!

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 :2009-08 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 [mm ²] | Rated fuse current [A gL] |
|---------------------------|-------------------|--|---------------------------|
| ZETADYN/ZAdyn 3/4xx011 | 11 | 1,5 | 16 A |
| ZETADYN/ZAdyn 3/4xx013 | 13 | 2,5 | 20 A |
| ZETADYN/ZAdyn 3/4xx017 | 17 | 4,0 | 25 A |
| ZETADYN/ZAdyn 3/4xx023 | 23 | 6,0 | 35 A |
| ZETADYN/ZAdyn 3/4xx032 | 32 | 10,0 | 50 A |
| ZETADYN/ZAdyn 3xx040 | 40 | 16,0 | 63 A |
| ZETADYN/ZAdyn 3xx050 | 50 | 16,0 | 80 A |
| ZETADYN/ZAdyn 3xx062 | 62 | 25,0 | 80 A |
| ZETADYN/ZAdyn 3xx074 | 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.

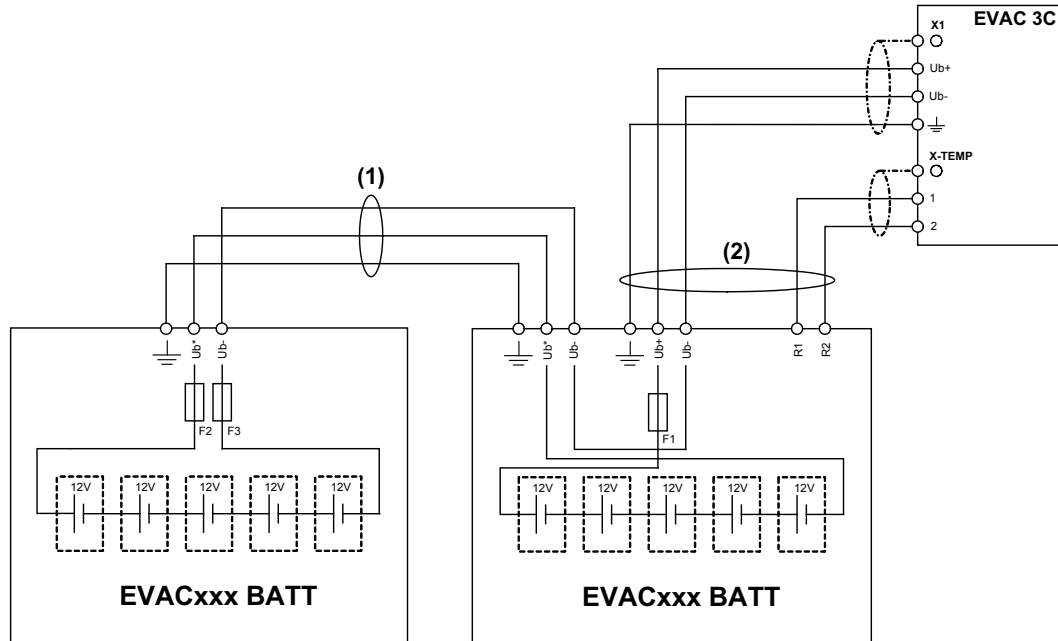
6.4.1 Connection of the Ziehl-Abegg battery sets



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

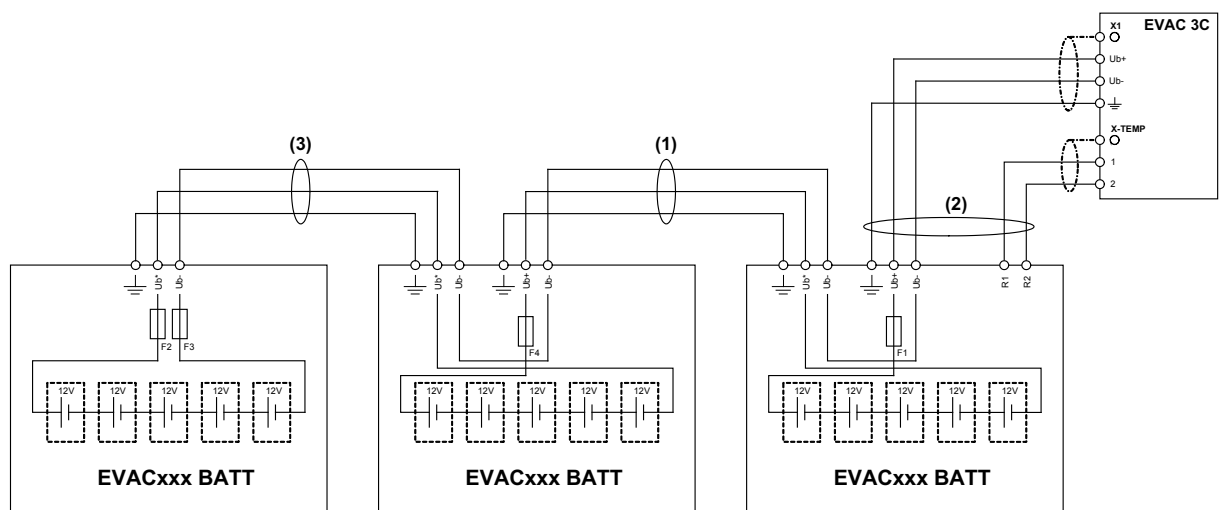


The individual battery packs are wired in series.

(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



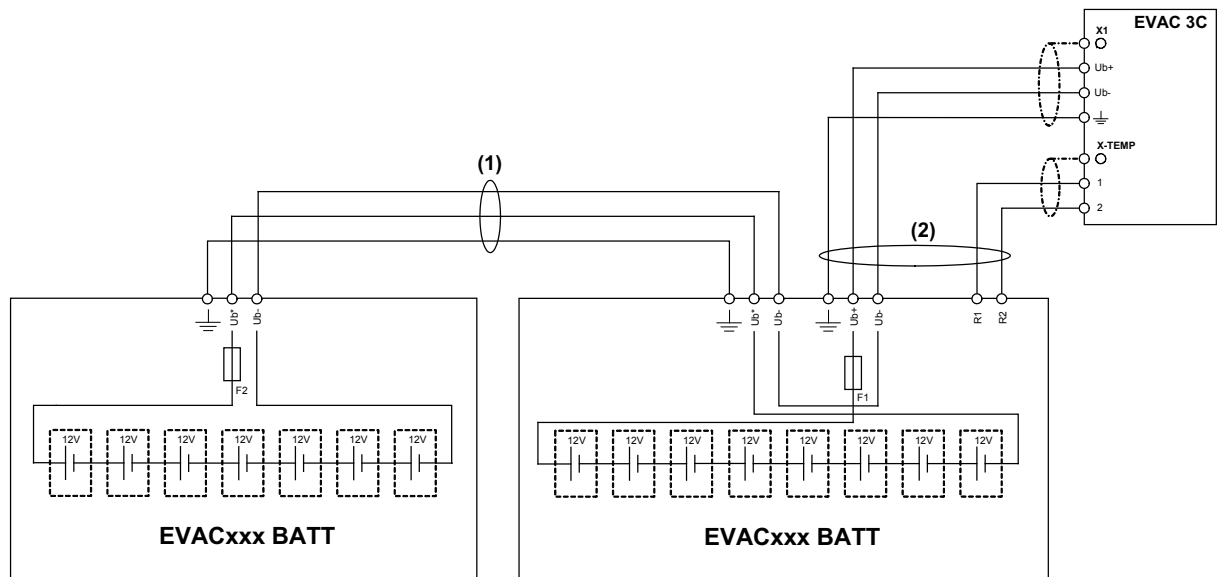
The individual battery packs are wired in series.

(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 | | | | |
| Nominal 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 conditions operation | [°C] | 0 ... +40 (0 ... +20*) | | |
| Ambient conditions storage | [°C] | -15 ... +40 (-15 ... +30*) | | |
| rel. humidity | [%] | 20 ... 85 | | |
| Max. installation height | [m] | 2500 | | |
| Protection class | | 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 | | | | |
| Nominal 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 conditions operation | [°C] | 0 ... +40 (0 ... +20*) | | |
| Ambient conditions storage | [°C] | -15 ... +40 (-15 ... +30*) | | |
| rel. humidity | [%] | 20 ... 85 | | |
| Max. installation height | [m] | 2500 | | |
| Protection class | | 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 | | |
| Nominal 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 conditions operation | [°C] | 0 ... +40 (0 ... +20*) |
| Ambient conditions storage | [°C] | -15 ... +40 (-15 ... +30*) |
| rel. humidity | [%] | 20 ... 85 |
| Max. installation height | [m] | 2500 |
| Protection class | | 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

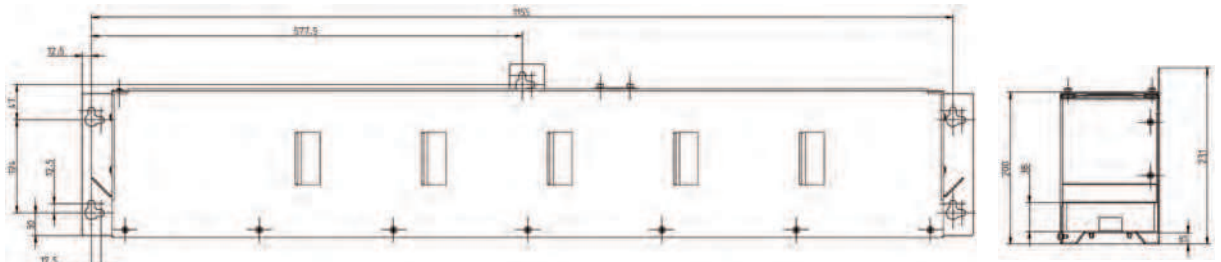
Ambient conditions

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

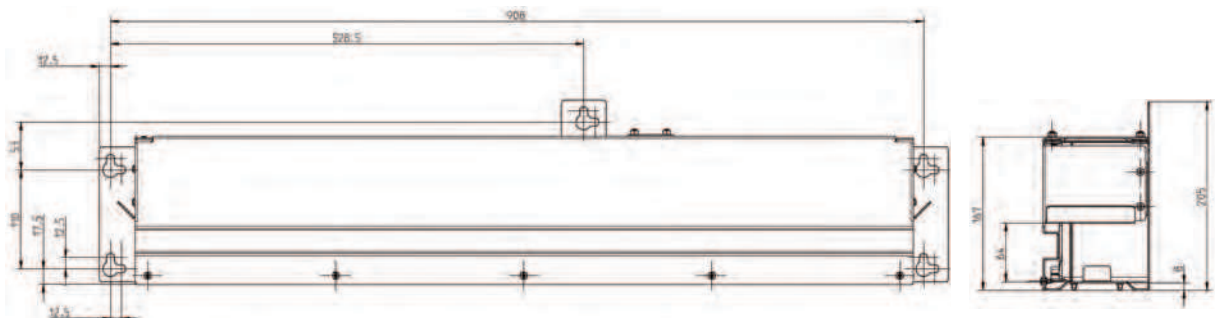
Installation position

- 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.

Parameterisation

```
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.

Parameterisation

```
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.

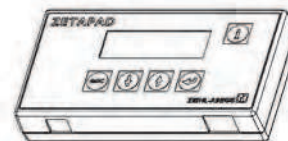
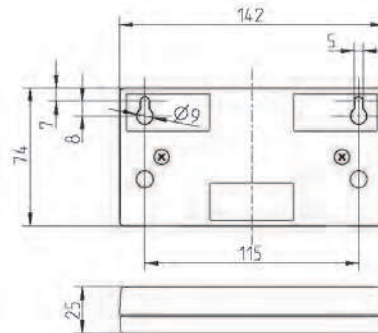
6.5.1 Mounting / Fastening

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



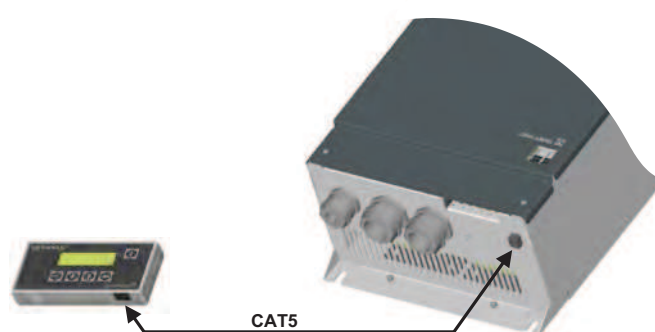
ZETAPAD dimensions

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 cable

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



ZETAPAD connection

ERROR: undefined
OFFENDING COMMAND: limitcheck

STACK:

64
-dictionary-