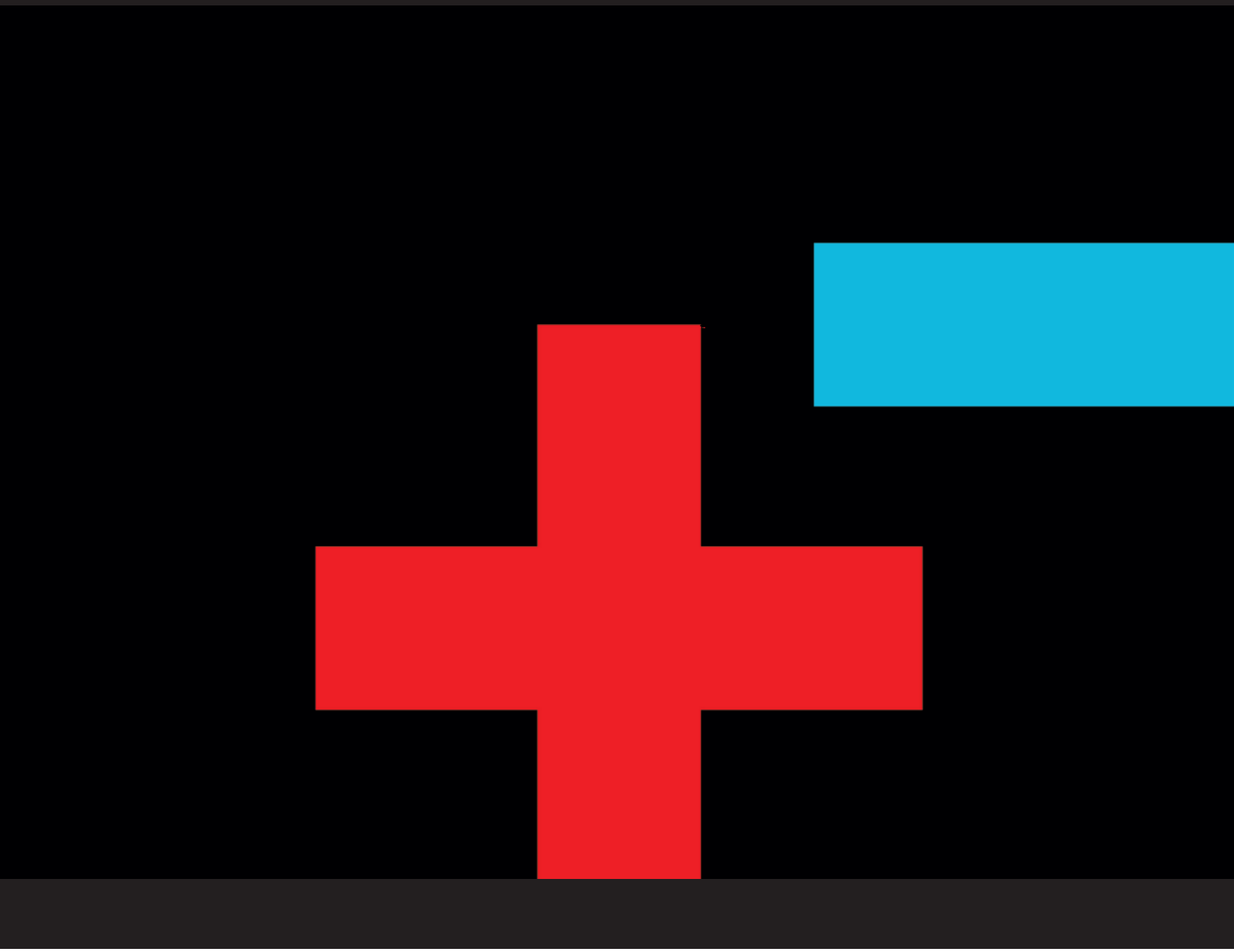

StoraXe PowerBooster

Compact storage system

GSS0608

adstec
Energy

StoraXe PowerBooster GSS0608

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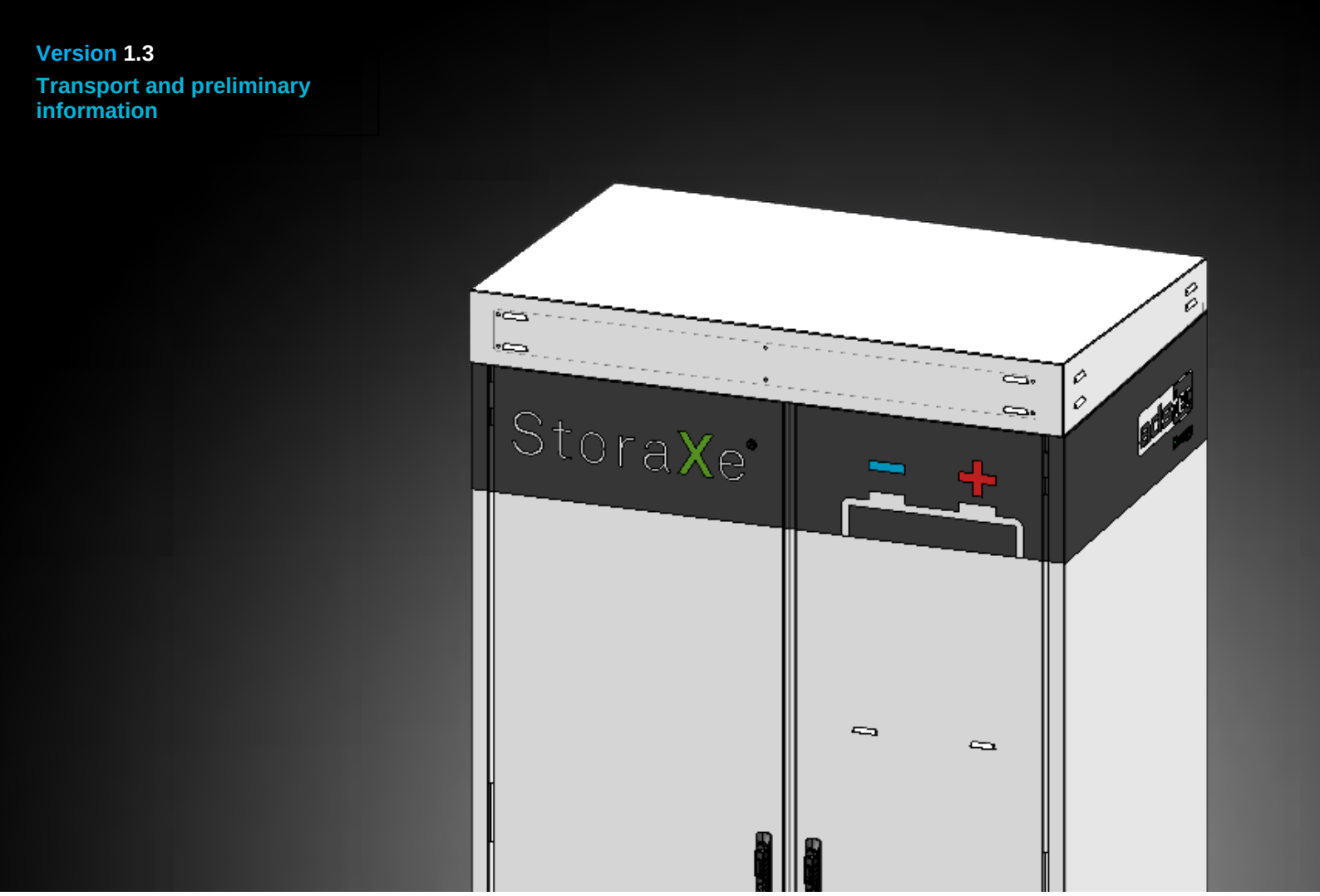

Transport and preliminary information

StoraXe PowerBooster

Compact Storage System

GSS0608

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1 Transport information

(Detail from the instruction manual)

The battery modules are declared as dangerous goods when transported. Follow the relevant instructions on the packaging.

The storage system is delivered in 3 parts:

- One pallet with storage system preassembled, without battery modules (approx. 800 kg gross).
- Two pallets with 2x 4 battery modules, corresponding power and communication cables and manual (2x 330 kg gross).

CAUTION

Risk of irreversible damage to the components!

Improper transport can irreversibly damage components.

- ➡ Use only means of transport that are designed for the weight of the storage system and battery modules.
- ➡ Transport the battery modules to the final location separately from the storage system.
- ➡ Transport the storage system upright with the help of a forklift to the final location.
- ➡ Bear in mind that the centre of gravity of the storage system is not positioned centrally.
- ➡ Move the storage system only when in a lifted state.
- ➡ Use non-slip mats on any surfaces where the storage system will have to be set down temporarily.

WARNING

Hazard from heavy loads!

If the storage system or the battery modules tip over or fall, they can cause serious injuries.

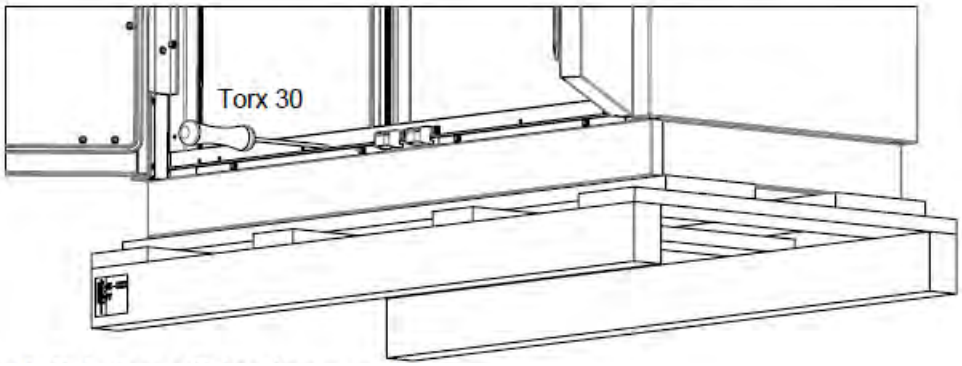
- ➡ Hazard from falling or tipping loads.
- ➡ Risk of crushing hands and feet during transport.

The centre of gravity of the storage system is noted on the packaging as follows:

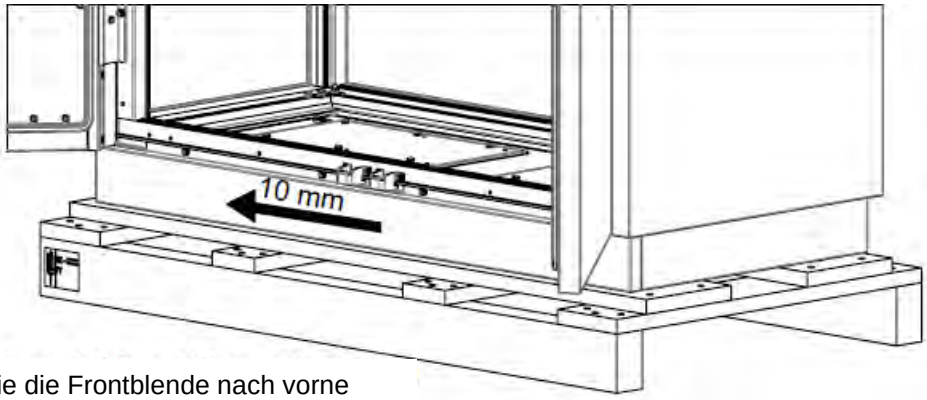
2 Installation information

(Detail from the information of the housing manufacturer – german/english)

Blenden entfernen / Remove panels

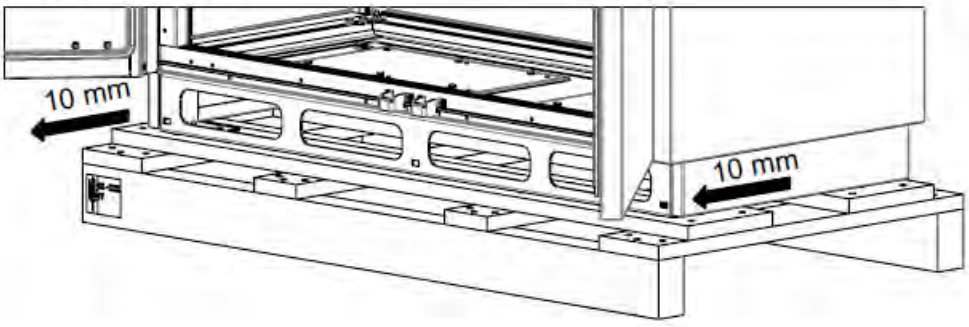


1 Lösen Sie die Befestigungsschrauben des vorderen Sockels.
Unscrew the fastening screws of the front panel.

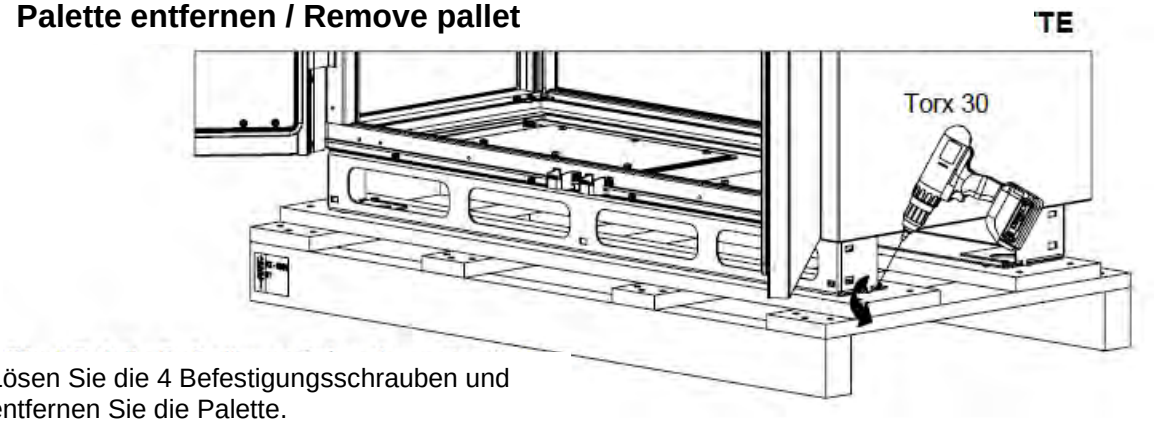


2 Schieben Sie die Frontblende nach vorne
und entfernen Sie diese.
Slide the front panel forward and remove it.

3 Schieben Sie die seitliche Blende nach vorne und entfernen Sie diese.
Slide the side panel forward and remove it.



Palette entfernen / Remove pallet



Lösen Sie die 4 Befestigungsschrauben und entfernen Sie die Palette.
Loosen the 4 fastening screws and remove the pallet.

3 Requirements regarding installation location

(Detail from the instruction manual)

The system is designed for stationary use in an outdoor area. Make certain that the specified environmental conditions are maintained at all times. Use in non-specified environments, e.g. on board ships, in explosive atmospheres or at high altitude (see the climatic environmental conditions) is prohibited.

CAUTION

Hazard due to condensation!

➡ Condensation may form if the system has not had sufficient time to settle to the environmental conditions following transport or before it is put into operation again. (Connection to AC supply is required.)

3.1.1 Environmental conditions

Observe the environmental conditions information in the technical data (➲ *4 Technical data*).

3.1.2 Requirements regarding installation location

Please note that the battery system may not be set up and operated

- in buildings, garages, courtyards and other covered structures
- in areas where there is a risk of flooding
- in areas where there is a risk of fire and explosion
- in the vicinity of combustible materials
- and in areas with sandstorms
- in permanent residential areas
- in the vicinity of escape routes

.

Installation conditions:

- The "Commissioning requirements" checklist must be completed and signed (➲ *7 Checklist for commissioning*).
- The system is only suitable for outdoor installation.
- Observe the following floor space requirements for the system:
  - The floor space is to be constructed at the installation location in accordance with the local conditions and technical data (➲ *4 Technical data*)
  - Wind-protected (e.g. in the lee of a building)
  - The floor space is exactly horizontal.
  - Cable entry is from below.
  - The floor space has the required load capacity for the 1.25 t weight of the system and has to withstand this load permanently.
    If applicable, also take into account the weight of the means of transport.
  - Sufficient drainage is available.
- Earthing via ring earth electrode for flexible connection cable (min. 16 mm²) according to national and local regulations and conditions must be in place.
- Note that ventilation openings must be kept clear.
  - The air at the ventilation openings must be able to circulate freely.
  - During the entire operating time, no leaves, dirt, etc. must be sucked in from the ventilation openings.
- Protect the system against penetrating water (groundwater or flood hazard area).

- Keep the existing housing doors closed.
- Observe the required minimum distances of 1.5 m to adjacent structures. Make additional spacing allowances for open doors and any escape routes.

When installing in built-up areas, observe the local noise abatement regulations (Germany: "Technische Anleitung zum Schutz gegen Lärm" (Technical Instructions for Protection against Noise), abbreviated "TA Lärm"). Observe the resulting minimum distances to residential buildings.

Power connections:

Observe the information given in the electrical diagram (➲ *9 Appendix: Electrical diagram*).

4 Technical data

		GSS0608
System	System type	AC coupled storage system with outdoor cabinet
	Control / functions	ADS-TEC Energy apps: peak-shaving, optimisation of personal consumption, ADS-TEC master interface
	Network connection	Ethernet, RJ45, LTE
	Inverter	Integrated
Grid connection	Effective power	60 kW
	Apparent power	60 kVA
	Mains voltage	400 VAC
	Grid type	TN-S with 3Ph + N + PE (stationary)
	Grid frequency	50 Hz
Battery storage system	Battery technology	Lithium-ion
	Nominal energy content	84,6 kWh
Battery cells²	Cell chemistry	Lithium-NMC
General data	Installation location	Outdoor
	Temperature range	-20 °C to +40 °C
	Protection class	IP55
	Guarantee of current market value (battery cells)	Up to 10 years (in combination with BatX)
	Vandalism class	IK10
	Dimensions WxHxD	1430 x 2500 x 940 mm (+/-20 mm)
	Weight	Approx. 1,250 kg (fully equipped)
Standards	List of the applied harmonised standards	Wireless ETSI EN 301 908-1 V13.1.1; ETSI EN 301 908-13 V13.1.1 EMC ETSI EN 301 489-1 V2.2.3; EN 61000-6-2:2005; EN 61000-6-3:2021 Safety EN 62368-1:2014 + AC:2015; EN 62311:2008; EN 61439-1:2011
	List of the applied regulations, standards and applications	EMC ETSI EN 301 489-52 V1.1.0 Safety EN IEC 61439-7:2020; IEC 62485-5:2020; EN 62619:2017 Functional safety EN 61508 series ed. 2 Miscellaneous VDE-AR-E 2510-2:2021 UN 38.3 Revision 7:2019 (on battery module layer)

5 Temporary storage of the battery modules

Observe the manufacturer specifications and safety data sheets of the battery cell.

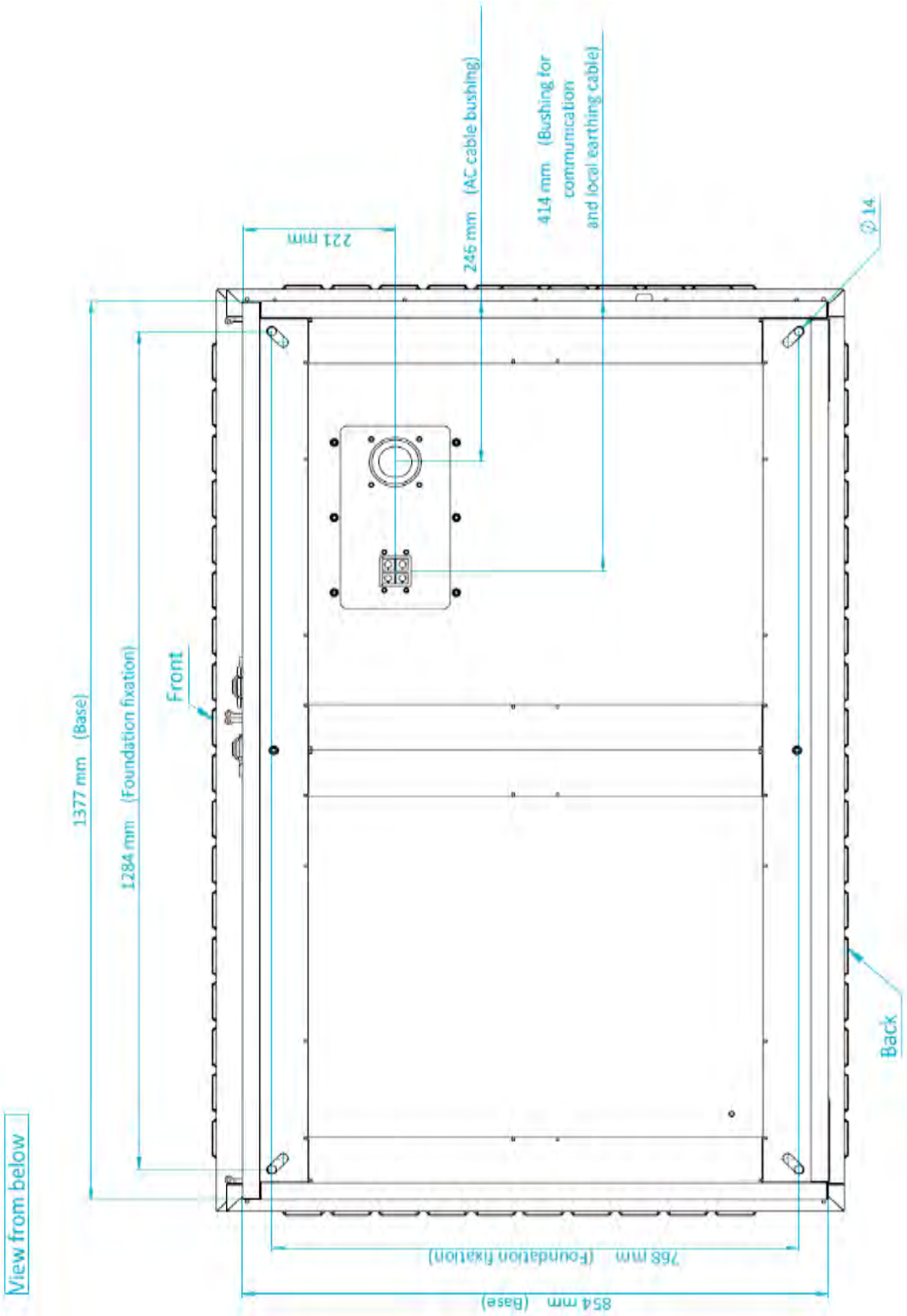
- It is strongly advised that directive VDS-3103: 2019-06 also be observed.
- Store the battery modules in their original packaging in a dry, ideally air-conditioned indoor space until installed.
- Avoid direct sunlight, large temperature fluctuations and frost.

CAUTION

Damage to property due to incorrect storage!

- ➡ Store the battery modules properly in the original packaging until installation according to the information in the battery module data sheet.
- ➡ No direct sunlight, no large temperature fluctuations, no frost.
- ➡ Storage temperature: 0 to + 40°C.
- ➡ Avoid condensation.
  Condensation can occur if the battery module has not been sufficiently climatically adjusted after transport or before installation.

6 Bottom view of unit



7 Checklist for commissioning

Checklist: Commissioning requirements for GSS storage system

Please send this filled out checklist to support-est@ads-tec-energy.com at least 10 working days before the planned commissioning.

Project name:		Order number:	
Client:		Contact person:	
		Telephone/mobile:	
Commissioning date:		E-mail:	

Client address:	Plant location (if different):

1) Before delivery and commissioning	OK	nOK	Comment
Attachment points for the storage system prepared according to base drawing			
Earthing via ring earth electrode for flexible connection cable available			
Door stop and swivel range taken into account			
Safety distances (fire protection) taken into account			
Protection against penetrating water (groundwater or flood hazard area) taken into account			
Ventilation openings and their 1.5 m unobstructed ventilation around the storage system taken into account			
Routing of AC power supply to the transfer point carried out according to electrical diagram			
AC power supply connected on the grid side. Grid side fused according to the requirement in the electrical diagram.			
SIM cards (4G/LTE) and local Ethernet connection for communication / control / monitoring available			
Customer-specific: additional meters / smart meters for installation during commissioning are available			
Only for Master mode: Software / control solution available			
Connection permission obtained from the local network operator			
Requirements/permission for charging / discharging from/into the grid during commissioning obtained			

2) Delivery and installation at the plant location	OK	nOK	Comment
Installation at system location organised by forklift (GSS) or crane (battery modules). Information in the transport drawing taken into account.			
Access possible for trucks to the plant location.			
Necessary road closure for crane / truck during unloading approved.			
Access to the plant location provided for the logistics and commissioning personnel.			
3) Day of commissioning	**OK**	**nOK**	**Comment**
On the day of commissioning at the plant location, authorised electricians are charged with connecting and checking the cabling in accordance with DIN VDE 0100-600 (including protocol)			
Grid test: Rotating field right and loop check <0.3 Ohm			
Switching authorisation for power and auxiliary voltage supply assigned on day of commissioning The person authorised for switching is on site.			
Customer-specific: additional meters / smart meters for commissioning are installed and ready for operation			
Customer-specific: external control for testing the charging / discharging process is functional and the test can be carried out			
Customer-specific: SIM card (LTE) / local Ethernet Internet connection connected and communication possible			
The customer's qualified personnel for operational handover with instruction is available at the plant site on the day of commissioning			

Additional comments / notes:

Location **Date** **Name in block letters** **Signature**

My signature confirms that the necessary prerequisites for the installation and commissioning of the Powerbooster battery storage system have been professionally created. ads-tec assumes no liability for any costs resulting from failure to comply during delivery, installation and commissioning as well as during subsequent operation.

8 Contact

8.1 Support ADS-TEC

The ADS-TEC support team is available for inquiries from direct customers between 8:30am and 5:00pm, Monday to Friday. The support team can be reached via phone or e-mail:

Phone: +49 7022 2522-203

Email: support.est@ads-tec-energy.com

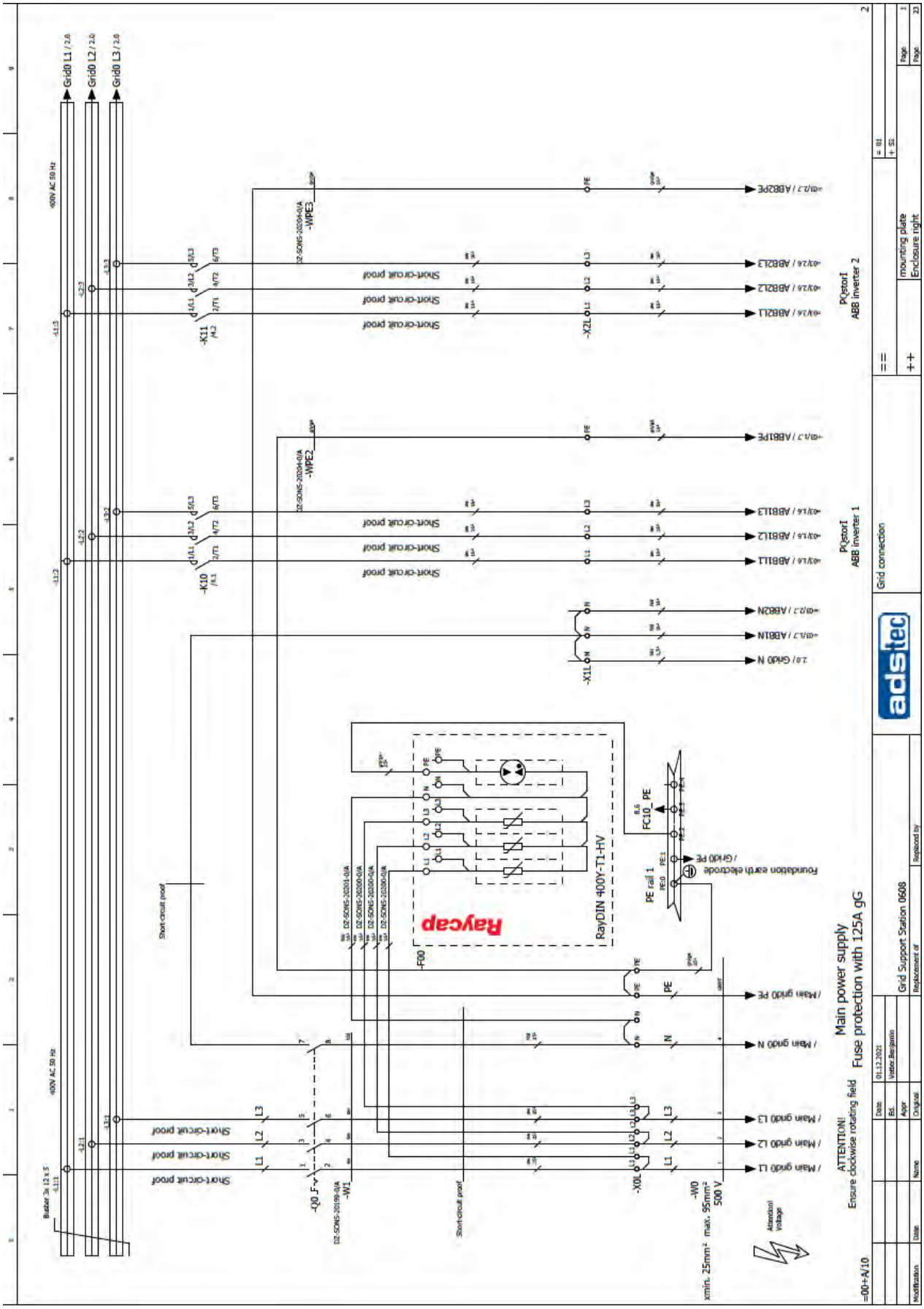
Alternatively, you can contact us by completing a support form on our website www.ads-tec-energy.com. Our Support team will then get in touch with you as soon as possible.

8.2 Company address

ads-tec Energy GmbH
Heinrich-Hertz-Str.1
72622 Nürtingen
Germany

Phone: +49 7022 2522-201
Email: energy@ads-tec-energy.com
Home: www.ads-tec-energy.com

9 Appendix: Extract of the electrical diagram



Instruction sheet - Operating regulations and rules of conduct

For handling lithium-ion batteries

Place the filled form clearly visible near the system!

Whoever operates a system is responsible for its proper operation

Information about the system

Designation and address of the system:

Operating company of the system:

Model (lithium-ion) and battery capacity (kWh):

Conduct in case of fire

Stay calm

1. Report fire

Operational contact person: .....

Fire brigade 112

Police 110

2. Get to safety

- Follow the instructions
- Help people in danger
- Clear the danger zone

3. Make no attempts to extinguish the fire

- Wait for fire brigades
- Make no attempts to extinguish the fire
- Close off danger zone over a large area

Danger warning!

Batteries

Risk of explosion in case of fire

Electrical voltage

Operating regulations and rules of conduct

For handling lithium-ion batteries

Place the filled form clearly visible near the system!

Please provide this information sheet (or an information sheet according to local regulations) to the local fire protection officer / to the control center for the local fire protection concept.

EU-Konformitätserklärung / EC Declaration of Conformity

Hersteller / Adresse:
Manufacturer / Address:
ads-tec Energy GmbH
Heinrich-Hertz-Straße 1, 72622 Nürtingen/Germany

Produktbeschreibung:
Product description:
StoraXe PowerBooster GSS0608

Modell:
Model:
DVK-GSS0608 001-AA

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller /
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Bestimmungen folgender Richtlinien und Verordnung überein: /
The product described above as delivered is in conformity with the provisions of the following Directives and Regulation:

2014/53/EU Richtlinie des Europäischen Parlaments und des Rates über die Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Funkanlagen auf dem Markt
Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment

2006/66/EG Richtlinie des Europäischen Parlaments und des Rates vom 6. September 2006 über Batterien und Akkumulatoren sowie Altbatterien und Altakkumulatoren.
Directive of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators.

Die Übereinstimmung des bezeichneten Produkts mit den Vorschriften der angewandten Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen:
The conformity of the product described above with the provisions of the applied Directives is demonstrated by compliance with the following standards:

herangezogene harmonisierte Normen /
Harmonized standards used

Funk / *Radio*	**ETSI EN 301 908-1 V13.1.1; ETSI EN 301 908-13 V13.1.1**
EMV / *EMC*	**ETSI EN 301 489-1 V2.2.3; EN 61000-6-2:2005; EN 61000-6-3:2021;**
Sicherheit / *Safety*	**EN 62311:2008; EN 61439-1:2011**

herangezogene Normen, Anwendungsregeln und Vorschriften /
Standards, rules and Regulations of application used:

EMV / *EMC*	**ETSI EN 301 489-52 V1.1.0**
Sicherheit / *Safety*	**EN IEC 61439-7:2020; IEC 62485-5:2020; EN 62619:2017**
Funktionale Sicherheit / *Functional safety*	**EN 61508 Reihe/*serie* Ed. 2**
Sonstiges / *Others*	**VDE-AR-E 2510-2:2021;** **UN 38.3 Revision 7:2019** (auf Batteriemodulebene */at the battery module level)*

Ort, Datum
Place and date of issue
Nürtingen, 10. März 2022

Name und Unterschrift
Name and signature

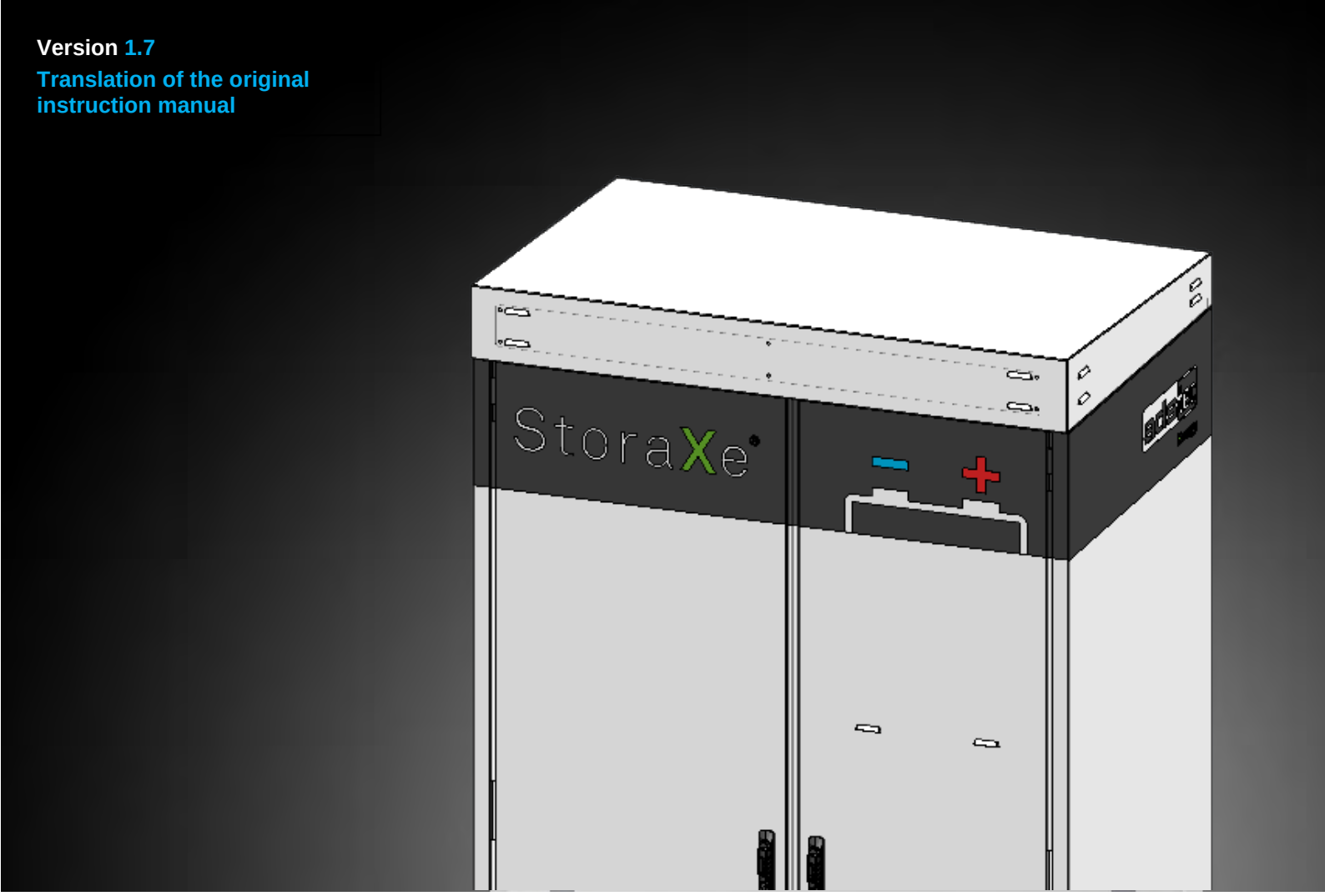
R. Vogt
Chief Financial Officer (CFO)

Dr. T. Ochs
Chief Technology Officer (CTO)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Beschaffenheits- oder Haltbarkeitsgarantie nach §443 BGB. Die Sicherheits- und Einbauhinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but does not imply any warranty for properties. The safety and installation documentation accompanying the product shall be considered in detail.

Version 1.7

Translation of the original instruction manual



Translation of the original instruction manual

StoraXe PowerBooster

Compact Storage System

Instruction manual PowerBooster GSS0608

Last changed: 11/2023

Manufacturer contact details

ads-tec Energy GmbH
Heinrich-Hertz-Str. 1
72622 Nürtingen
Germany

Phone: +49 7022 2522-201

E-mail: energy@ads-tec-energy.com

Home: www.ads-tec-energy.com

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1 General information

1.1 About this document

This instruction manual is intended to ensure safe and efficient handling of the storage system. The instruction manual and all additional documents provided are part of the storage system and must be kept in the immediate vicinity of the system.

The instruction manual must be accessible to all persons who are involved in installation and commissioning of the device and must be read and understood before any work is started. The instruction manual must be passed on to the operator after commissioning has been completed. All of the safety instructions and handling instructions given in the manual must be obeyed in order to ensure that work is carried out safely.

Operation of the system is subject to the laws and regulations which are applicable in the respective country at national, federal, European and international level by operators. The operating company is independently responsible for compliance with and observance of any corresponding technical innovations or new legal requirements.

Figures used in this instruction manual are provided for basic understanding and may differ from the actual design. The original version of this instruction manual was written in German. All non-German versions of this instruction manual are translations of the German instruction manual.

1.2 Legal regulations and other information

In Germany, the law regarding the placement on the market, the taking back and the environmentally compatible disposal of batteries and accumulators (German Battery Act – BattG) from 3 November 2020 and the law regarding the placement on the market, the taking back and the environmentally compatible disposal of electrical and electronic devices (German Electrical and Electronic Equipment Act – ElektroG) from 15 August 2019 apply.

The instruction manual is intended to provide assistance for adhering to legal regulations. It does not, however, replace them. Responsibility for adherence to the applicable laws and regulations lies with the users of the product. All details in this instruction manual were compiled to the best of our knowledge. Despite taking utmost care, no liability can be assumed for accuracy, completeness and actuality of the information.

1.3 Applicable documents

In addition to this instruction manual, the suppliers and manufacturers provide further detailed information and other applicable documents.

These documents can be accessed via https://share.ads-tec.de/index.php/s/rsmAWsGNMd33Pr3:

- GSS0608 manual with instruction manual, electrical diagram, safety data sheet for lithium-ion cells
- Transport and preliminary information GSS0608
- Manufacturer instruction manual for inverter
- ADS-TEC EMS interface description for StoraXe HMI
- ADS-TEC master interface description for Modbus/TCP
- ADS-TEC smart meter connection and parameterisation
- Commissioning requirements checklist

1.4 Limitation of liability

ads-tec Energy GmbH shall not be liable for personal injury, property damage or damage caused to the system as well as consequential damage that is/was the result of non-compliance with this instruction manual, improper use of the system, repairs and other actions on the system by unqualified electricians, or that is/was the result of using unapproved replacement parts. Failure to observe the maintenance intervals shall also result in exclusion from liability. Furthermore, it is strictly forbidden to make any unauthorised alterations or technical modifications to the system.

All assembly work, installation work and disassembly work on the battery storage system, both mechanical as well as electrical in nature, must only be performed by qualified electricians.

The owner and operator of the storage system are obliged to verify the scope of insurance cover for the case in question with their insurance company and, where necessary, to adjust the scope of this cover.

1.5 Manufacturer and contact details

The manufacturer of the product is ads-tec Energy GmbH. The company is referred to in the following as ADS-TEC.

ads-tec Energy GmbH
Heinrich-Hertz-Str.1
72622 Nürtingen
Germany
Phone: +49 7022 2522-201
Fax: +49 7022 2522-460
E-mail: energy@ads-tec-energy.com
Home: www.ads-tec-energy.com

1.6 Data, figures and modifications

All data, text and figures were prepared according to the current state of technical development and experience and do not constitute assurance of product properties. The figures are intended for basic understanding and are symbolically represented in individual cases.

1.7 Trademarks

It is noted that any software and/or hardware trademarks and any company brand names mentioned in this documentation are all subject to the general trademark protection rights. StoraXe® and Big-LinX® are registered trademarks of ADS-TEC. All other used third-party trademarks are hereby acknowledged. In the case of trademark infringement, ADS-TEC reserves the right to exercise all rights.

1.8 Copyright

2 Safety

2.1 General safety instructions

The system contains electrical voltages. Should comprehensive modifications be required, it is necessary to consult either with the manufacturer directly or with support personnel authorised by the manufacturer. If the system is opened up by an unauthorised person, the user may be subject to hazards as well as personal injury and the warranty will be invalidated.

Take the battery storage cabinet out of operation before beginning any service or maintenance work (➲*10 Switching off the system*).

	CAUTION
	**Risk of death due to high voltages!** High voltages can result in death. ➡ Check that no voltage is present prior to all work. ➡ Wear an appropriate protective equipment. ➡ Remove watches, rings, necklaces, bracelets and similar conductive items from your body and clothing.

2.2 Structure of safety instructions

The safety and warning notices used in this documentation are based on the standards DIN ISO 3864-2 (signal words), ISO 3864-1 (safety colours), DIN EN 82079-1 and ANSI Z 535.4 (design).

Signal word	Meaning
DANGER	**Indicates a hazardous situation where non-compliance** will lead to fatal or serious injury.
WARNING	**Indicates a hazardous situation where non-compliance** can lead to fatal or serious injury.
CAUTION	**Indicates a hazardous situation where non-compliance** can lead to minor injury and property damage.
NOTE	Indicates tips for easier operation and cross-references. It **eliminates the risk of property damage or injury.**

Table 1: Signal colours

Example:

	DANGER
	**Description of the type and source of the potential hazard!** Description of the consequences resulting from non-compliance. ➡ Description of the measures for hazard prevention.

NOTE

Description of the type of information given in the note!

➡ Description of the information given in the note.

2.3 Safety symbols

Symbol	Meaning
	Designation of batteries in accordance with § 13 of the German Battery Act (BattG). Batteries may not be disposed of with household waste, but must rather be disposed of separately. Used batteries must be returned to the point of sale or a disposal system.
	Labelling of electrical and electronic devices in accordance with § 7 of the German Electrical and Electronic Equipment Act (ElektroG). Electrical and electronic devices must not be disposed of with household waste, but must rather be taken to a collection point for waste electrical equipment. Such a collection point is generally operated by public waste management authorities, i.e., by municipalities.
	No naked flames; fire, open ignition sources and smoking prohibited
	"Do not extinguish with water" in accordance with BGV A8 and DIN 4844
	Follow the instructions
	Warning of a danger area
	Warning of electrical voltage
	Warning of hazards from charging batteries
	Warning of non-observance of the discharging time
	Environmental hazard
	Symbol for DC voltage
	Provide earth connection before use

Table 2: Safety symbols

2.4 Special rules of conduct in the event of fire

The system is equipped with a smoke detector that outputs an acoustic signal in the event of smoke emission and stops the power flow by opening the AC and DC isolating elements.

NOTE

Fire protection concept requirement.

- ➡ The operating company is required to provide a fire protection concept with appropriate notices in accordance with local regulations for the entire plant.
- ➡ Observe the example of a "Conduct in case of fire" instruction sheet (➲ Conduct in case of fire instruction sheet in manual GSS0608).

DANGER

Risk of death from fire and thick smoke!

- ➡ In the event of fire and heavy smoke emission, severe injuries to the body's surface and respiratory passages can occur which could lead to death.
- ➡ Leave the danger area immediately.
- ➡ Notify the fire brigade immediately and observe the following instructions.

DANGER

Risk of suffocation from fast and sudden propagation of gases!

If a cell overheats, gases can quickly and suddenly spread and an immediate reaction can occur involving the propagation of flames. The direction of propagation can vary depending on the installation site.

- ➡ Should there be a noticeable smell of gas, remove yourself immediately from the danger area and inform the fire brigade. Please note the following information.

DANGER

Hazard from flying parts in the event of detonation of the battery system!

In the event of an unexpected malfunction or external influence, the system may detonate.

- ➡ Leave the danger area immediately.

If there is smoke or fire **inside** and/or **outside** the storage system, if there is a smell of gas or if the acoustic warning signal of the smoke detector sounds:

- Remain calm and leave the danger area immediately.
- Warn all persons at the location and require that they leave the danger area via marked escape routes (walk crouched down, as hot gases rise).
- Do not attempt to put out the fire yourself.
- Contact the fire brigade immediately and inform them that lithium-ion batteries are involved in the fire.
- If possible, switch off the main switch or the fuses connected upstream.
- Secure the hazardous area.

2.5 Lithium-ion batteries

2.5.1 Transportation of new and used lithium-ion batteries

The transport of lithium-ion batteries is subject to conditions that are listed in the regulations for dangerous goods for the individual modes of transport. The packaging for transport and shipping must be in compliance with the respective current regulations; such as IATA (air), IMDG code (maritime traffic), ADR (road traffic in Europe).

The customer is responsible for informing himself about the developments of the respective regulations and laws. This may vary from country to country. Countries that are not bound by the ADR (European road traffic), IATA (International Air Transport) or IMDG (maritime traffic) may have their own requirements.

Lithium-ion batteries are, for all modes of transport, subject to the regulations for dangerous goods applicable for the respective mode of transport. These are to be complied with by all parties involved in the transport, including packers, shippers and consignors. All parties involved in the transport must have completed the training and earned proof of the training required for the respective mode of transport prior to participating in transport.

If possible, keep the original packaging.

Classification (as of 2019):

Shipment name:	lithium-ion batteries
UN number:	UN 3480
Classification:	Class 9

The lithium-ion batteries correspond to a type that was tested in accordance with the UN Manual of Tests and Criteria, sub-section 38.3.

For the air transport of lithium-ion batteries, a maximum charge state of 30% has been required since April 1st, 2016.

Lithium-ion batteries SRB5106 are assigned Class 9 in all dangerous goods regulations and may be transported in compliance with the regulations specified under number UN3480. Lithium-ion batteries SRB5106 have a rated energy of more than 100 Wh, a mass of more than 12 kg and, thus, are NOT subject to special regulations SV188 (ADR, IMDG) and P965 part IB and part II.

Training:

Persons who are involved with the transport of dangerous goods must be trained in the applicable requirements regarding dangerous goods (details available in the UN regulations).

Handling and battery packaging:

The packaging and labelling of the lithium-ion batteries must be designed and executed in accordance with the UN regulations for the given mode of transport. Responsibility for compliance with the legal regulations lies with the packer and shipper.

If ads-tec Energy GmbH is involved with handling and packaging on an advisory level, then handling and packaging must only be performed in accordance with the instructions of ads-tec Energy GmbH. If packaging and part numbers of the packaging components are specified therein, only these are to be used. Information on the handling and shipment of lithium-ion batteries is only valid and applicable for lithium-ion batteries that the manufacturer or shipper did NOT find to be faulty or damaged due to reasons of safety.

Not only is compliance with the packaging materials specified there required but also all information on preparing the goods before packing, for packing the goods in the inner and outer packaging, for fastening and for securing within the packaging, for closing the packaging and for labelling.

Used lithium-ion batteries are subject to these regulations as well. For intact and undamaged used lithium-ion batteries, the regulations for new batteries can generally be applied.

2.5.2 Transportation of defective or damaged lithium-ion batteries

Defective or damaged batteries are subject to more stringent regulations, which include up to a complete ban on transport. The transport ban applies for air carriers (ICAO T.I., IATA DGR special provision A154).

DANGER

Risk of death due to poisoning!

Outgassing substances can cause injury to eyes, skin and respiratory passages. Escaping smoke is highly flammable.

➡ Leave the danger area immediately. Cordon off the hazardous area immediately and notify the fire brigade.

If one of the following questions can be answered with **YES**, the packaging and transport regulations for **defective** batteries apply:

- Battery housing/battery cells exhibit a damaged or deformed housing
- Fluid is escaping
- Strange smell of gas is noticeable
- Measurable increase in temperature in the OFF state
- Melted or deformed plastic parts

- Melted power supply lines
- Battery management system has identified defective cells

If, even under normal transport conditions, the defective/damaged battery is at a risk of rapid decomposition, dangerous reaction, flame formation, dangerous heat development or dangerous emission of poisonous, corrosive or flammable gases or vapours, then regulations SV376; sentence 5 et seq. / P911; LP904 apply.

2.5.3 Storage and supply of new and used lithium batteries

Observe the manufacturer specifications and safety data sheets of the battery cell.

- It is strongly advised that directive VDS-3103: 2019-06 also be observed.
- Store the battery modules in their original packaging in a dry, ideally air-conditioned indoor space until installed.
- Avoid direct sunlight, large temperature fluctuations and frost.

2.5.4 Storage and supply of defective or damaged lithium batteries

Observe the manufacturer specifications and safety data sheets of the battery cell. It is strongly advised that directive VDS-3103: 2019-06 also be observed.

- Separate the defective lithium batteries (quantity restriction).
- Remove damaged or defective batteries from storage and production areas and store them in a separate, fire-resistant area that is engineered for fire protection until they are disposed of.
- Alternatively, store damaged or defective batteries in a spatially separated area (e.g., hazardous materials warehouse or hazardous materials container). Minimum safety distance 5 m. Avoid mixed storage with other products on a shelf or block.
- Make certain that a suitable fire alarm system with connection to a constantly occupied post is present for the storage area. For fire extinguishing systems, use suitable extinguishing agents according to the product data sheets.

2.6 Residual risks

The battery storage system corresponds to the state of the art and was built in accordance with the recognised safety regulations. The system was subjected to a careful inspection. Nevertheless, residual risks cannot be ruled out if the system is used incorrectly or as a result of environmental influences.

To avoid residual risks, it is essential to observe the specifications in this instruction manual when carrying out any work on the system, such as installation, maintenance or service work.

2.6.1 Electric shock from touching the battery poles of the serially connected battery string

DANGER

Risk of fatal electric shock!

During maintenance and service work, touching the battery poles on the serially connected string can cause serious injuries that can lead to death.

- ➡ Wear appropriate personal protective equipment.
- ➡ Training of the personnel.
- ➡ When working on the battery system or its components, the power supply must be disconnected and secured against being switched on again.

2.6.2 Crushing during movement and installation of a battery module

WARNING

Risk of crushing!

Crushing of hands, arms and other limbs may occur if the user is not qualified and does not use the system as intended. These can lead to serious injuries.

- ➡ Training of the personnel.
- ➡ Wear appropriate personal protective equipment.
- ➡ Use recommended lifting equipment.
- ➡ Have read and understood the entire instruction manual

2.6.3 Off-gassing batteries

WARNING

Hazard due to off-gassing batteries!

If damaged, gasses can escape from the batteries.

- ➡ Observe the battery cell safety data sheet
- ➡ Training of the personnel.

3 Product description

3.1 General

The battery storage system is a compact 60 kW storage system with Li-ion battery modules for outdoor installation directly at the location of use. The system stores electrical power from the AC power supply network and feeds it back to the AC power supply network if necessary.

- Complete system with integrated inverter series
- Especially powerful and efficient
- For many areas of application such as optimisation of personal consumption and peak-load capping,
  optional for EV charging and zero feed-in (with additional components).
- The battery storage system is scalable (➲ *14.1 Grid-connected mode (scaling of multiple systems in a group))*

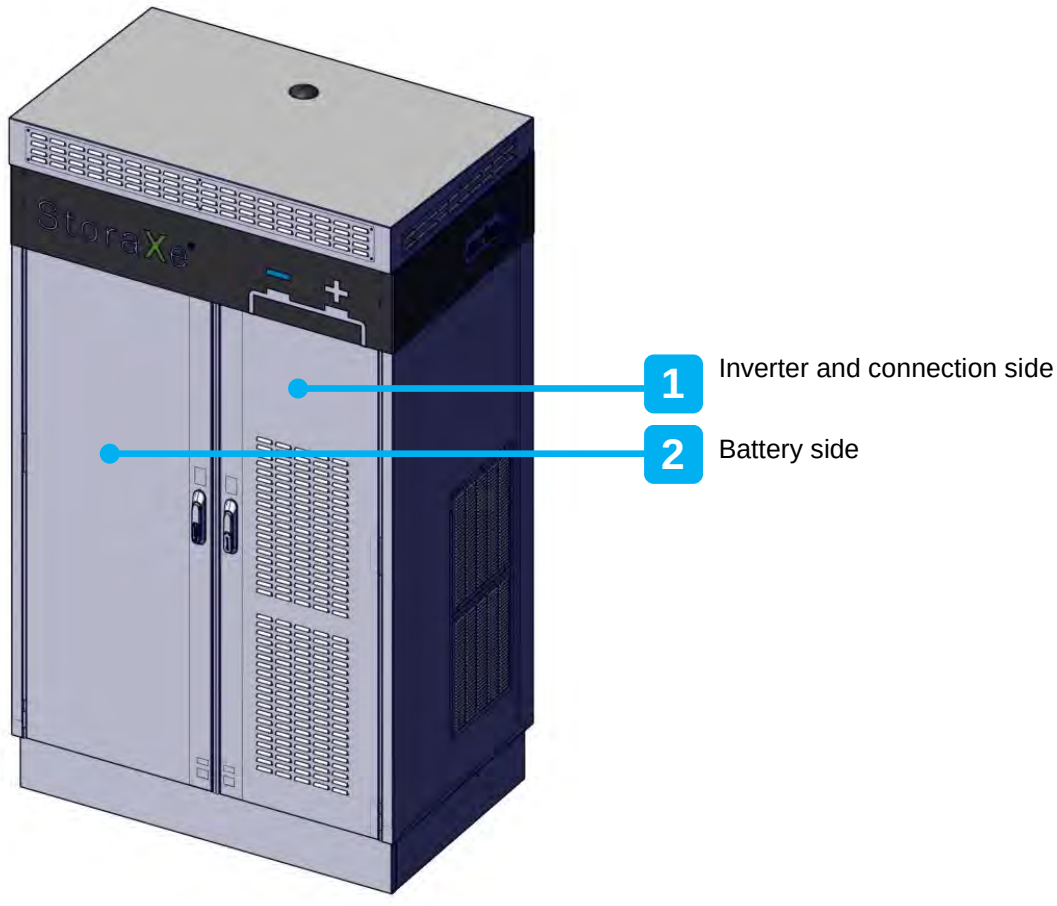


FIGURE 1: VIEW OF BATTERY STORAGE SYSTEM

The storage system comprises an outdoor double cabinet housing, which is equipped with a battery rack, two inverters, an air-conditioning system and an integrated roof fan. For a description of the system components, see chapter 6.

3.2 Technical data

		GSS0608
System	System type	AC coupled storage system with outdoor cabinet
	Control / functions	ADS-TEC energy apps: - Peak-shaving - Optimisation of personal consumption - ADS-TEC master interface
	Network connection	Ethernet, RJ45, LTE
	Inverter	Integrated. Type: ABB PQstorl-M
Grid connection	Effective power	60 kW
	Maximum charging capacity	60 kW
	Apparent power	60 kVA
	Mains voltage	400 VAC
	Grid type	TN-S with 3Ph + N + PE (stationary)
	Grid frequency	50 Hz
Battery storage system	Cell chemistry	Lithium-NMC
	Nominal energy content	84.6 kWh
	Useable energy	78.7 kWh
General data	Installation location	Outdoor
	Temperature range	-20 °C to +40 °C
	Protection class	IP55
	Cell performance warranty	up to 10 years (in combination with advanced service contract and BatX)
	Break-in protection	RC2
	Vandalism class	IK10
	Dimensions WxHxD	1430 x 2500 x 940 mm (+/-20 mm)
	Weight	Approx. 1,250 kg (fully equipped)
Ambient conditions	Temperature range (operation)	-20° - +40° C
	Storage temperature range for battery modules	0°C - +25°C, <80% relative humidity, non-condensing
	Temperature range (service work)	-20° to +40 °C
	Ambient humidity – operation	20 - 93% relative humidity, non-condensing

Standards	List of the applied harmonised standards	Wireless ETSI EN 301 908-1 V13.1.1; ETSI EN 301 908-13 V13.1.1 EMC ETSI EN 301 489-1 V2.2.3; EN 61000-6-2:2005; EN 61000-6-3:2021 Safety EN 62368-1:2014 + AC:2015; EN 62311:2008; EN 61439-1:2011
	List of the applied regulations, standards and applications	EMC ETSI EN 301 489-52 V1.1.0 Safety EN IEC 61439-7:2020; IEC 62485-5:2020; EN 62619:2017 Functional safety EN 61508 series ed. 2 Miscellaneous VDE-AR-E 2510-2:2021 UN 38.3 Revision 7:2019 (on battery module layer)
	Grid connection directives	The used inverter meets the following directives: DE: VDE-AR-N-4105:2018-11 VDE-AR-N-4110:2018-11 UK: G99 EU: EN50549

Table 3: Technical data

3.3 Safety in the total system

Functionality:

The safety system from ADS-TEC is based on a redundant safety concept which protects the battery cells from unsafe operating windows. The safety concept ensures that the battery is switched off reliably in the event of a fault, e.g. if the battery system exceeds a temperature threshold or the charging/discharging power is exceeded. The safety thresholds are configured so that the system disconnects from the inverter before the safe operating window is exited. After rectifying the error, the system can again be operated safely.

First safety level:

The SRC4310 constantly checks predefined limit values and triggers an error if limits are exceeded or fallen short of. Due to the error, the contactors are opened and the system switched to a safe state.

Second safety level:

Extended limit values are defined in the battery management system of the SRB. If exceeded or fallen short of, corresponding measures are initiated and the system switched to a safe state.

Third safety level:

In addition, the SRB module has a separate, software-independent monitoring system that uses ICs to force a safety shutdown. If the outermost limit values are exceeded or fallen short of, the system is switched to a safe state.

The system reduces the maximum available power in the charge and discharge direction as a function of the cell temperature.

NOTE
Safe operating window ➡ If the safe operating window is exited, e.g., due to high overcurrents, the system automatically disconnects from the inverter and prevents further operation. A corresponding error message can be viewed via the communication protocol or the web interface.

4 Operating instructions

If maintenance or repair work is necessary, ADS-TEC support or a support provider authorised by ADS-TEC is to be contacted for advice. If the system is opened up by an unauthorised person, the user may be subject to hazards and the warranty is invalidated.

4.1 Obligations of the operating company

CAUTION

Hazard due to environmental and property damage!

➡ If modifications or changes are made at the installation location at a later stage, the environmental conditions and compliance with the requirements regarding the installation location must be observed.

The instruction manual must be read and understood by all users who work with the battery storage system. It must be accessible at all times. Installation, commissioning, operation, decommissioning and repairs must be performed only by qualified electricians. At the installation site of the system, the applicable rules and regulations for accident prevention must be observed.

The safety instructions and the instruction manual are to be observed by all persons who work with the system. The instruction manual contains the most important information for safely operating the system. To ensure safe and proper operation of the system, proper storage, transport, installation and commissioning as well as careful handling are required.

All maintenance work must be performed at the specified intervals. All modifications to the battery storage system are prohibited.

Insulation resistance check

DGUV Regulation 3 stipulates that the insulation resistance of electrical systems be checked regularly in accordance with the standard DIN VDE 0100-600: 2008-06.

Leakage current monitoring

The operating company is responsible for monitoring the leakage current.

A technical solution is to equip earthed installations (TN systems) with a system for residual current monitoring (RCM). Any leakage current causes a measurable surge in residual current. This current is calculated from the sum of all currents on all conductors with the exception of the protective earth (PE) conductor. Residual current monitoring (RCM) and the associated separation point must be installed in their sub-distributors by the operating company.

4.2 Intended use

The storage system is used to store electrical energy. Assembly and connection take place at the installation site. The storage system may only be operated with the inverter installed by ADS-TEC. The storage system is only to be assembled, installed and operated within the permissible specification. All requirements with respect to the environment and the installation location must be adhered to. Use in non-specified environments is prohibited.

NOTE

Observe service life.

➡ Batteries are an electronic system, the behaviour and service life of which are strongly influenced by environmental conditions and usage profiles. Bear in mind that high charging and discharging cycles affect the service life of the cell.

4.3 Improper use

Operation other than or beyond that described for the storage system shall be deemed improper use. Therefore, the battery storage cabinet must not be put into operation in the case of transport damage, non-observance of the environmental conditions and non-compliance with the requirements regarding the installation location and, if necessary, must be taken out of operation in the case of changing conditions.

In the case of improper use, ADS-TEC shall not accept responsibility or liability for injury or damage that is directly or indirectly attributable to the handling of the storage system. Should the battery storage cabinet have evident signs of damage caused by, for example, improper operation or storage conditions or due to improper use or handling, it must be shut down immediately. Ensure that it is secured against being started up inadvertently.

Damage due to improper use

Should the product or one of its components have evident signs of damages caused, e.g., by improper operation / storage / transport conditions or due to improper use or handling, it must be immediately shut down and secured against being started up accidentally.

4.4 Personnel qualification

- Safe operation requires the storage system to be operated by personnel who have received sufficient training. Unqualified personnel are unable to recognise risks and are therefore subject to a higher degree of danger.
- Only trained and authorised persons are allowed to perform the activities described in this instruction manual.
- The operating company must ensure that the personnel comply with the locally applicable rules and regulations for safe and hazard-conscious work.

- The personnel must have read and understood the instruction manual, in particular the chapter "Safety".
- The operating company must ensure that no hazards exist for persons with a restricting medical condition (e.g. persons with implants, cardiac pacemakers) when working on the system.
- If hazards exist due to a restricting medical condition, work on the system is prohibited.

The following qualifications for personnel are addressed in this instruction manual:

- Electricians
- Transport personnel
- Instructed personnel

4.4.1 Electricians

Electricians must satisfy the following qualification criteria and requirements in order to perform work on the GSS and to recognise and avoid hazards independently:

- Professional training and experience.
- Specific product training by ADS-TEC.
- Knowledge of relevant standards and regulations.

4.4.2 Transport personnel

Transport personnel must meet the following qualifications and requirements in order to be able to carry out transport work at storage system and to independently recognise and avoid hazards:

- Trained in driving conveyor vehicles with driver's seat or driver's platform. Proof of qualification is mandatory.
- Trained to operate a crane. Proof of qualification is mandatory.
- Trained to drive lorries. Proof of qualification is mandatory.
- Trained or participation in the transport of battery systems
- Due to physical, mental and character qualities suitable for driving conveyor vehicles and lorries.

4.4.3 Instructed personnel

Instructed personnel have been informed about transferable work activities, potential hazards and intended use.

- Work only according to the instructions for transport, assembly and operation of the system.

4.4.4 Target group matrix

Life phases	Electricians	Transport personnel	Instructed personnel
Transport		X	X
Installation		X	X
Commissioning	X		
Operation	X		X
Maintenance	X		
Repair	X (ADS-TEC)		
Decommissioning	X		

Table 4: Target group matrix

4.5 Personal protective equipment

To prevent personal injury and damage to the plant, every activity requires the utmost concentration of the persons involved because these activities are always carried out close to earthed or live components. It is essential to ensure that all used tools must always be insulated and are in good order and condition. The following protective clothing is recommended:

	**Use eye protection** Flying parts/particles or coolant: Use eye protection
	**Wear protective clothing** Chemicals, heat, cold: Wear protective clothing
	**Use foot protection** Foot injuries caused by objects or contact with hot or chemical materials
	**Use hand protection** Hand injuries caused by objects or contact with hot or chemical materials

Table 5: Personal protective equipment

4.6 Warranty / repairs

Repairs must be performed only by ADS-TEC or by persons authorised by ADS-TEC. Failure to observe this point will invalidate the warranty. The warranty will also be invalidated in the case of failure to observe the maintenance intervals, work on the battery storage system (SRS) by non-authorised persons, use of an inverter not approved by ADS-TEC, operation of the SRS outside its specifications,

use of non-approved replacement parts, and any other activity that deviates from this instruction manual.

4.7 Damage due to improper use

Should the system or one of its components have evident signs of damages caused, e.g., by improper operation / storage / transport conditions or due to improper use or handling, the device must be immediately shut down and secured against being started up accidentally.

Do not drill holes in the system or its components.

4.8 Requirements regarding installation location

The system is designed for stationary use in an outdoor area. Make certain that the specified environmental conditions are maintained at all times. Use in non-specified environments, e.g. on board ships, in explosive atmospheres or at high altitude (see the climatic environmental conditions) is prohibited.

CAUTION

Hazard due to condensation!

➡ Condensation may form if the system has not had sufficient time to settle to the environmental conditions following transport or before it is put into operation again. (Connection to AC supply is required.)

4.8.1 Environmental conditions

Observe the environmental conditions information in the technical data (➲ 3.2 Technical data).

4.8.2 Requirements regarding installation location

Please note that the battery system may not be set up and operated

- in buildings, garages, courtyards and other covered structures
- in areas where there is a risk of flooding
- in areas where there is a risk of fire and explosion
- in the vicinity of combustible materials
- in areas with sandstorms
- in permanent residential areas
- in the vicinity of escape routes

.

Installation conditions:

- The checklist "Commissioning Requirements" must be completed and signed (➲ attachment: *Transport and preliminary information*).
- The system is only suitable for outdoor installation.

- Observe the following floor space requirements for the system:
  - The floor space is to be constructed at the installation location in accordance with the local conditions and technical data (➲ *3.2 Technical data*).
  - The floor space is exactly horizontal.
  - Cable entry is from below.
  - The floor space has the required load capacity for the 1.25 t weight of the system and has to withstand this load permanently.
    If applicable, also take into account the weight of the means of transport.
- Sufficient drainage is available.
- Earthing via ring earth electrode for flexible connection cable (min. 16 mm²) according to national and local regulations and conditions must be in place.
- Note that ventilation openings must be kept clear.
- The air at the ventilation openings must be able to circulate freely.
- During the entire operating time, no leaves, dirt, etc. must be sucked in from the ventilation openings.
- Protect the system against penetrating water (groundwater or flood hazard area).
- Keep the existing housing doors closed.
- Observe the following minimum distances:
  - Clearance from rear side to wall or to other objects: no clearance required
  - Clearance from sides (left + right) to wall or to other objects: min. 1 m
  - Clearance from front side to other objects: 1.5 m (0.7 m for opened doors + 0.8 m for service activities).
  - Take into consideration any additional clearance required for escape routes (min. 0.8 m).
  - Note that ventilation openings must be kept clear.
- The air at the ventilation openings must be able to circulate freely.
- During the entire operating time, no leaves, dirt, etc. must be sucked in from the ventilation openings.
- Protect the system against penetrating water (groundwater or flood hazard area).
- Keep the existing housing doors closed.

Installing multiple systems in a group (scaling)

- Observe the minimum clearance for each individual system
- Observe the resulting requirements with regard to floor space
- Observe the supplementary information as well as the examples for installing in a group (➲ *14.1 Grid-connected mode (scaling of multiple systems in a group)*)

Installation in built-up areas

- When installing in built-up areas, observe the local noise abatement regulations (Germany: "Technische Anleitung zum Schutz gegen Lärm" (Technical Instructions for Protection against Noise), abbreviated "TA Lärm"). Observe the resulting minimum distances to residential buildings.

Power connections

- Note the information in the electrical diagram (➲ *Electrical diagram in manual GSS0608*).
- When installing in built-up areas, observe the local noise abatement regulations (Germany: "Technische Anleitung zum Schutz gegen Lärm" (Technical Instructions for Protection against Noise), abbreviated "TA Lärm"). Observe the resulting minimum distances to residential buildings.

4.9 Standards

Compliance with the protective aims of the applicable CE directives is confirmed by the EU conformity declaration and is represented by a CE mark on the product. The EU conformity declaration is part of the documentation.

5 Transport

5.1 Transporting the storage system

CAUTION

Risk of irreversible damage to the components!

Improper transport can irreversibly damage components.

- ➡ Use only means of transport that are designed for the weight of the storage system and battery modules.
- ➡ Transport the battery modules to the final location separately from the storage system.
- ➡ Transport the storage system upright with the help of a forklift to the final location.
- ➡ Bear in mind that the centre of gravity of the storage system is not positioned centrally.
- ➡ Move the storage system only when in a lifted state.
- ➡ Use non-slip mats on any surfaces where the storage system will have to be set down temporarily.

WARNING

Hazard from heavy loads!

If the storage system or the battery modules tip over or fall, they can cause serious injuries.

- ➡ Hazard from falling or tipping loads.
- ➡ Risk of crushing hands and feet during transport.

The storage system is delivered in 3 parts:

- 1x pallet with preassembled storage system, without battery modules (approx. 800 kg gross).
- 2x pallets with 2x 4 battery modules as well as associated power and communication cables and manual (approx. 2x 330 kg gross).

The centre of gravity of the storage system is indicated on the packaging as follows:

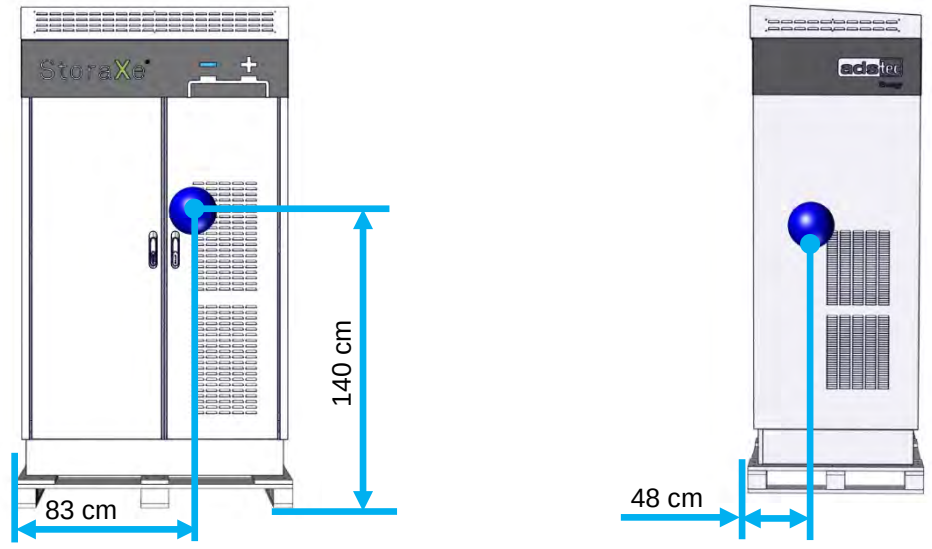


FIGURE 2: CENTRE OF GRAVITY INDICATED ON PACKAGING

5.2 Checking delivery package

Check that the delivery package is complete and in flawless condition. If parts are missing or damaged:

- Do not use the product! Submit a complaint to the supplier.

The delivery package consists of:

- GSS0608 storage system (preassembled and prewired).
- 8 x battery module SRB5106 with installation material
- Box with power cabling, communication cabling, key for SRC4310 and cabinet, screws, cable clamps.
- Manual GSS0608

CAUTION

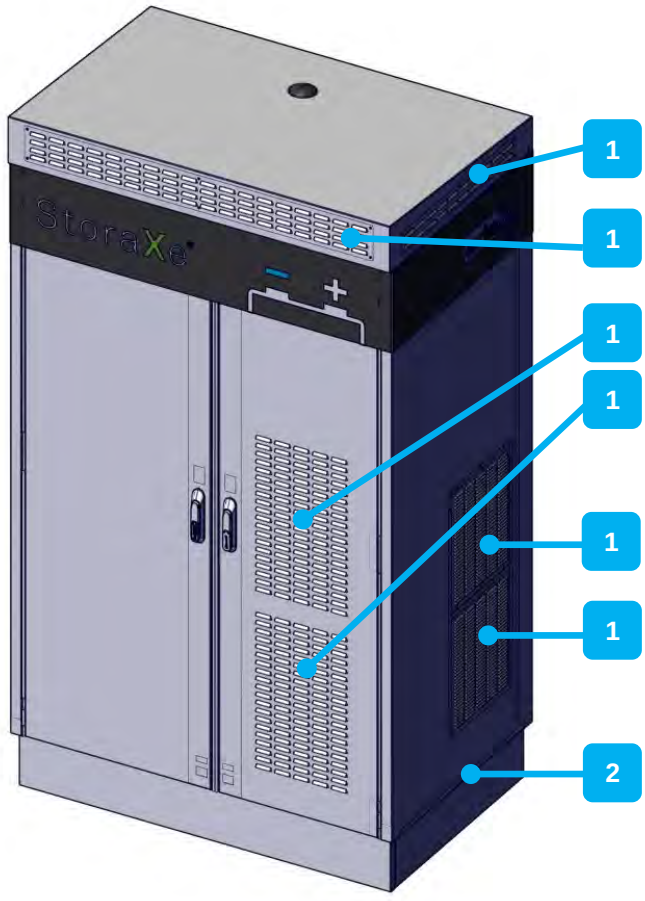
Damage to property due to incorrect storage!

➡ Store the battery modules properly until installation according to the specifications in the battery module data sheet (➲ 2.5.3 Storage and supply of new and used lithium batteries).

6 Brief description of system components

6.1 Double cabinet housing

The outdoor double cabinet housing is designed to accommodate all system components. Depending on the components used, it has recesses for cable entry, ventilation openings on the base and roof as well as ventilation grilles on the right-hand door and on the right side of the cabinet.



1 Ventilation grille with filter mat

2 Condensate drain hose for air-conditioning system

– Lay down the condensate drain hose and make sure that it is not soiled or clogged.

FIGURE 3: DOUBLE CABINET COMPONENT

The system is lockable to prevent unauthorised access.

NOTE

Observe access.

➡ It must be ensured that the two doors are freely accessible.
➡ To ensure air circulation, the ventilation grilles must be unobstructed.

6.2 SRS Storage Rack System

The storage system includes a battery storage system rack of type SRS0085 with 8 battery modules and an SRC4 storage rack controller for controlling and monitoring the battery modules.

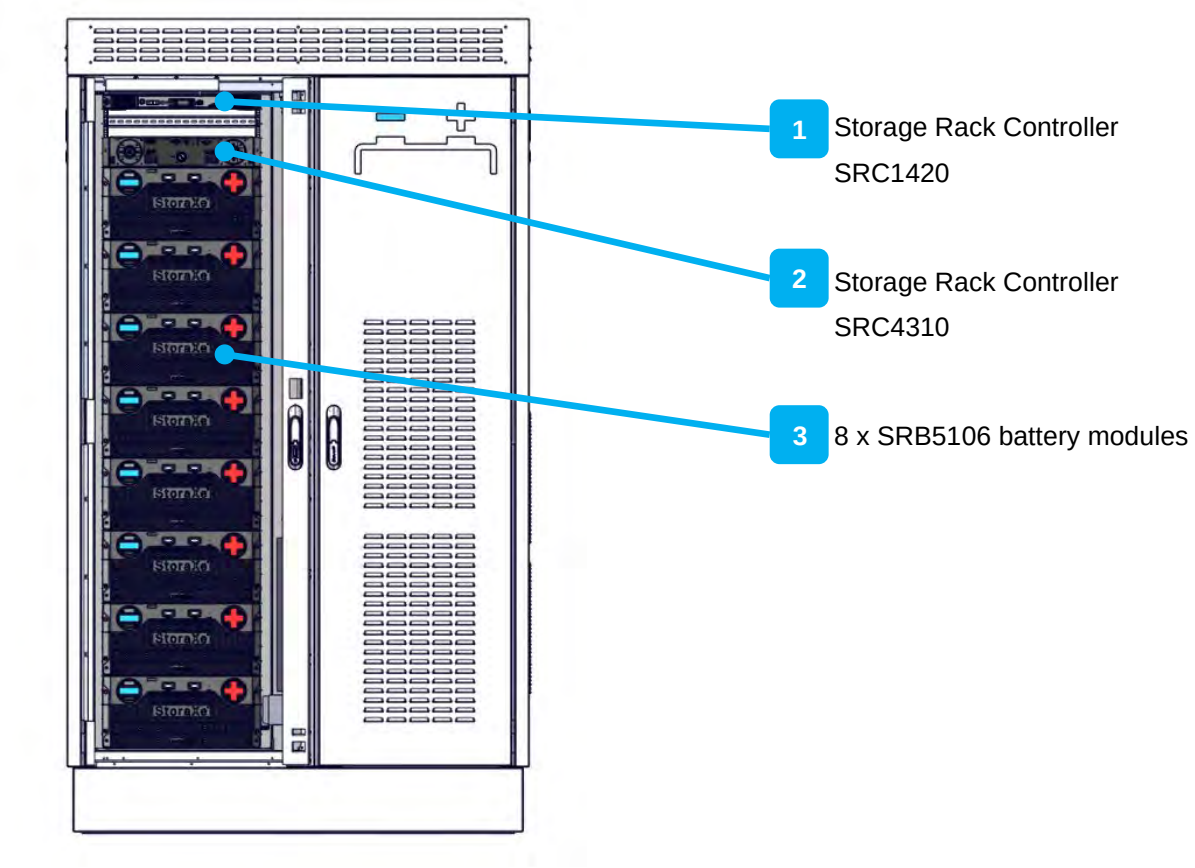


FIGURE 4: SRS STORAGE RACK SYSTEM COMPONENT

6.2.1 Storage Rack Battery – SRB5106

The Storage Rack Battery (SRB) component represents one battery module of the storage system. The battery module contains the cells and its own battery management system (BMS). The SRB module displays its current status via a display on the front.

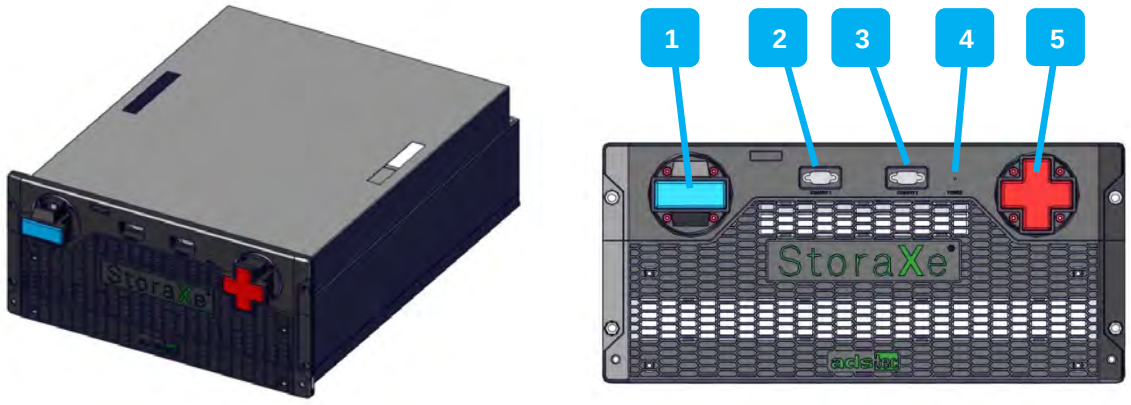


FIGURE 5: SRB STORAGE RACK BATTERY COMPONENT

Position	Description
1	Minus pole – connector
2	CAN-BUS1 – IN
3	CAN-BUS2 – OUT
4	Status LED
5	Plus pole – connector (with transport cover)

6.2.1.1 Status indicators

Symbol	Behaviour	Description
	Off	System is switched off
	Static	SRB is performing an update
	Static	SRB is operating normally
	Static	SRB in fault state

Table 6: SRC LED status displays

6.2.2 Storage Rack Controller – SRC4310 (SRC4)

The storage rack controller (SRC4310) component is the control unit of the StoraXe storage system and handles functions such as the following:

- Controls and monitors the connected battery modules via the battery management system (BMS) and supplies power to the BMS.
- Communicates the battery condition to external devices.
- Controls operation of the contactors:
- Starts the inverter (charges the DC intermediate circuit with a limited current via a pre-charge resistor).
- Controls the roof fan via an analogue 0-10 V signal and monitors its function via the feedback tacho signal.

Two class "aR" short-circuit fuses are installed in the SRC4310. One fuse is in the negative path and the other is in the positive path of the device. The device also includes a current measurement unit that automatically opens the contactors within 10 ms in the event of overcurrent, thus placing the system in error mode.

NOTE

Operate with key switch

➡ The key switch should be operated by qualified and trained personnel only.

NOTE

Recommendation for use

➡ The key on the SRC4310 should only be operated in the case of decommissioning, servicing and faults as well as for maintenance work. The key must then be removed to prevent the switch from being switched on again. A switch in any other position may lead to damage to both the battery system and the connected power electronics. To do this, proceed as described in the chapter *Decommissioning*.

6.2.2.1 Connections on front side

The Storage Rack Controller SRC4 is already configured and connected. Only the key of the key switch (2) still has to be inserted.

FIGURE 6: STORAGE RACK CONTROLLER FRONT VIEW (EXAMPLE FIGURE)

Position	Description
1	Minus pole to SRB
2	-S1 key switch (ON – SERVICE – OFF)
3	CAN BUS 1
4	SERVICE USB 2.0, only for internal service purposes
5	RESET reset button
6	STATUS SRC LED (top) SRB LED (bottom)
7	Lithium battery (CR2032 - 230 mAh) for SRC4310 real time clock
8	Plus pole to SRB

In the "Service" position of the key switch (2), the control cables of the DC contactors are disconnected. This serves to protect against switching back on again. It is not possible to close the contactors with a software command in this switch position.

The reset button (5) allows the SRC4310 to be reset to the delivered state. To do this, the button must be pressed for five seconds while in operation. As confirmation, the SRC LED and the SRB LED then flash red for five seconds. Once in this phase, the Reset button must not be pressed. The SRC4310 then performs an automatic restart.

6.2.2.2 Status indicators

SRC LED (top)

Symbol	Behaviour	Description
	Off	System is switched off
	Flashing	SRC4 is starting up
	Flashing	SRC4 is performing an update
	Static	SR4 in operating state
	Static	SRC4 in warning state
	Static	SRC4 in fault state
	Flashing	Reset to factory settings

Table 7: LED overview – SRC4310 (top)

SRB LED (bottom)

Symbol	Behaviour	Description
	Off	System is switched off
	Flashing	SRB modules are starting up
	Flashing	SRB modules are performing an update
	Static	SRB modules in operating state
	Static	SRB modules in warning state
	Static	SRB modules in fault state
	Flashing	Reset to factory settings

Table 8: LED overview - SRB (bottom)

6.2.3 Storage Rack Controller SRC1420 (SRC1)

The SRC1420 functions as a control unit for systems with inverters for the ads-tec EMS operating mode with apps (standard operating mode) as well as Master operating mode.

Smart meters can be connected to the SRC1420. For this purpose, please refer to the list of supported smart meter models (➲ *Connection and parameterisation of the power meters*).

Furthermore, the SRC1420 can connect to the ads-tec BigLinX Energy Monitoring Portal. This is necessary for every service level agreement.

NOTE

Property damage due to incompatible devices

- ➡ When replacing cables and protective earth connections, observe the respective cable cross sections in the electrical diagram (➲*Electrical diagram in manual GSS0608*).
- ➡ Externally connected devices (Ethernet and USB) must have protection class II with respect to the mains voltage.

6.2.3.1 Connections on front side

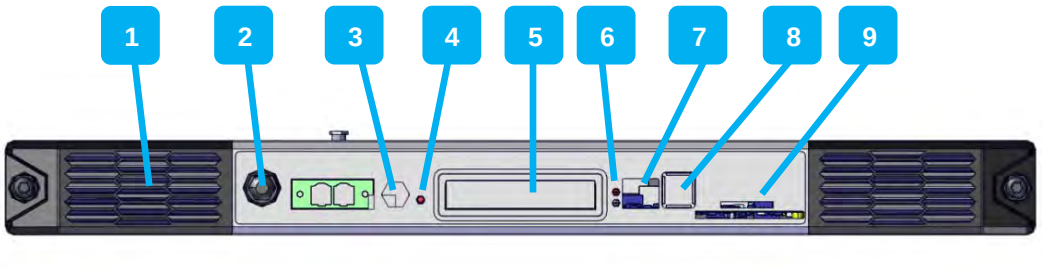


FIGURE 7: SRC1420 STORAGE RACK CONTROLLER COMPONENT - FRONT VIEW

Position	Labelling	Description
1	-	Lithium battery (1/2AA 3 V 850 mAh) (located under ventilation grille)
2	START	Power button
3	T10A, H, 250 VAC	Fine-wire fuse 5 mm x 20 mm / T10 250 V
4	Reset	Reset button
5	CAN bus 1	CAN bus 1
6	-	Status LED, top Power LED, bottom
7	LAN 1	LAN via RJ45, for customer network, IP via DHCP
8	USB 1-2	2 x USB 2.0, for service
9	SD card SIM1 SIM2	1 x SD card slot on top SmartCard slot (SCM) on left SIM card for mobile communication (optional), slot (4G/LTE) on right

6.2.3.2 Status indicators

Status LED (front, top LED)

Symbol	Behaviour	Description
Status LED		
	Off	System is not connected to any voltage source (power supply/battery)
	Static	System OK
	Static	System in fault state

Table 9: Overview of status LED displays

Power LED (front, bottom LED)

Symbol	Behaviour	Description
Power LED		
	Off	Controller is not connected to any voltage source (power adapter/battery)
	Flashing slowly	Controller booting
	Flashing quickly	Controller is being updated
	Static	Controller is connected to a voltage source (AC) Controller has powered up / is ready for operation

Table 10: Overview of power LED

NOTE

Pressing the reset button resets the SRC1420 to factory settings.

➡ All settings such as IP addresses, etc. are reset and must be reconfigured.

6.3 Inverter

6.3.1 Scope of delivery

Two 30 kVA bi-directional inverters with power section and control unit of ABB-PQstorl-M type have been integrated for the storage system.

The inverter transfers electrical power from the public grid to a battery and back. It is the interface between AC (public grid) and DC (battery system) and operates bidirectionally to charge and discharge the battery system.

The inverter can be used in current-regulated grid-connected mode.

6.3.2 Safety instructions

DANGER

Risk of death due to electric shock!

The AC and DC supply must be switched off before any work is performed on the system, otherwise a potentially fatal electric shock can occur. A short-circuit of the batteries can cause a fire.
Observe the following points in this order:

- Comply with national and international safety rules and regulations for working on electrical systems.
- Only work with insulated tools and remove body jewellery to avoid short circuits and electrical shock.
- Before starting work, make sure that the AC supply of the supply lines to the system is switched off and secured to prevent it from being switched on again inadvertently.
- Make sure that the main switch is set to the OFF position.
- Turn the key switch of the SRC4310 to "OFF" and remove it to prevent the SRC4310 from being switched on again.
- Observe a waiting period of **20 minutes** to reliably exclude residual voltages.
- Check that the system is de-energised.
- Before making any changes to the interior, check that the fan has stopped.

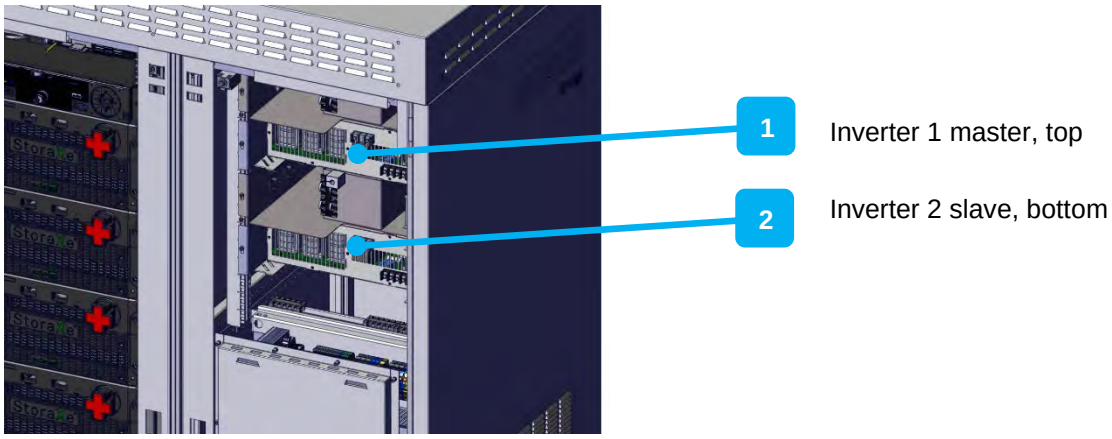
NOTE

Observe qualifications.

- All work must be performed by qualified and specially trained personnel only!
- When carrying out work (e.g. installation work at the device), make sure that the units concerned are in a secured and de-energised condition, and wear personal protective equipment.
- It is essential to follow the instructions from the manufacturer (see "Applicable documents").

6.3.3 Set-up

FIGURE 8: INVERTER COMPONENT - POSITION



6.4 Air-conditioning system

The air-conditioning system is a switching cabinet-type cooling unit of the Blue e+ series from Rittal. The air-conditioning system is preconfigured for cooling the battery modules and is equipped with an additional heater for lower temperatures.

The air-conditioning system is preset to a temperature of 23°C for the battery compartment.

The heater switches on automatically when temperatures fall below 15°C.

Speed-controlled fans on the housing dissipate the heat of the active components.

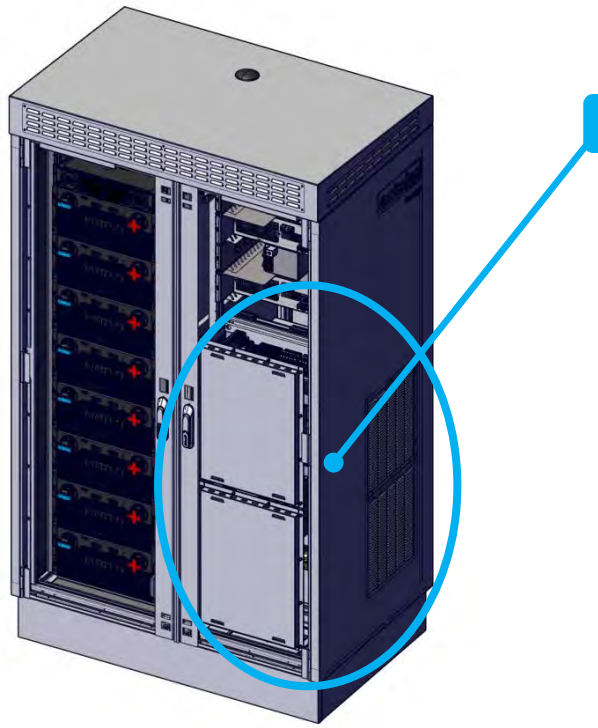
NOTE

Ensure correct lubrication and cooling!

➡ The accumulation of oil in the compressor of the air-conditioning system can ensure sufficient lubrication and cooling.

The air-conditioning components are monitored via a central IoT interface.

The climate control system as delivered is already preconfigured and does not need to be adjusted.



1 Air-conditioning system position.

INFO:
The air-conditioning system is behind the switch board and is not visible when the cabinet door is open.

FIGURE 10: AIR-CONDITIONING SYSTEM COMPONENT – POSITION (EXAMPLE FIGURE)

7 Installation

7.1 Installation requirements

NOTE

Observe requirements regarding installation location.

- ➡ Observe the environmental conditions at the installation location as well as the installation location requirements (➲*4.8 Requirements regarding installation location*).
- ➡ Assembly must be performed only by qualified and trained personnel.
- ➡ The storage system must not be put into operation in the case of transport damage, non-observance of the environmental conditions and non-compliance with the requirements regarding the installation location. If necessary, the storage system must be taken out of operation in the case of changing conditions.

NOTE

Observe weather conditions.

- ➡ Make sure that the weather conditions are suitable for installing the system:
- ➡ There is no wind or only a light wind up to wind force 2 (up to 12 km/h).
- ➡ No rain is expected for the entire duration of all work operations. If rain is expected, it may be necessary to set up a protective tent.
- ➡ The ambient temperature during assembly is at least -20 °C and at most +40 °C.

The storage system is delivered preassembled. The individual components are pre-installed and already connected. The exception to this are the installation and cabling of the battery modules.

Ensure that the two doors are freely accessible for installation, service and operation (recommended: clearance of at least 1.5 m).

It must be possible to open both doors without obstructing or blocking an escape route or possible escape doors in the installation area.

NOTE

Pay attention to the position of the cable entry.

- ➡ When preparing the floor space, pay attention to the recess for cable entry from below.

Screws and anchors suitable for the substrate are required.

7.2 Installing at the final location

CAUTION

Risk of injury!

There is a risk of crushing during installation of the storage system. Do not stand underneath suspended loads.

➡ Wear an appropriate protective equipment.

Assembly must be performed only by qualified personnel.

Checking floor space

- Take into consideration the installation location requirements (➲ *4.8.2 Requirements regarding installation location*).
- When installing multiple systems in a group, ensure that all floor spaces are suitable.
- Earthing via ring earth electrode for flexible connection cable (min. 16 mm²) according to national and local regulations and conditions must be in place.
- Take into consideration the dimensions for screwing down the system as well as the position of the cable glands:

View from above

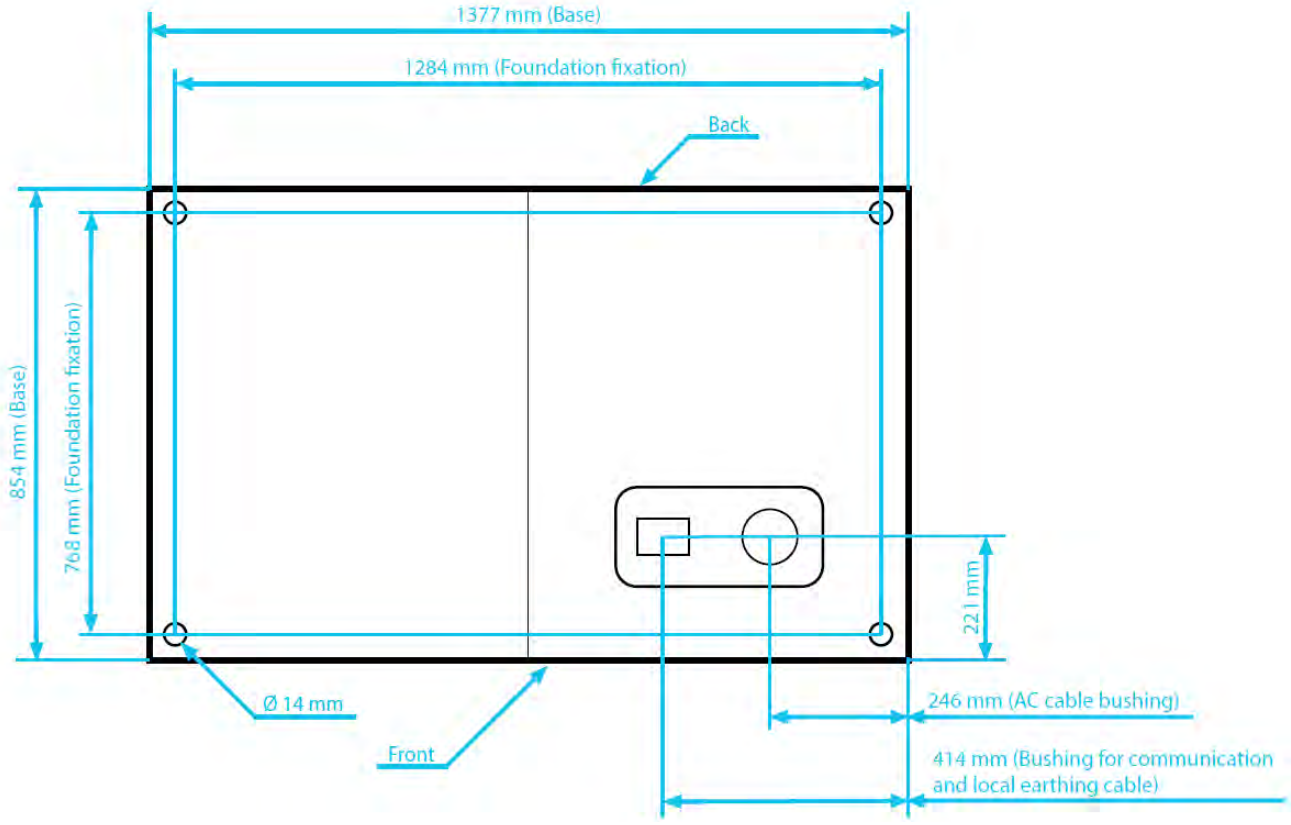


FIGURE 11: DIMENSIONS FOR SCREWING TO FLOOR SPACE/FOUNDATION

Screwing storage system to floor space

Located on the bottom are recesses for screwing to the floor. To secure, use anchors and screws that are suitable for the substrate (anchors and screws are not provided).

- Make the substrate ready for the overall system.
- Make sure that the cable outlet projects from the substrate in sufficient length at the intended position (➲ *Fig. 11*).
- Move the storage system into position (on the forklift) and insert the AC supply line into the system at the intended position.
- Align the system with the cable outlet projecting from the substrate and set down the system at its final position.
- Drill the holes in the substrate at the intended positions as shown in Figure 11.

View from above

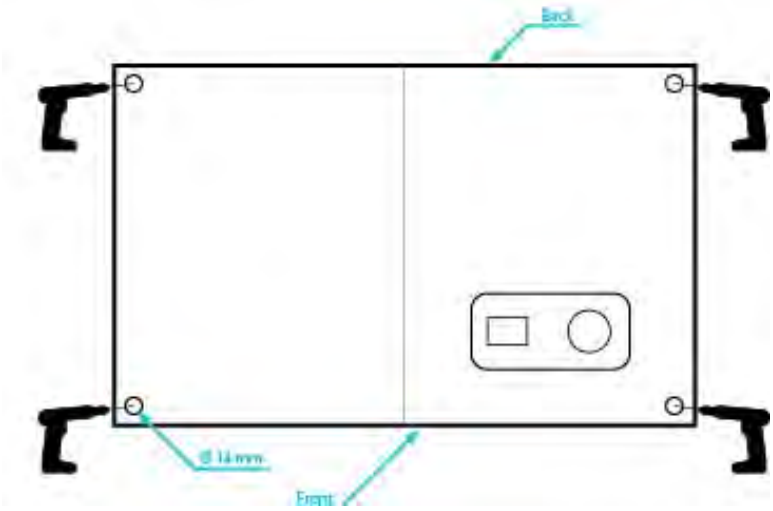


FIGURE 12: SCREWING STORAGE SYSTEM ONTO FLOOR SPACE

- To secure, use anchors and screws that are suitable for the substrate (anchors and screws are not provided) and screw the system in place.

7.3 Electrical connection

DANGER

Risk of death due to high voltages!

High voltages can cause fatal injury.

- ➡ Before starting work, make sure that the main switch is set to "OFF" and the storage system is in a de-energised state and protected from being switched on again.
- ➡ Check that the entire system is de-energised.
- ➡ Wear the appropriate protective work clothes.
- ➡ Observe the 5 safety rules.

NOTE

Observe qualifications.

- ➡ All electrical connections may only be performed by a trained electrician.
- ➡ Follow the electrical diagram documentation for all electrical connections (➲ Electrical diagram in manual GSS0613).
- ➡ When replacing cables and protective earth connections, observe the respective cable cross sections in the electrical diagram (➲ Electrical diagram in manual GSS0608).

7.3.1 Cable glands

Cables are fed through the cable gland insert on the right-hand underside of the cabinet.

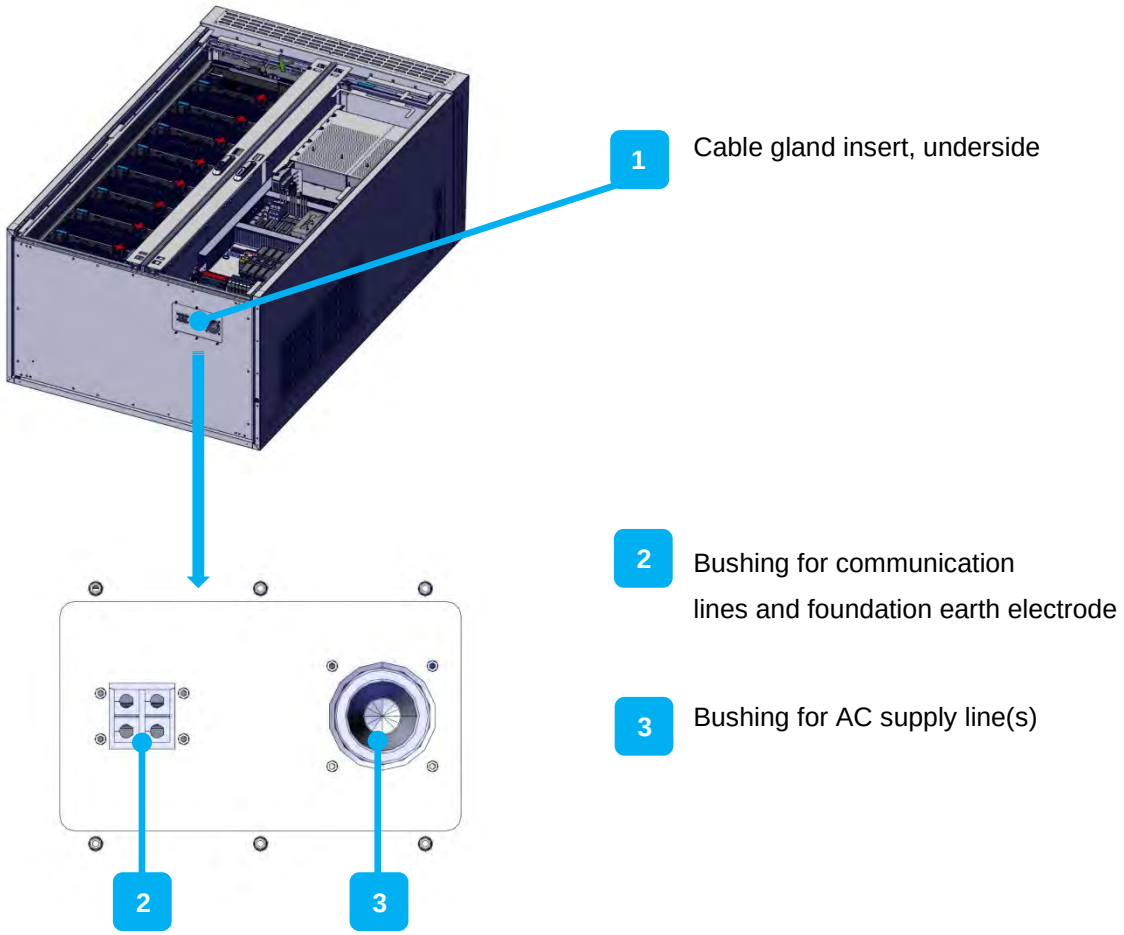


FIGURE 13: UNDERSIDE WITH CABLE GLAND SET

7.3.2 Earth connection

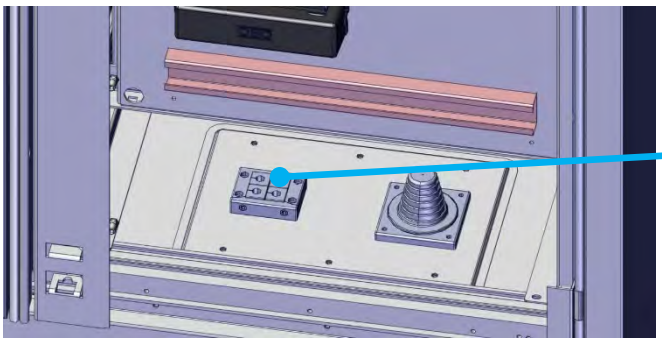
NOTE

Observe the earth connection.

- The housing system must be properly earthed at the designated location with an earthing cable and maintained in accordance with VDE0113 (➲Electrical diagram in manual GSS0608).
- The device includes interference suppressor filters with increased earth leakage currents. Ensure that the PE conductor has at least half the cross section of a phase conductor.

The earth connection is made via a foundation earth electrode, which must be installed according to local conditions.

Foundation earth electrodes must meet the DIN 18014:2014-03 standard.



Follow the electrical diagram for all electrical connections.

1 Cable glands

1 Feed the foundation earth electrode from the outside through the cable gland.

2 Make sure that the cable inlet is sealed from the outside.

FIGURE 14: FOUNDATION EARTH ELECTRODE IMPLEMENTATION

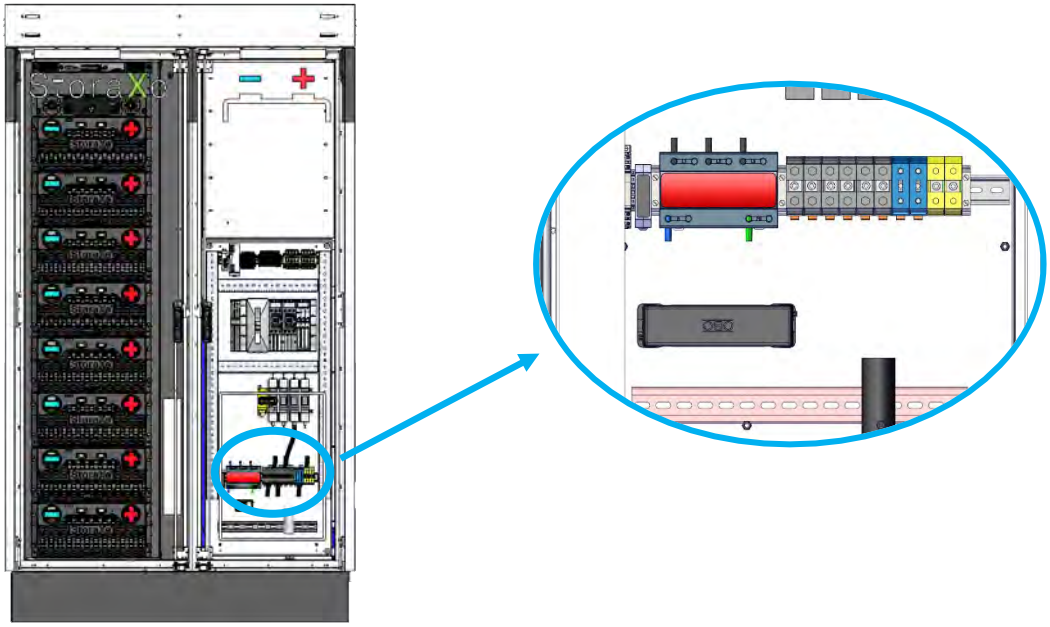
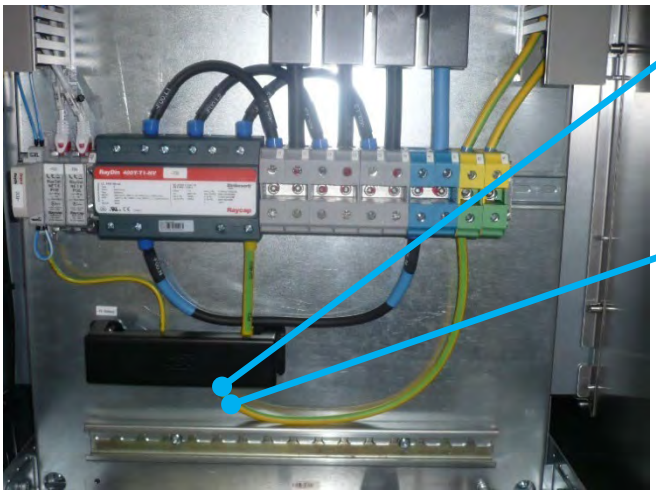


FIGURE 15: POSITION OF EQUIPOTENTIAL BONDING RAIL



2 Equipotential bonding rail with cover

3 Remove the cover of the equipotential bonding rail.

4 Connect the foundation earth electrode to the equipotential bonding rail. Keep the earth connection as short as possible.

Reattach the equipotential bonding rail cover.

5

FIGURE 16: EQUIPOTENTIAL BONDING RAIL WITH COVER

7.3.3 AC power connection

The AC power cable is fed in via the cable inlet on the underside of the housing. Observe the cable cross section of the 5-wire cable in the electrical diagram (➲*Electrical diagram in manual GSS0608*).

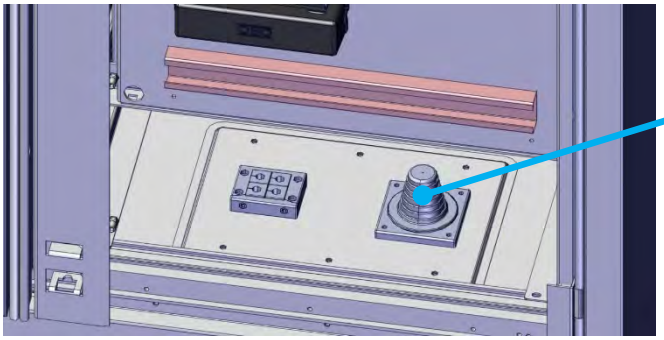


FIGURE 17: AC SUPPLY LINE IMPLEMENTATION

Follow the electrical diagram for all electrical connections.

1 Cable gland for AC supply line

1 Prepare the cable gland to fit the existing AC supply line.

2 Feed in the 5-wire AC supply line from the outside through the cable gland.

3 Make sure that the cable gland is sealed.

4 Use the existing C-rail to provide strain relief for the AC supply line using a suitable cable clamp

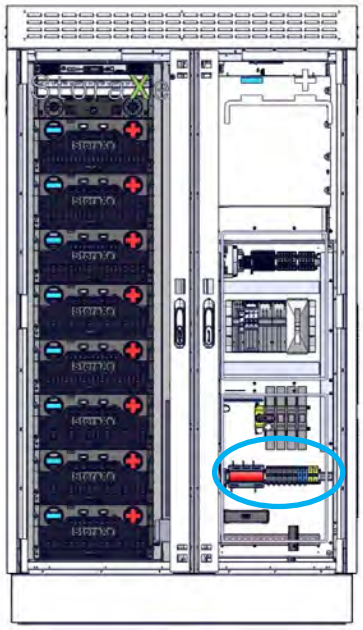


FIGURE 18: POSITION OF AC CONNECTION (EXAMPLE FIGURE)

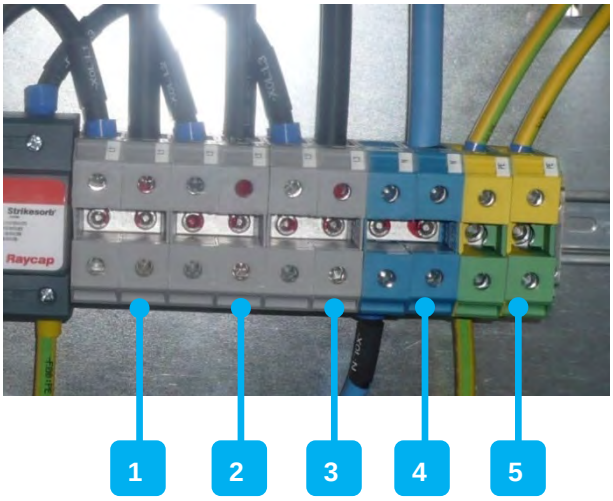


FIGURE 19: CONNECTING THE AC SUPPLY LINE

Connect the wires of the AC supply line from below as follows

1 L 1 (phase 1)

2 L 2 (phase 2)

3 L 3 (phase 3)

4 N (neutral conductor)

5 – PE (protective earth)

NOTE:
Observe the clockwise rotating field.

If the L1, L2 and L3 sequence is incorrect, the

– inverters will not work!

7.3.4 Communication port

The cable entries on the underside of the housing are used to feed in the communication line for local diagnosis and monitoring of the battery storage system, the optional supply line for connecting charging stations, smart meters or service, and the optional supply line for an external emergency stop signal.

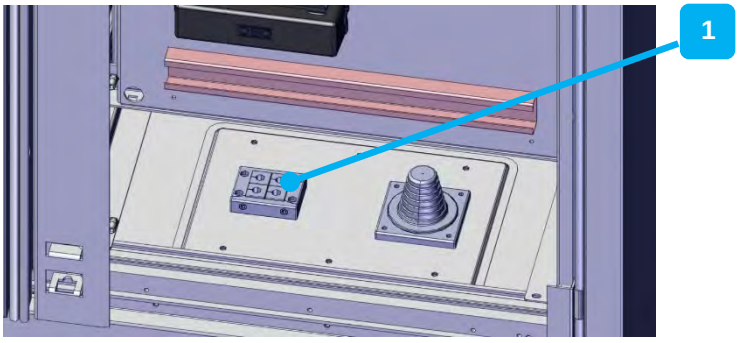


FIGURE 20: COMMUNICATION LINE IMPLEMENTATION

Follow the electrical diagram for all electrical connections.

1 Cable gland for communication lines and smart meter

– Feed in the LAN connection line to the customer network (Customer LAN) from the outside through the cable gland.
– Optional: Feed in the LAN connection line of the smart meter (provided by the customer) from the outside through the cable gland.
– Optional: Feed in the 2x1.5mm² cable lines for an external emergency stop signal through the cable gland
– Make sure that the cable inlets are sealed from the outside!

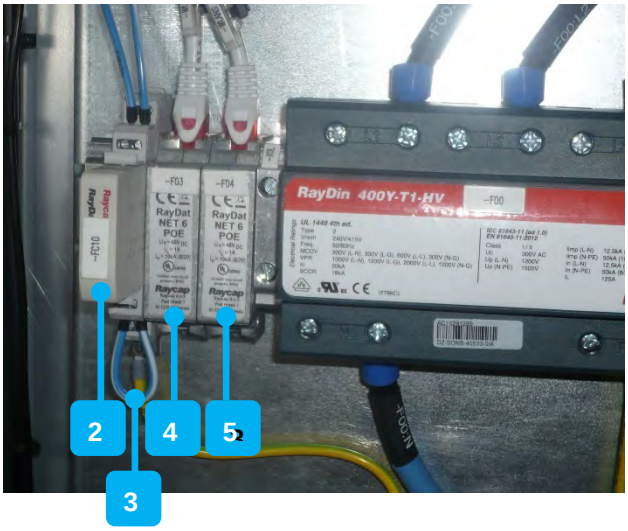


FIGURE 21: PLUGGING IN THE COMMUNICATION LINE

2 FC10: Connection option for an external emergency stop signal

– Connect 2x1.5mm² cable lines.

3
– With bridge = normally closed.
– Alternatively customer-specific: potential-free contact connectable.

INFO: Open contact prevents activation of AC contactors K100, K10 and K11.
This means that the public grid remains disconnected.

4 F03: Communication line for customer network (Customer LAN), also for grid-connected mode.
Also: free fixed IP address for smart meter in customer network. Please determine the IP range in the customer network.

– Connect the LAN communication line to the RayDat overvoltage protection device (-F03).

5 F04: System network. Optional supply line for connecting charging stations. Service connection.
Also: free fixed IP address for smart meter in system network, e.g. 172.17.10.41.

– Connect the LAN communication line to the RayDat overvoltage protection device (-F04).

7.4 Installing the battery modules

NOTE

Observe qualifications.

➡ Only qualified electricians are allowed to install the battery modules!

The procedure described in the following for assembling the storage system is to be observed under all circumstances. The module label can be found imprinted on the front label of the module.

7.4.1 Inserting the battery modules

Owing to the heavy weight of the SRB modules, it is essential to follow the procedure described below for installing the components. The SRB modules are equipped with a transport safety device on the plus pole. Do not remove the transport safety device when installing the modules in the cabinet. They are only to be removed within the scope of the DC cabling.

WARNING

Risk of death from falling and tipping loads!

Falling and tipping loads can cause fatal injury.

➡ The battery module is very heavy and must be installed by two people at a minimum. Refer to the technical data for the exact weight.
➡ To lift loads, use only lifting equipment that is suitable for the task and in perfect working order. Lifting eyes are provided on the top of the modules.
➡ Make sure that no persons are located in the hazardous area underneath the suspended load.
➡ Due to their heavy weight, install the battery modules from the bottom up.
➡ Wear the appropriate protective equipment.

WARNING

Risk of crushing and cuts from sharp edges!

Inserting the battery modules may cause crush injuries and cuts.

➡ Wear gloves.
➡ Have at least 2 people install the battery module.

Basic procedure for inserting battery modules:

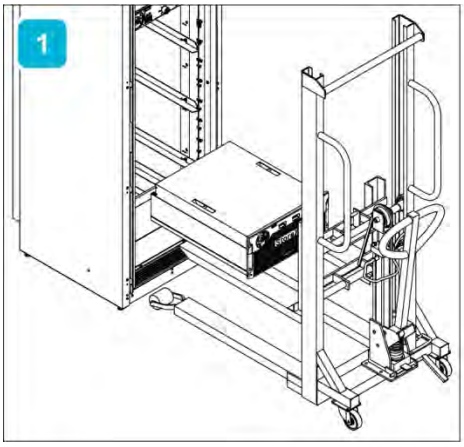


FIGURE 22: POSITIONING THE BATTERY MODULE

1
- Place the battery module on the support rails of the lifting equipment and position at the intended installation height. Note the order of installation when doing so.
- Push the module halfway into the rack.

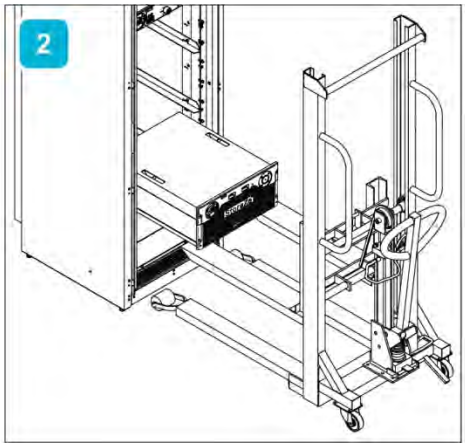


FIGURE 23: INSERTING THE BATTERY MODULE INTO THE RACK

2
- Slide the battery module into the rack until it is flush.

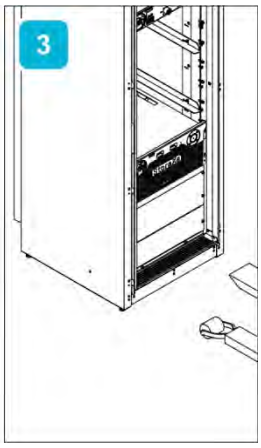
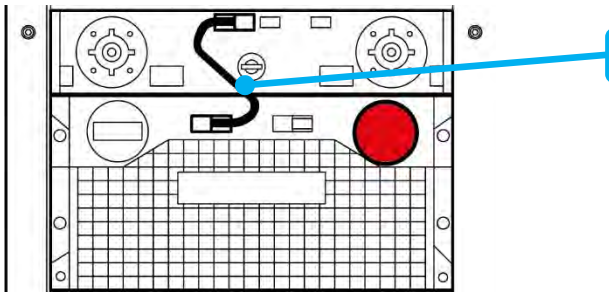


FIGURE 24: SCREWING ON THE BATTERY MODULE

3
- Using 2 Nm of torque, fix the modules on the front side with the socket head cap screws provided. (M6x16 DIN 912, 4 for each module).
- Repeat steps 1 to 3 for the remaining modules.

7.4.2 Installing the communication cabling

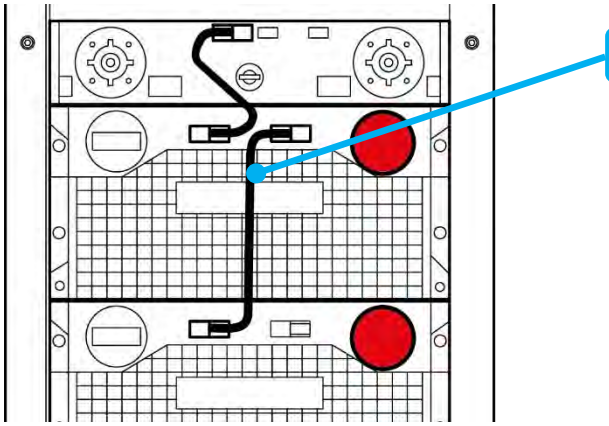
The procedure described in the following for assembling the communication cabling is to be observed under all circumstances. The designation on the SRB modules is CAN-BUS1 for the input and CAN-BUS2 for the output to the next module. The module label can be found imprinted on the front label of the module.



1 Communication cable 1 (short)

1 – Connect the short communication cable from SRC4310 to the first CAN-BUS1 battery module and screw it tight.

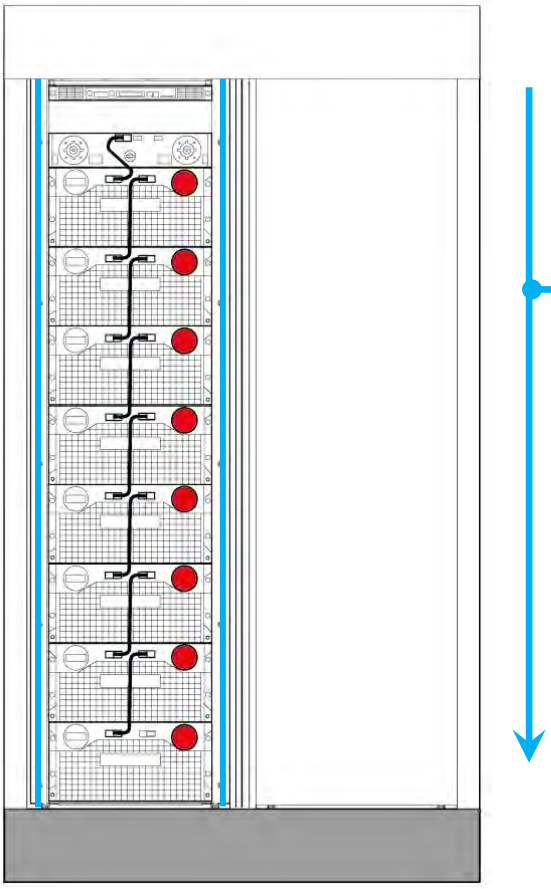
FIGURE 25: ATTACHING THE COMMUNICATION CABLE - 1



2 Communication cable 2

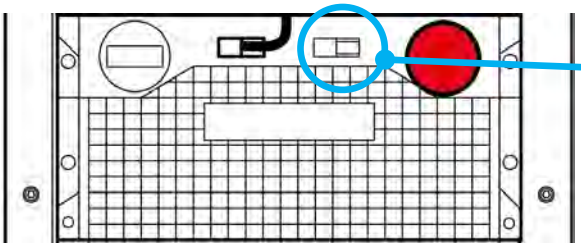
2 – Connect the next communication cable from the first to the second battery module CAN-BUS1 and screw it tight.

FIGURE 26: ATTACHING THE COMMUNICATION CABLE - 2



4 – Repeat step 2 for the remaining modules. Note that the order is from top to bottom.

FIGURE 27: ATTACHING THE COMMUNICATION CABLE - 3



5 – Attach the terminator plug (shown in blue) to the bottom battery module.

FIGURE 28: ATTACHING THE COMMUNICATION CABLE - 4

7.4.3 Installing the power cabling

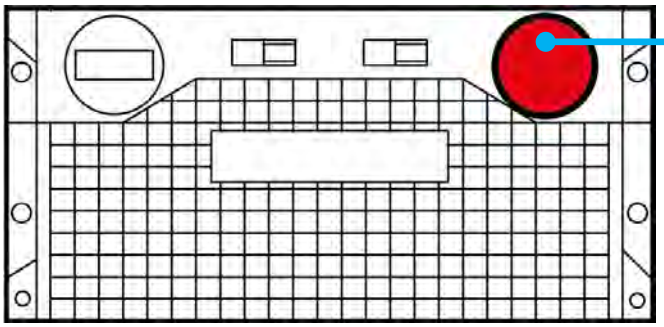
The procedure described in the following for assembling the power cabling is to be observed under all circumstances. The module label can be found imprinted on the front label of the module.

The modules are equipped ex factory with a transport cover on the plus pole. This transport cover is screwed to the module with Torx-TR 20 safety screws. All cables are included in the scope of delivery.

NOTE

Observe the assembly sequence.

➡ Do not remove the transport cover until requested to do so in the described installation sequence. The sequential procedure prevents incorrect cabling and ensures safe installation.



1 Transport cover

INFO:
Remove the transport cover on the individual battery modules only during the respective installation step.

FIGURE 29: TRANSPORT COVER INFORMATION (EXAMPLE FIGURE)

NOTE

Observe the key switch position.

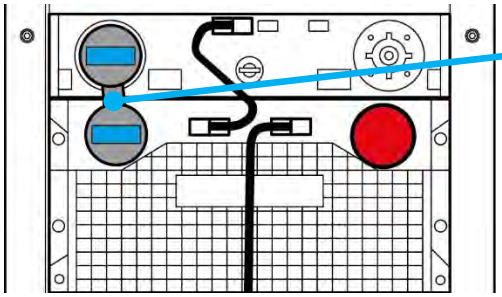
➡ Before beginning the installation, make sure that the key switch of the SRC4310 is in the "OFF" or "Service" position.

Check the power cables for damage. If damaged:

Do not use the power cables!

The power cables have coded plugs. The power cable negative plug only fits into the minus pole of the module. Similarly, the positive plug only fits into the plus pole of the module.

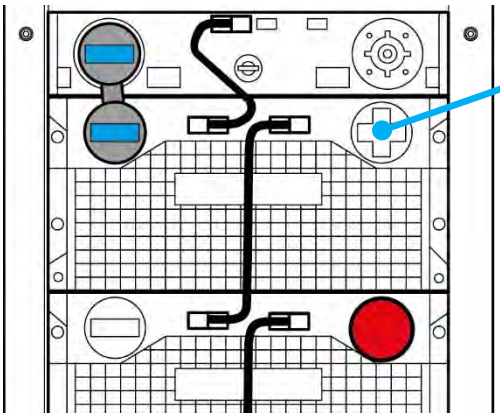
The power cables can be securely connected to the battery module with four screws. Tighten the screws crosswise to 0.5 Nm.



Negative power cable (- -)

1 – Connect the negative power cable from the SRC4310 controller to the first SRB battery module with the short cable (- -).

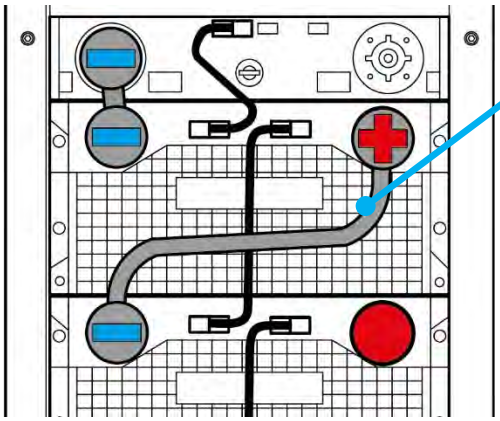
FIGURE 30: ATTACHING THE POWER CABLE - 1



Transport cover 1

2 – Remove the transport cover on the first battery module.

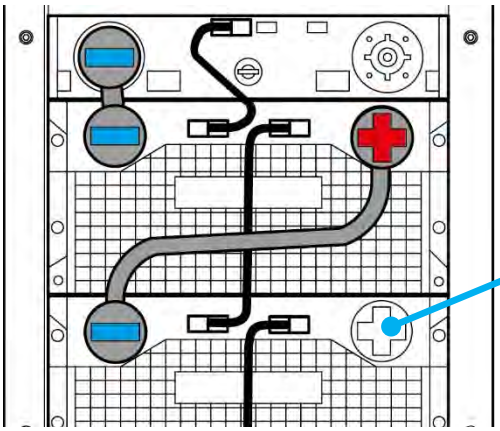
FIGURE 31: ATTACHING THE POWER CABLE - 2



Power cable 1 (+ -)

3 – Insert the positive plug of the power cable and screw the cable onto the minus pole of the second SRB module.

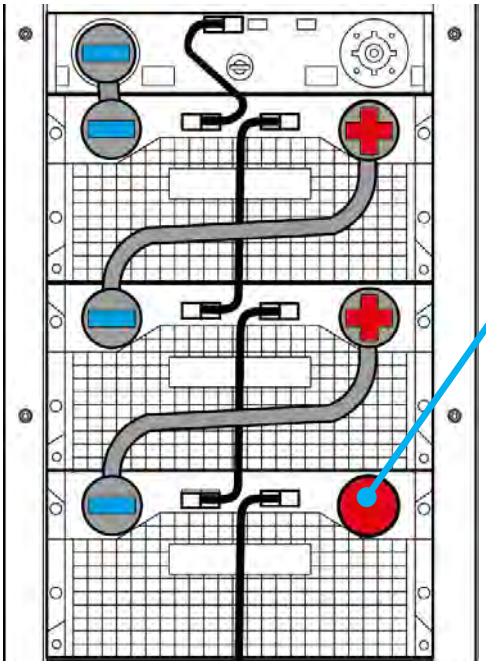
FIGURE 32: ATTACHING THE POWER CABLE - 3



Transport cover 2

4 – Remove the transport cover on the second battery module.

FIGURE 33: ATTACHING THE POWER CABLE - 4

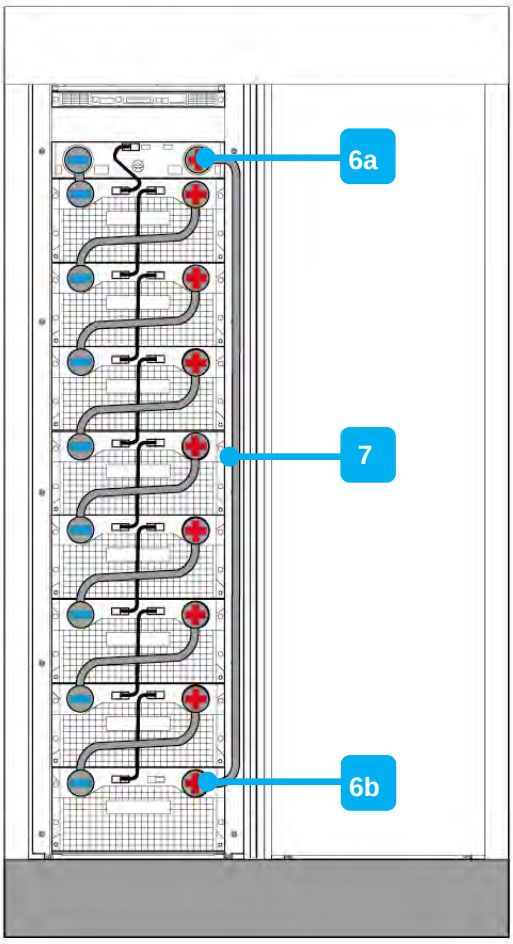


5 Power cable 2 (+ -)

5 – Insert the positive plug and screw the cable onto the minus pole of the third battery module.

6 – Repeat steps 2 and 3 for the remaining modules underneath in the left side of the cabinet.

FIGURE 34: ATTACHING THE POWER CABLE - 5



6a Plus pole of SRC4310 controller

6b Plus pole of bottom battery module

7 Long positive power cable (+ +):

7 – Connect the plus pole of the bottom module to the plus pole of the SRC4310 controller with the long cable (+ +).

FIGURE 35: ATTACHING THE POWER CABLE - 6

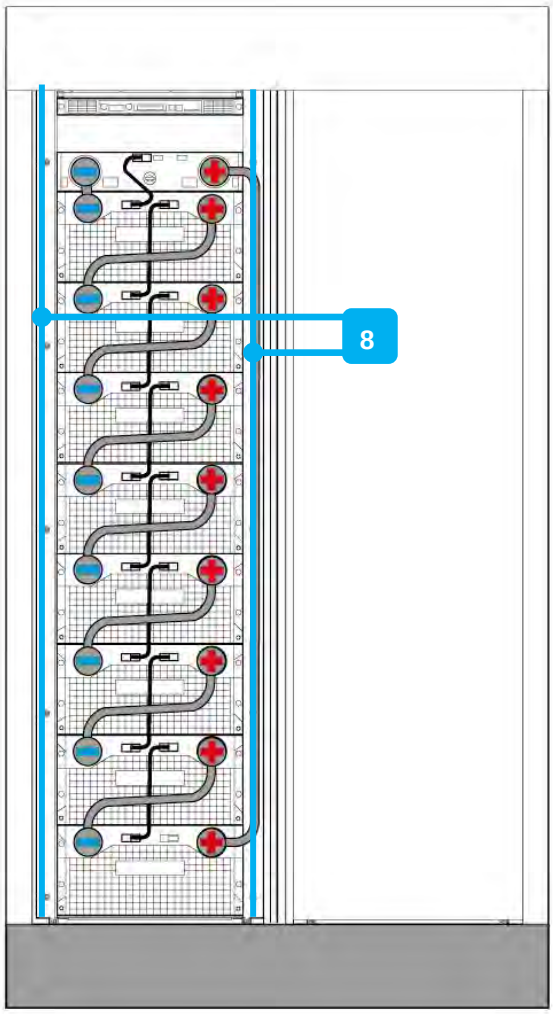


Figure 36: Attaching the power cable

8 Attach cable routing guide rails

– Fasten the cable guide rails

8 Commissioning

NOTE

Observe qualifications.

- ➡ Commissioning must be performed only by qualified electricians!
- ➡ It is essential to follow the procedure described below!

8.1 Configuring the components

8.1.1 Network overview

Operating mode		IP addresses LAN	WAN	4G	Subnet	Gateway
EMS	SRC1420 preconfigured	DHCP	172.17.10.100	-	255.255.255.0	DHCP
	SRC4310 preconfigured	172.17.10.101				
	Inverter preconfigured	172.17.10.200				
Master	SRC1420	DHCP	172.17.10.100	-	255.255.255.0	DHCP
	SRC4310 preconfigured	172.17.10.101				
		…				
	Inverter preconfigured	172.17.10.200				
Factory reset	SRC1420	1.0.0.1	192.168.0.254	-	255.255.255.0	192.168.0.10
	SRC4310	192.168.0.10				
	Inverter	Observe inverter instructions				

Table 11: Network overview

8.1.2 Configuration of the SRC1420 via the web interface

The web interface of the SRC1420 delivers state values for the entire system.

Determine the SRC1420 system from the list of ads-tec devices and enter this IP address in the browser. The web interface is displayed.

8.1.2.1 EMS operating mode

NOTE
Observe documentation. ➡ For details on the EMS communication interface, see the description "ADS-TEC EMS_StoraXe Machine Interface". ➡ For details on setting the smart meters, see the description "Connection and parameterisation of the power meters".

Make the following pre-settings for commissioning:

- Configure the type, address and function of the smart meters used according to the instructions (➲*Connection and parameterisation of the power meters*).
- Select the desired apps with their parameters.
- Enter the IP address of the LAN interface for integration into the customer network (➲ *8.1.1 Network overview*)
- INFO: The IP address of the WAN interface for device communication is already preset.
- Make further customisations as required.

8.1.2.2 Master operating mode

NOTE
Observe documentation. ➡ For details on the Master communication interface, see the description "ADS-TEC Master".

Make the following pre-settings for commissioning:

- Enter the IP address of the LAN interface for integration into the customer network (➲ 8.1.1 Network overview)
- Activate the Modbus function and deactivate the EMS function.
- Make further customisations as required.

8.1.3 Configuration of the SRC4310 via the web interface

The SRC4310 is already preconfigured.

8.2 System start

8.2.1 System start for EMS operating mode

1. Switch on the main switch.
2. Turn the key switch on the SRC4310 to ON. The LEDs on the SRC4310 switch from red to green when power is requested in or out of the battery.
3. Switch on the two fuses F10 (air-conditioning system) and F11 (power supply for additional devices) (next to each other).
4. Close the two system doors.
5. The SRC1420 and air-conditioning system start automatically when switched on.
   Note: After shutting down the system, briefly press the START button on the SRC1420 to restart. The LEDs start to flash. After approx. 3 minutes the system is ready for operation again.
6. Set the desired application types and parameters via the apps.
   Please note the documentation for the StoraXe Machine Interface
   (➲ *ADS-TEC EMS_StoraXe Machine Interface).*
7. ADS-TEC EMS takes over the control of the system.

8.2.2 System start for Master operating mode

1. Switch on the main switch.
2. Turn the key switch on the SRC4310 to ON. The LEDs on the SRC4310 switch from red to green when power is requested in or out of the battery.
3. Switch on the two fuses F10 (air-conditioning system) and F11 (power supply for additional devices) (next to each other).
4. Close the two system doors.
5. The SRC1420 and air-conditioning system start automatically when switched on.
   Note: After shutting down the system, briefly press the START button on the SRC1420 to restart. The LEDs start to flash. After approx. 3 minutes the system is ready for operation again.
6. The system waits for commands from the customer control via Modbus.

9 Operation

9.1 Operating mode: ADS-TEC EMS

NOTE

Observe documentation.

➡ For details on the EMS communication interface, see the description "ADS-TEC EMS_StoraXe Machine Interface".

The control is automated via the local ADS-TEC EMS energy management system for

easy operation and control of the storage system.

Various standard apps are available for the respective applications described in greater detail below.

NOTE

Recommendation for use

➡ To be able to use the apps, it is necessary to connect smart meters, depending on the respective application type.
➡ For this purpose, please refer to the list of supported smart meter models (➲ *Connection and parameterisation of the power meters*).

9.1.1 Operation

The StoraXe® system is operated via the web browser.

With the energy management display in the browser, you can keep an eye on all operating parameters of the storage system from your PC, notebook, smartphone or tablet. The display provides information on the usage behaviour of the storage system and presents it in graphical form. All settings for the energy management system of the battery storage system can be carried out conveniently via this display.

9.1.2 Optimisation of personal consumption

Excess energy from power generators that cannot be used is stored in the battery storage system. This stored energy can then be discharged to the loads at a later time, e.g., at night or during inclement weather. As a result, power does not need to be supplied from the public grid or the amount of power that is supplied is significantly reduced.

9.1.3 Peak-load capping

Peak-load capping is targeted explicitly at end customers who wish to operate the battery storage system in situations where the electricity rates have a connection and service price. Here, the battery storage system is used to cap peaks in the energy drawn from the public grid.
In this case, the storage system is used so as to keep the effective power drawn from the public grid below the average value within the 15-minute billing interval.

If the system detects that the requirement cannot be met, the "PeakLoadMgr" signal is set.

Configuration

Peak-load capping: Maximum power drawn from the public grid that should not exceed the 15-minute average.

Peak load power: Definition of the maximum load power.

9.1.4 Selfcare

This application prevents a deep discharge of the storage system by continuously monitoring the battery charge level. If the minimum charge level is reached, further discharging is initially prevented. If the charge level drops further, the storage system automatically recharges until the minimum battery charge level is again exceeded.

This takes place automatically in the background and is not visible to or configurable by the customer.

Configuration

There are no parameters than need to be set.

9.2 Operating mode: Master protocol

NOTE

Observe documentation.

➡ For details on the Master communication interface, please see the description "ADS-TEC Master".

If the ADS-TEC storage system as a complete unit with inverter is controlled by means of an external energy management system provided by the customer, then the storage system is controlled via the ADS-TEC master protocol, which uses Modbus/TCP.

In this case, the task of the external energy management system is to control the storage system and while doing so to monitor the condition of the battery strings and inverter and to define the energy flows.

The interface enables operating data and permissible operating parameters to be queried according to customer specifications.

For this purpose, ADS-TEC provides the corresponding Modbus/TCP protocol description.

The Storage Rack Controller supplies additional data for information purposes or for fault diagnosis.

The battery storage system has a degree of internal consumption during operation. The operating company is responsible for observing the relevant limit values and for ensuring that these limit values are reported.

Configuration

The control parameters are specified by the customer.

10 Switching off the system

10.1 Switching off the system before performing maintenance or decommissioning

NOTE

Observe qualifications.

➡ Maintenance work, service and repairs as well as decommissioning must be performed by qualified electricians only.

- Switch off all fuses belonging to the system. Use a suitable testing device to check that no voltages are present.
- Only work with insulated tools and remove body jewellery to avoid short circuits and electrical shock.
- Never work on the system on your own.

Procedure:

1. Initialise the shut-down process via the controller software.
2. Switch off the backup fuses of the storage system at the connection point and secure them against being accidentally switched on again, or remove the fuses.
3. Open the two system doors
4. Turn the AC main switch to the OFF position. Wait at least 20 minutes until any residual voltage has been eliminated.
5. Set the key switch on the SRC4310 to the OFF position. Remove the key to prevent it from being switched on again.
6. Observe the 5 safety rules and use a suitable testing device to ensure that no voltage is present.

Maintenance and repair work can now begin (➲ *11 Maintenance & storage)*

For complete decommissioning or disassembly of the system, further disassembly steps are described below (➲ *10.2 Order of disassembly)*

10.2 Order of disassembly

The procedure described in the following for disassembling the storage system is to be observed under all circumstances. The modules are removed from the cabinet starting with the top module and working down.

The module label can be found imprinted on the front label of the module.

WARNING

Risk of death due to falling loads!

Falling and tipping loads can cause fatal injury.

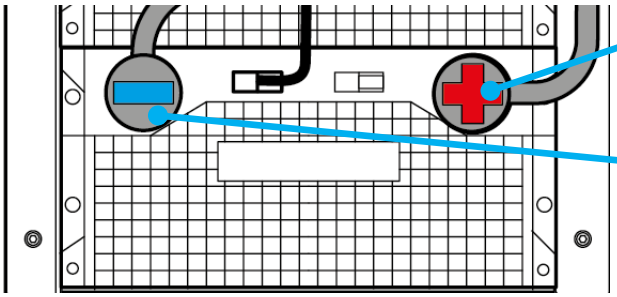
- ➡ The SRB module weighs approx. 80 kg and requires at least two people to remove it. Refer to the technical data for the exact weight.
- ➡ To lift loads, use only lifting equipment that is suitable for the task and in perfect working order. Lifting eyes are provided on the top of the modules.
- ➡ Make sure that no persons are located in the hazardous area underneath the suspended load.
- ➡ Wear the appropriate protective equipment.

CAUTION

Risk of injury!

Sharp edges cannot be ruled out on the housing.

- ➡ Wear an appropriate protective equipment.



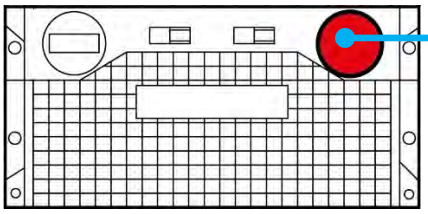
1 Plus pole of bottom battery module

2 Minus pole of bottom battery module

FIGURE 37: ATTACHING THE TRANSPORT COVER

1 – Undo the screws securing the DC power cabling (4 screws per connector, shown in blue).

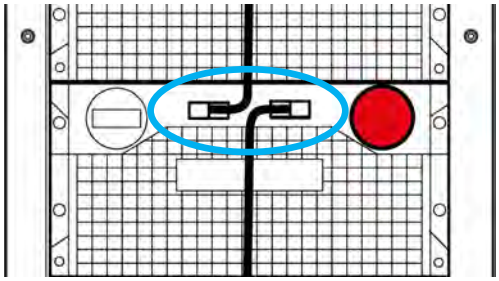
2 – Disconnect all power cables in the cabinet.



Transport cover

3 – Attach the transport covers to the plus poles of the battery modules.

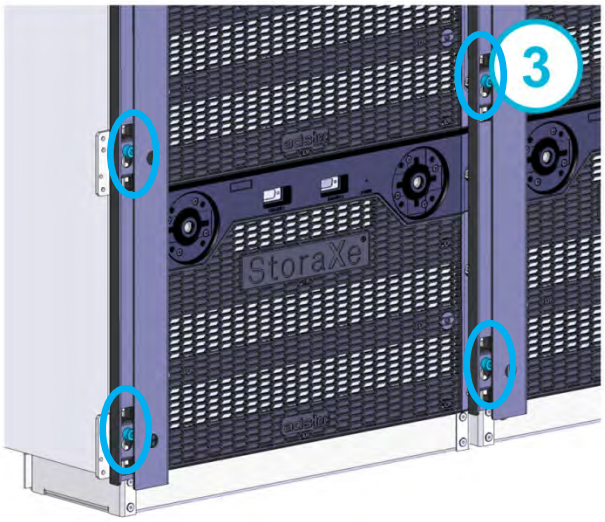
FIGURE 38: ATTACHING THE TRANSPORT COVER



4 – Undo the screws securing the communication cables (2 screws per connector, shown in blue in the drawing).

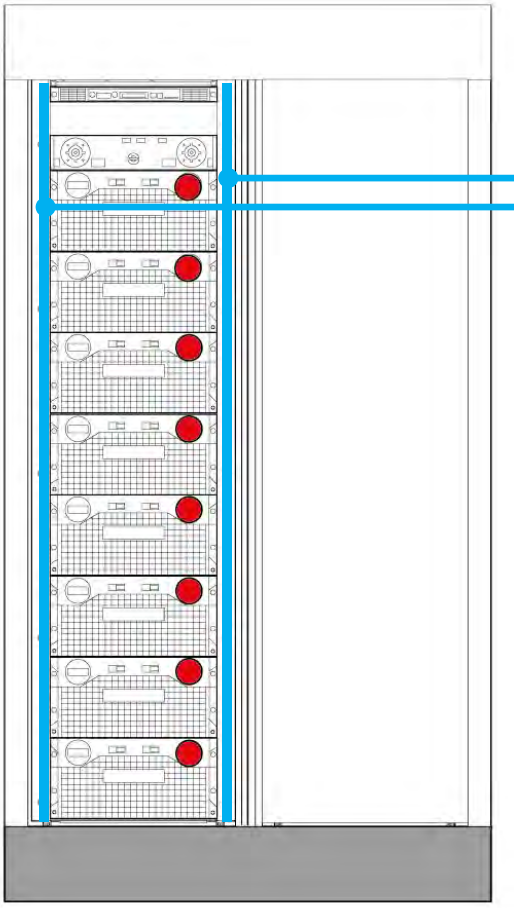
5 – Disconnect all communication cables in the cabinet.

FIGURE 39: DISCONNECTING THE COMMUNICATION CABLES



6 – Undo the socket head cap screws securing the cable guide rails (M8x16 DIN 912, shown in blue in the drawing).

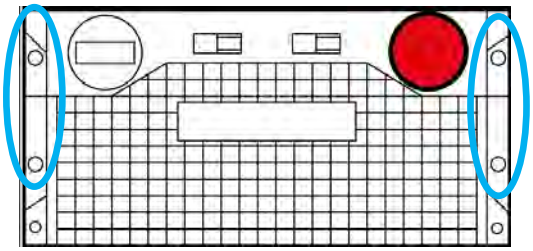
FIGURE 40: UNSCREWING THE CABLE GUIDE RAILS



Cable guide rails

7 – Detach the front cable guide rails

FIGURE 41: DETACHING THE CABLE GUIDE RAILS



8 – Remove the socket head cap screws securing the modules (M6x16 DIN 912, 4 screws per module).

FIGURE 42: REMOVING THE BATTERY MODULE SCREWS (EXAMPLE FIGURE)

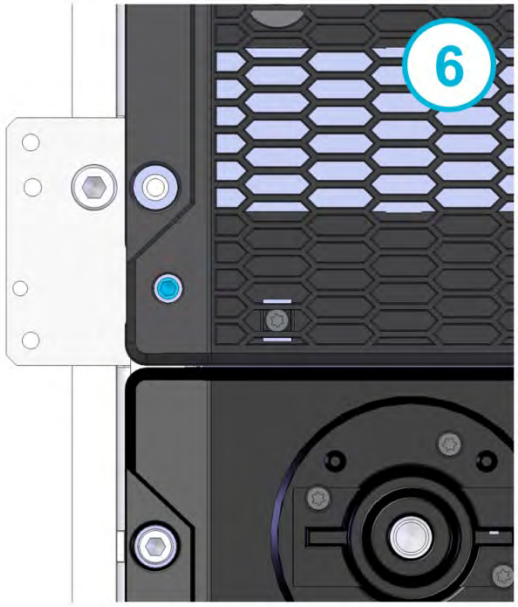


FIGURE 43: REMOVING THE REMOVAL AID SCREWS

9 – Unscrew the socket head cap screws (M5x16 DIN 912, 2 screws per module, shown in blue in the drawing).
These screws are used as a removal aid.
Remove the top modules first.

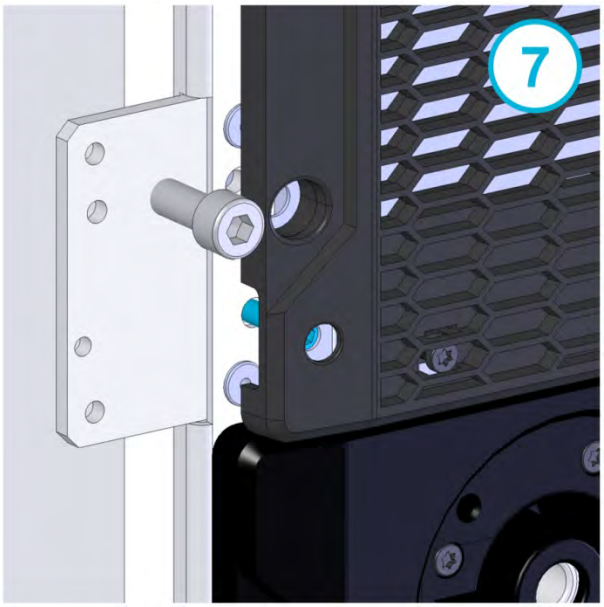
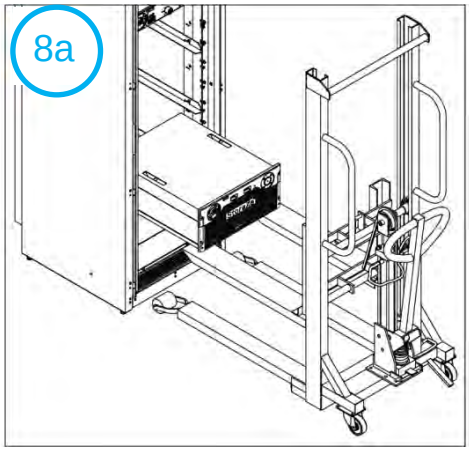


FIGURE 44: VIEW OF REMOVAL AID

INFO:

The socket head of the removal aid pushes the module out of the cabinet and makes removal of the module easier.



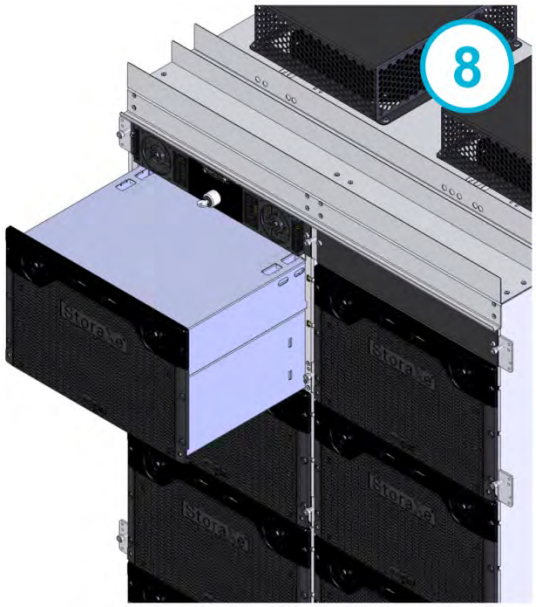


FIGURE 45: LIFTING OUT THE BATTERY MODULE

- Use lifting equipment to remove the battery modules.
- Pull out the top battery module.
- The module can be pulled halfway out of the cabinet without tipping.
- Lift the other modules out from top to bottom.

11 Maintenance

NOTE

Observe qualifications.

➡ Maintenance work must be performed only by qualified electricians.

Observe the information for switching off the system (➲ *10 Switching off the system*)

NOTE

Observe the manufacturer's specifications.

➡ Before performing any maintenance and service work, follow the manufacturer's specifications in the documentation of the individual components.

NOTE

Contact ADS-TEC service

➡ If SRB modules need to be replaced, please contact ADS-TEC support. Replacement and exchange may only be carried out by qualified and specially trained electricians.

NOTE

Observe the maintenance intervals

➡ Regular maintenance work is required in order to prevent potential damage to and failure of the complete system. The operator's obligation to cooperate will ensure a long service life of the complete system.

11.1 Maintenance schedule

Assembly	Component	Description	Maintenance interval
Overall system	Overall system	• Visual inspection (exterior)	Every 3 months
	Overall system	• Visual inspection (interior) Check for soiling and for electrolyte leakage • Clean as necessary	Every 3 months
	Fan	• Check (replace as necessary)	Every 5 years
		• Visual inspection Listen out for unusual noises during operation	Every 6 months
	Earth connections	• Check connections and check for correct operation	According to VDE0113
Sub-distribution system	AC connection	• Check torques	Every 12 months
	Smoke detector	• Test activation and if necessary replace battery. • For further information, see chap. 11.3	Every 12 months

Inverter		• Follow the maintenance instructions in the manufacturer's documentation!	
	ABB PQstorl (1 and 2)	• Clean	Every 12 months
		• Check AC/DC torques	Every 12 months
		• Check fans (replace as necessary)	Every 5 years
Air-conditioning system	Rittal Blue e+ Outdoor	• Follow the maintenance instructions in the manufacturer's documentation!	
		• Clean with compressed air	Every 12 months
		• Replace fans	Every 5 years
		• Check ventilation grilles for soiling and whether they are free from leaves, etc.	Every 6 months, more frequently as necessary if extremely soiled.
SRS0085 battery system	SRC4310	• Replace button cell For further information, see chap. 11.2	Every 3 years
	DC sub-distribution system	• Check torques	Every 12 months

11.2 SRS battery system

NOTE

Observe procedure.

➡ The maintenance intervals/cleaning of the storage system may only be carried out after the system is shut down.

NOTE

Observe the aids.

➡ Compressed air and dry cleaning cloths must be used for any cleaning work that is required.

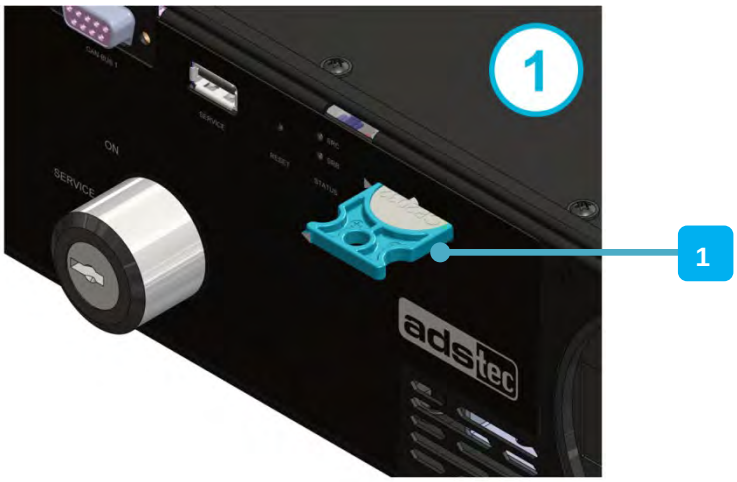
11.2.1 Replacing the backup battery

A lithium CR2032 button cell is built into the SRC4310. A maintenance interval of three years is recommended for the button cell. The procedure described in the following for maintenance is to be observed under all circumstances.

NOTE

Adjusting the time

➡ Replacing the button cell causes the set time to be lost. The time must then be reset via the web interface.



- Remove the battery holder with the aid of a screw driver through the opening via the slot in the front (marked in blue in the drawing).

FIGURE 46: REPLACING THE SRC4310 BACKUP BATTERY - 1

FIGURE 47: REPLACING THE SRC4310 BACKUP BATTERY - 2

- Replace the battery (CR2032), paying attention to the polarity.

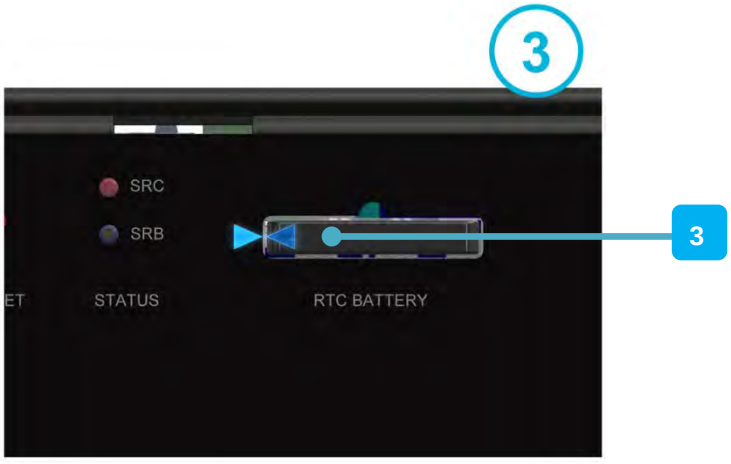


FIGURE 48: REPLACING THE SRC4310 BACKUP BATTERY - 3

- Reinsert the slot. When correctly installed, the arrows on the slot and the front point towards one another.

FIGURE 49: REPLACING THE SRC4310 BACKUP BATTERY - 4

- Push the slot in all the way. The battery holder audibly snaps into place.

11.3 Smoke detector

Description	Maintenance interval
Visual inspection and care: - Perform a visual inspection of the smoke detector for humidity, dust, traces of heat or other abnormalities. - The device should be wiped dry if necessary and vacuumed from the outside with a vacuum cleaner.	1 x annually
Functional check: - Check the function of the smoke detector: Press the test button (for up to 20 seconds) until a loud and pulsating alarm tone sounds (approx. 85 dB). The test alarm resets automatically a few seconds after the test button is released.	1 x annually and after every battery change
Automatic functional check: The detector performs an automatic self-test every 45 seconds: - OK: red LED flashes briefly. - Battery replacement required: Beeps (about every 45 seconds), about 30 days in advance.	Regularly
Battery replacement: Do not use rechargeable batteries. - Perform a function test after each battery change.	Recommended: every 2 years
Smoke detector replacement: In the event of a malfunction, the red LED flashes alternately to the beep tone about every 45 seconds. In this case the smoke detector must be replaced. The smoke detector automatically resets itself when an alarm is triggered if there are no more particles in the smoke chamber. - Open the housing by means of a rotating movement and disconnect the battery in the battery compartment. The alarm will be reset immediately.	As required

11.4 Cleaning

All surfaces accessible from the outside can be cleaned using a cloth that is damp but not wet. Do not use any cleaning agents or solvents.

11.5 Information on storage

Always observe the environmental conditions for storing batteries (no direct sunlight, dry room, no frost). Check the charge state of the batteries regularly. Follow the instructions on storage (➲ 2.5.3 *Storage and supply of new and used lithium batteries).*

NOTE

Adjusting the time

➡ If the value drops below 20% SOC, it is recommended that the battery storage system be charged. The level of self-discharging at room temperature is < 2 % SOC / month.

12 Disposal

When lithium-ion batteries are transported for disposal, the relevant regulations applicable to the respective mode of transport must be observed. SV 377 applies (ADR, IMDG). Special regulations apply to damaged/defective lithium batteries (cf. chap. 2.6 Lithium-ion batteries).

If ADS-TEC is involved with handling and packaging on an advisory level, then handling and packaging must only be performed in accordance with the instructions of ADS-TEC. If packaging and part numbers of the packaging components are specified therein, only these are to be used. Information on the handling and shipment of lithium-ion batteries is only valid and applicable for lithium-ion batteries that the manufacturer or shipper did NOT find to be faulty or damaged due to reasons of safety.

Dispose of the remaining components in accordance with the legal requirements and guidelines applicable at the installation location.

13 Disposal

When lithium-ion batteries are transported for disposal, the relevant regulations applicable to the respective mode of transport must be observed. SV 377 applies (ADR, IMDG). Special regulations apply to damaged/defective lithium batteries (➲ Lithium-ion batteries122.5 Lithium-ion batteries).

If ADS-TEC is involved with handling and packaging on an advisory level, then handling and packaging must only be performed in accordance with the instructions of ADS-TEC. If packaging and part numbers of the packaging components are specified therein, only these are to be used. Information on the handling and shipment of lithium-ion batteries is only valid and applicable for lithium-ion batteries that the manufacturer or shipper did NOT find to be faulty or damaged due to reasons of safety.

Dispose of the remaining components in accordance with the legal requirements and guidelines applicable at the installation location.

14 Service & support

ADS-TEC and its partner companies provide you with comprehensive maintenance and support services, ensuring quick and competent assistance should you have any questions or queries with regard to ADS-TEC products and equipment.

14.1 ADS-TEC support

The ADS-TEC support team is available for inquiries from direct customers between

8:30am and 5:00pm, Monday to Friday. The support team can be reached via phone or e-mail:

Phone: +49 7022 2522-203

E-mail: support.est@ads-tec-energy.com

Alternatively, you can contact us by completing a support form on our website www.ads-tec-energy.com. Our Support team will then get in touch with you as soon as possible.

14.2 Company address

ads-tec Energy GmbH
Heinrich-Hertz-Str.1
72622 Nürtingen
Germany

Phone: +49 7022 2522-201
E-mail: energy@ads-tec-energy.com
Home: www.ads-tec-energy.com

14.3 Replacement parts

If you need to order replacement and wear parts for the system or you require detailed advice in this regard, contact the manufacturer. Have the serial number available.

15 Appendix

15.1 Grid-connected mode (scaling of multiple systems in a group)

PowerBooster GSS0608 and PowerBooster GSS0813 outdoor storage systems are suitable for grid-connected operation in a group (scaling).

With GSS0608, up to 5 devices can be scaled, with GSS0813, up to 8 devices.

If a system in grid-connected mode is planned, the software will need to be adapted. This is done by the ADS-TEC service team during commissioning.

Therefore please contact the ADS-TEC service team and order the commissioning appropriate for your system:

DV-SV-413037 Commissioning of GSS with 2-3 units as multistring

DV-SV-413039 Commissioning of GSS with 4-5 units as multistring

DV-SV-413041 Commissioning of GSS with 6-8 units as multistring (GSS0813 only)

15.1.1 Network topology for grid-connected operation with multiple systems

Connection is via the customer interface.

System example:

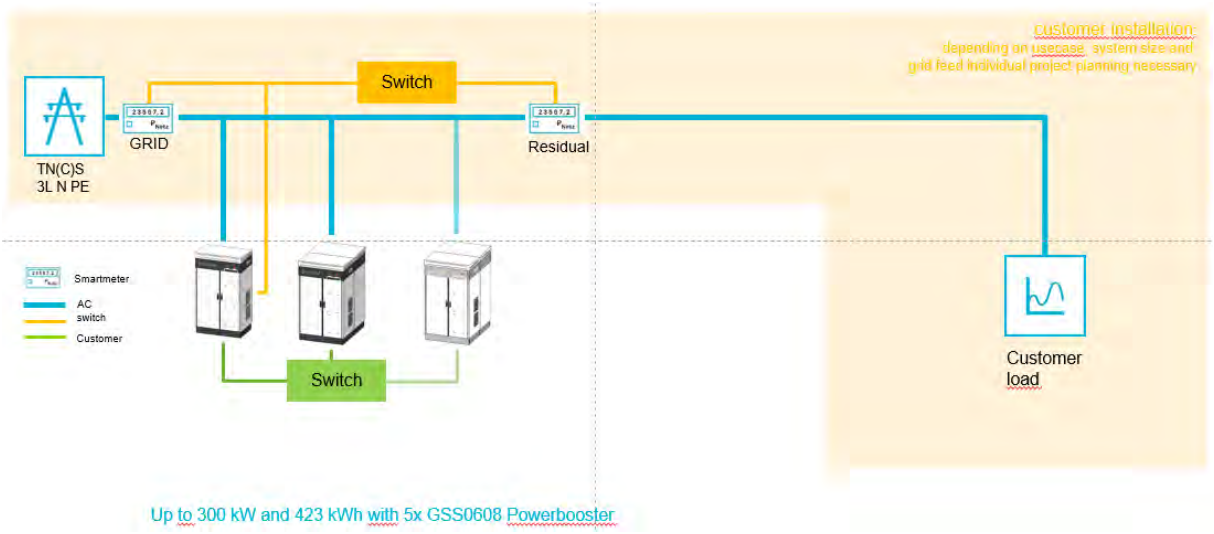


FIGURE 50: SYSTEM EXAMPLE OF SCALING THE POWERBOOSTER

15.1.2 Installing multiple systems in a group (scaling)

With GSS0608, scaling up to 5 systems possible; with GSS0813, scaling up to 8 systems possible.

When planning the system layout, observe the required minimum clearance of the storage cabinet in order to prevent the obstruction of ventilation openings, door openings, etc.

Layout examples for 4 systems / 8 systems:

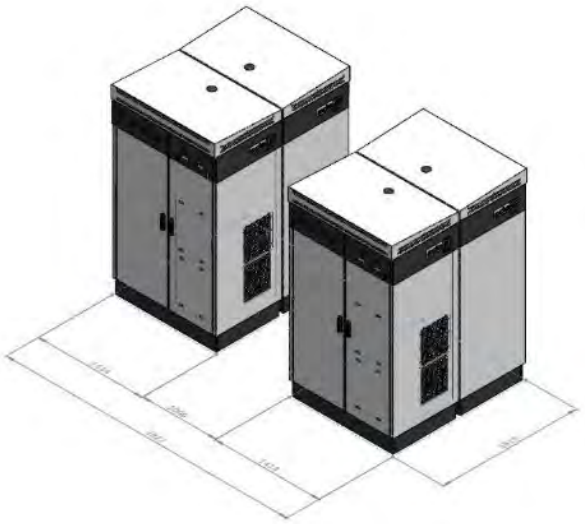


Figure 51: Scaling – 2x2 layout

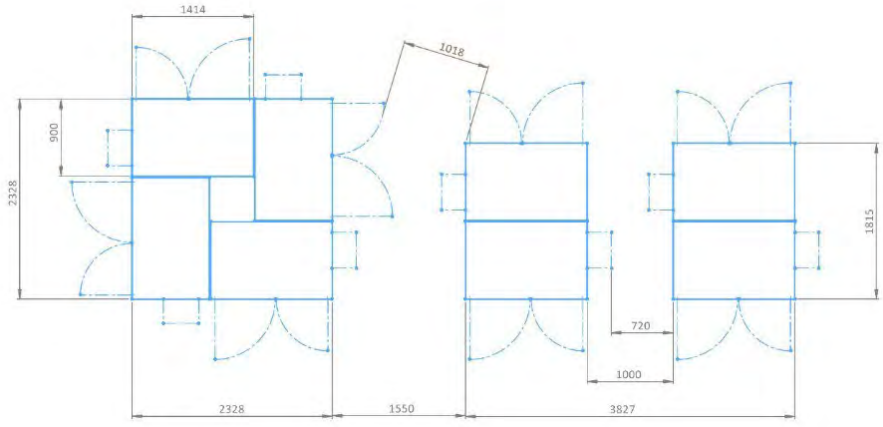


FIGURE 52: SCALING – 2X2 + 1X4 LAYOUT

Minimum clearance:

- Clearance from rear side to wall: no clearance required
- Clearance from sides (left + right) to wall or to other objects: min. 1 m
- Clearance from front side to other objects: 1.5 m (0.7 m for opened doors + 0.8 m for service activities).
- Take into consideration any additional clearance required for escape routes (min. 0.8 m).
- Note that ventilation openings must be kept clear.

15.1.3 AC supply lines and sub-distribution system

A multi-master system consisting of multiple GSS0608 systems requires an on-site switch for interconnecting the GSS0608 systems and smart meters.

- An electrical diagram based on the electrical diagram of the individual system is required for the specific customer layout with multiple individual systems (to be provided by the customer).
- The merging of individual systems is customer-specific (to be provided by the customer).
- Connect each individual PowerBooster with its own fuse protection.

NOTE

Provide a sub-distribution system.

- ➡ When scaling multiple devices, note that the appropriate sub-distribution system must be provided by the operating company.
- ➡ The sub-distribution system must be planned only by an electrician.
- ➡ Here, factor in the electrical diagram as well as an appropriate backup fuse of 160 A.

15.2 List of tables

15.3 List of figures

15.4 Revision history

Date	Revision	Change	Creation	Release
12.08.2021	V0.1	Variant transfer and initial document.	Ruoss / Schneider	
20.11.2021	V0.2	Adaptations of overall document.	Ruoss	
28.01.2021	V1.0	Adaptations for SRC1420, SRC4310, mechanical.	Ruoss	
14.02.2022	V1.1	Feedback transfer from development	Ruoss	SnSb/PkWs/PpFr/
28.02.2022	V1.2	Number of pallets changed (chap. 5).	Ruoss	PpFr
16.05.2022	V1.3	Chap. 1.2 Applicable documents and online link amended. Changes in chap. 5, 7.3 and 7.44.	Ruoss	
17.08.2022	V1.4	Formatting changed, figures updated, scaling information added, installation description expanded, product description adapted.	Trautmann/ Ruoss	
22.03.2023	V1.5	Additions to multimaster function, technical data adapted, insulation resistance added.	Ruoss	SnSb
18.10.2023	V1.6	Inverter type added.	Ruoss	PkWs
21.11.2023	V1.7	Chap. 4.1: Insulation information revised; Chap. 6.3.4: Connection texts for communication lines expanded.	Ruoss	SnSb, MlSg

ads-tec Energy GmbH
Heinrich-Hertz-Straße 1
72622 Nürtingen
Germany

Phone. +49 7022 2522-203
Fax +49 7022 2522-406
E-mail support@ads-tec.de

Customer	
Street	
ZIP code / City	
Phone	
Fax	
E-mail	

Control	DVG-SRC1420

Project name	Storage Container GSS0608_EN
Drawing number	
Project description	Grid Service Station 0608
Commission	
Responsible for project	
Created on	2020
Project end	
Edit date	20.04.2023
by (short name)	
Number of pages	23

Place of installation	
Manufacturer (company)	ads-tec Energy GmbH
Make	DVK-GSS0608 001-AA
Part feature	2x 30kW ABB PQstorl + SRS0085
Input lead	min. 25mm² - max. 95mm²
Power supply	Absicherung/Prefuse 125A gG
Control voltage	24V DC
Type	
Environmental consideration	None
Regulation	
Degree of protection	IP55
Enclosures	

Table of contents

F06_001_A

			Date	06.07.2022		ads-tec Energy GmbH	Table of contents : =00+A/1 - /1.b	PJ-EST-000085	= 00
			Ed	Vetter.Benjamin					+ A
			Appr		Grid Service Station 0608				Page 10
Modification	Date	Name	Original		Replacement of / Replaced by				Page 2 / 23

Busbar 3x 12 x 5
-L1:1
400V AC 50 Hz
-L2:1
-L3:1
-L1:2
-L2:2
-L3:2
-L1:3
-L2:3
-L3:3
400V AC 50 Hz
Grid0 L1 / 2.0
Grid0 L2 / 2.0
Grid0 L3 / 2.0

Short-circuit proof
Short-circuit proof
Short-circuit proof
Short-circuit proof

-K10
/4.1
1/L1 3/L2 5/L3
2/T1 4/T2 6/T3

-K11
/4.2
1/L1 3/L2 5/L3
2/T1 4/T2 6/T3

L1 L2 L3
-Q0 F
1 3 5 7
2 4 6 8
DZ-SONS-20199-0/A
-W1
sw sw sw hbl

DZ-SONS-20204-0/A
-WPE2
gn/ge
DZ-SONS-20204-0/A
-WPE3
gn/ge

hbl 16² DZ-SONS-20201-0/A
sw 16² DZ-SONS-20200-0/A
sw 16² DZ-SONS-20200-0/A
sw 16² DZ-SONS-20200-0/A
gn/ge 25²

-F00
L1 L2 L3 N PE
RayDIN 400Y-T1-HV

Short-circuit proof
Short-circuit proof
Short-circuit proof
Short-circuit proof
Short-circuit proof
Short-circuit proof

sw 35² sw 35² sw 35² hbl 35²

-X0L
L1 L1 L2 L2 L3 L3
N N PE PE
L1 L2 L3 N PE
gn/ge 35²
-W0
xmin. 25mm² max. 95mm²
500 V
1 2 3 4 GNYE

PE rail 1
PE:0 PE:1 PE:2 PE:3 PE:4
8.6
FC10_ PE
Foundation earth electrode / Grid0 PE

Attention! Voltage

/ Main grid0 L1
/ Main grid0 L2
/ Main grid0 L3
/ Main grid0 N
/ Main grid0 PE

-X1L
N N N
hbl 1,5² hbl 16² hbl 16²
2.0 / Grid0 N
=03/1.7 / ABB1N
=03/2.7 / ABB2N

sw 16² sw 16² sw 16²
L1 L2 L3
=03/1.6 / ABB1L1
=03/1.6 / ABB1L2
=03/1.6 / ABB1L3

gn/ge 16²
PE
=03/1.7 / ABB1PE

-X2L
L1 L2 L3
sw 16² sw 16² sw 16²
=03/2.6 / ABB2L1
=03/2.6 / ABB2L2
=03/2.6 / ABB2L3

gn/ge 16²
PE
=03/2.7 / ABB2PE

ATTENTION!
Ensure clockwise rotating field

Main power supply
Fuse protection with 125A gG

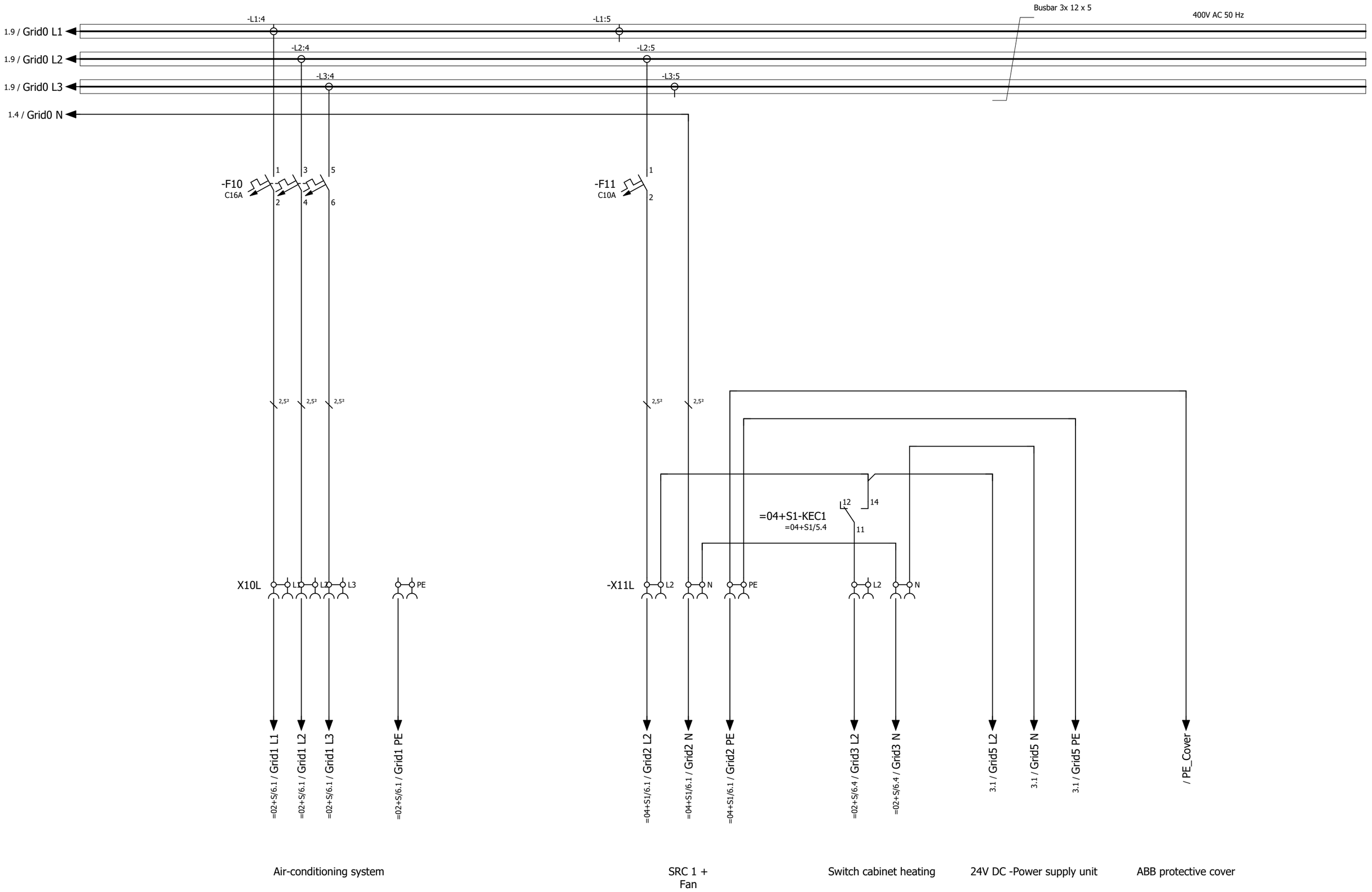
PQstorI
ABB inverter 1

PQstorI
ABB inverter 2

=00+A/10

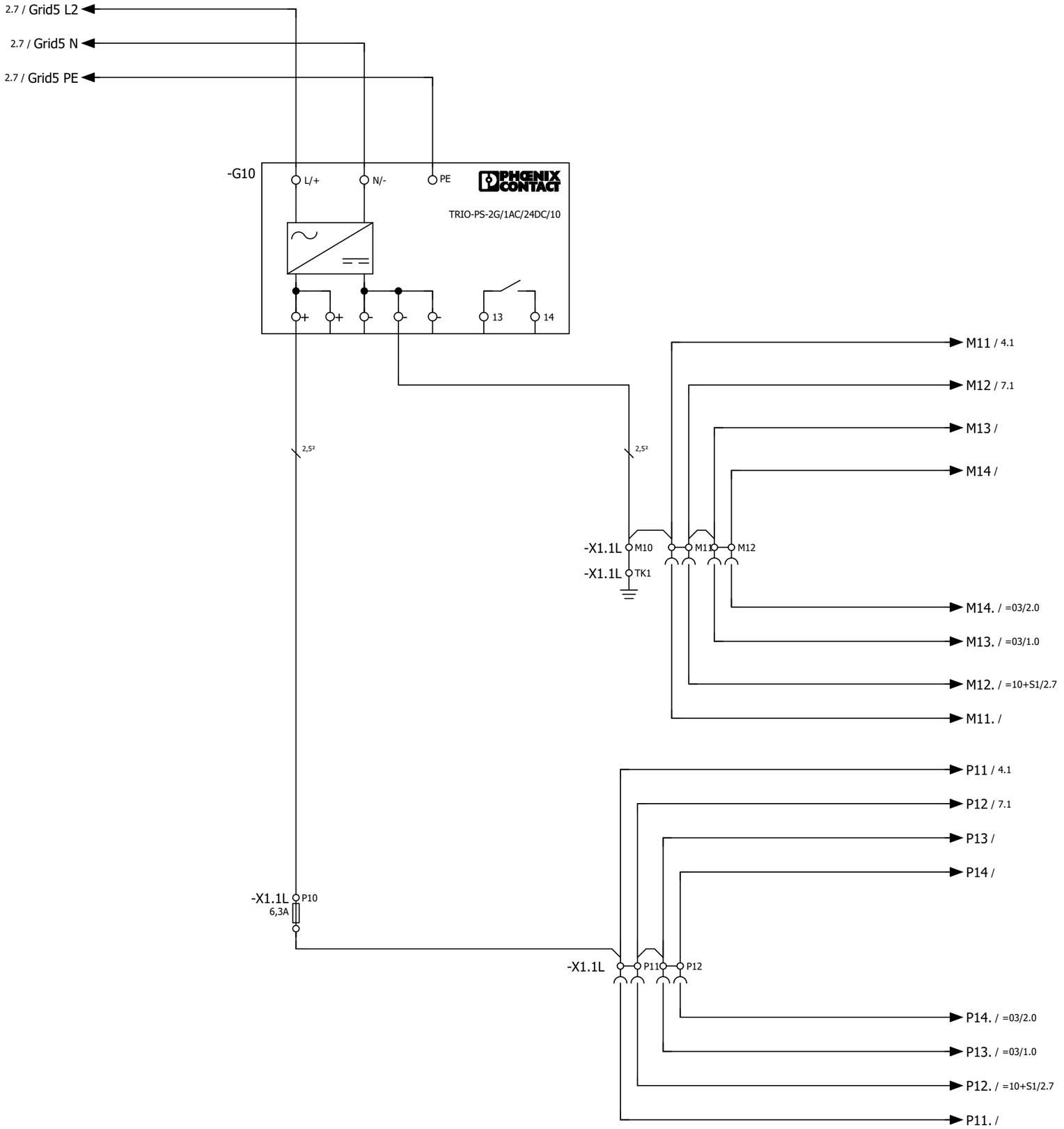
2

			Date	20.04.2023			Grid connection	==	= 01
			Ed.	Besitzer					+ S2
			Appr		Grid Service Station 0608			++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 1 / Page 23

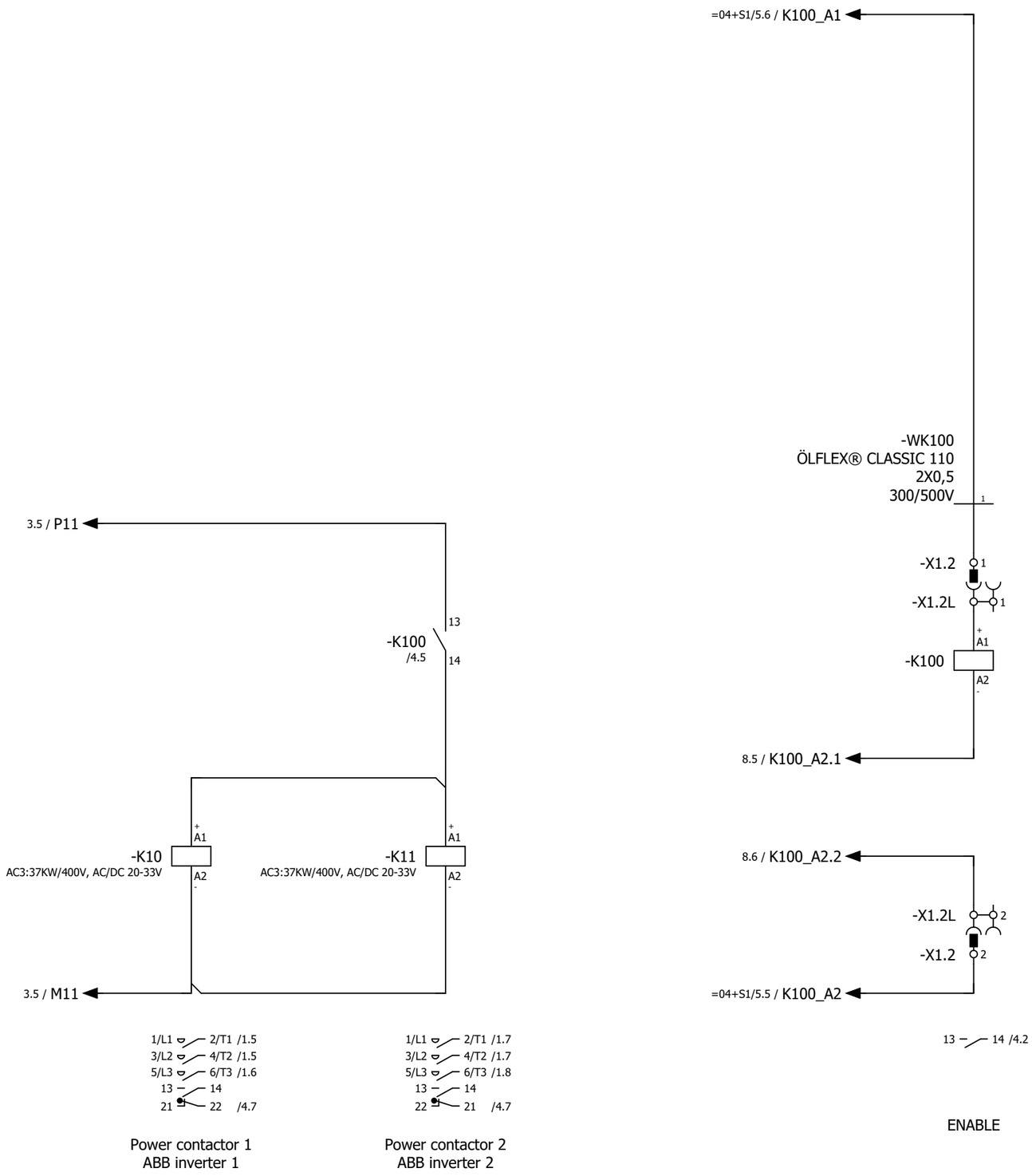


1 3

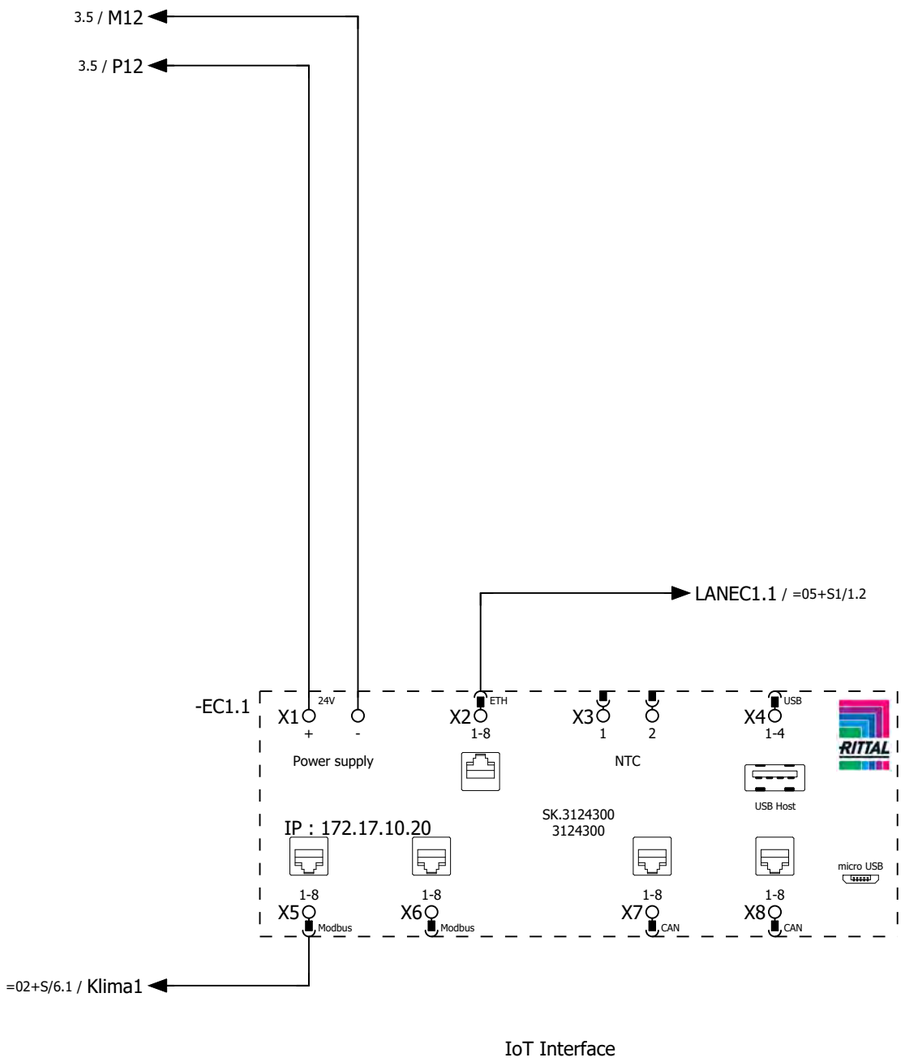
			Date	01.02.2022	Grid Service Station 0608		Connections from Busbar	== = 01 + S2
			Ed.	Besitzer				
			Appr				++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by		Page 2 / Page 23



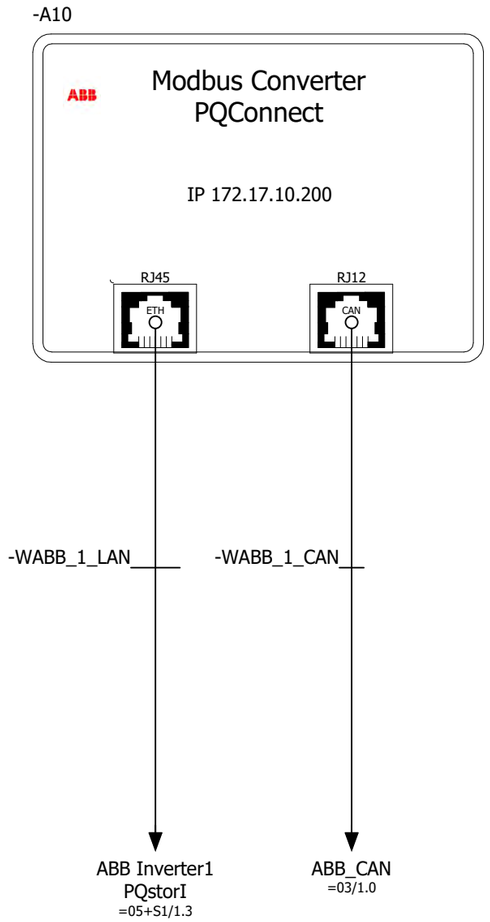
			Date	01.02.2022	Grid Service Station 0608		auxiliary voltage distribution	==	= 01
			Ed.	Besitzer					+ S2
			Appr					++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 3 / Page 23



			Date	20.04.2023			Signal exchange	==	= 01
			Ed.	Besitzer					+ S2
			Appr		Grid Service Station 0608			++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 4 Page 23



IoT Interface



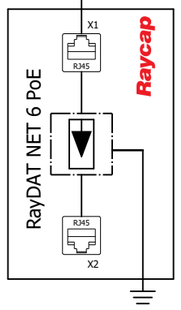
			Date	30.11.2021			Climate monitoring IoT Interface Modbus converter PQConnect	==	= 01
			Ed.	Vetter.Benjamin					+ S2
			Appr		Grid Service Station 0608			++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 7 Page 23

LAN interface SRC1
- Rear

=05+S1/1.4
CUSTOMER_LAN

-WLANC

-F03

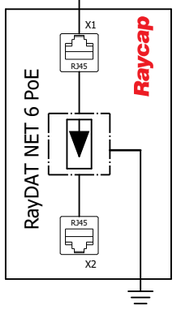


LAN interface SRC1
- Rear

=05+S1/1.3
SERVICE_LAN

-WLANS

-F04

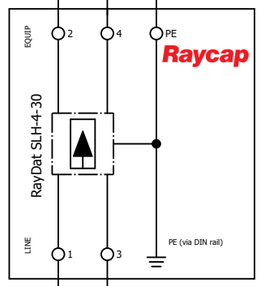


4.4 / K100_A2.1

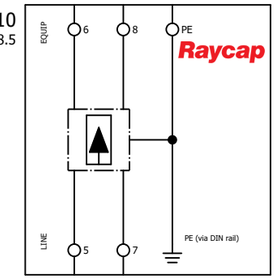
K100_A2.2 / 4.4

FC10_ PE / 1.3

-FC10
/8.7



-FC10
/8.5



LAN interface
Customer

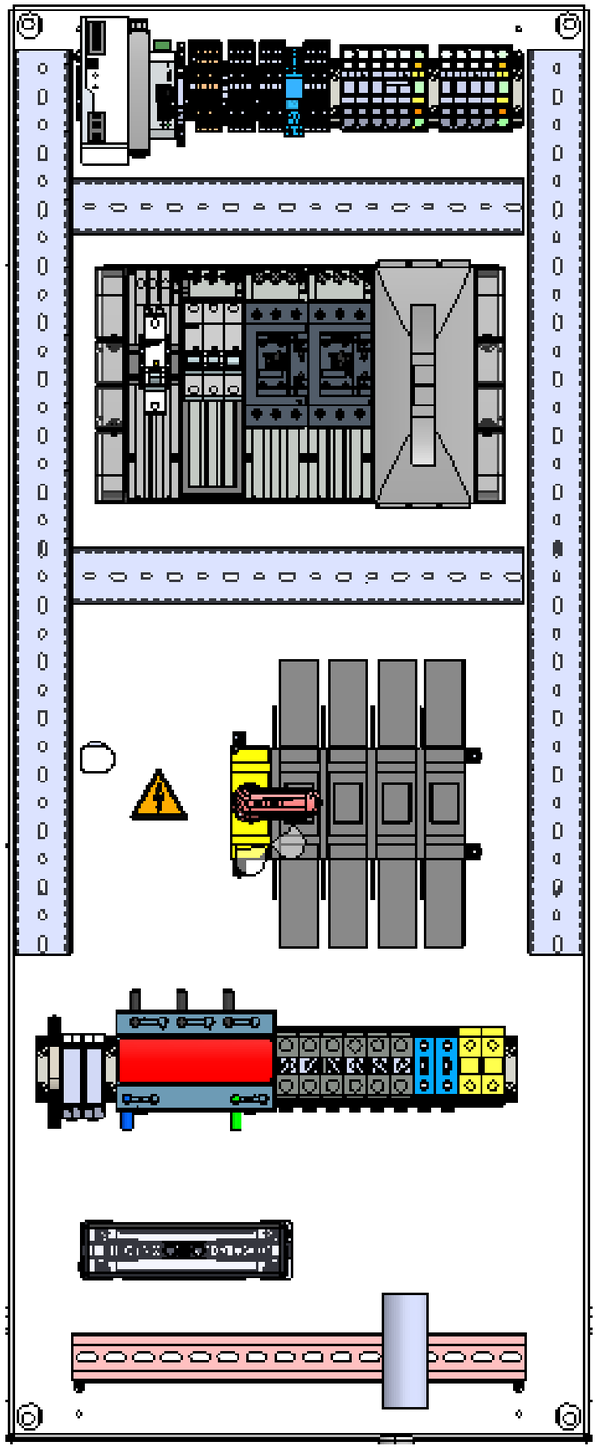
LAN interface Support

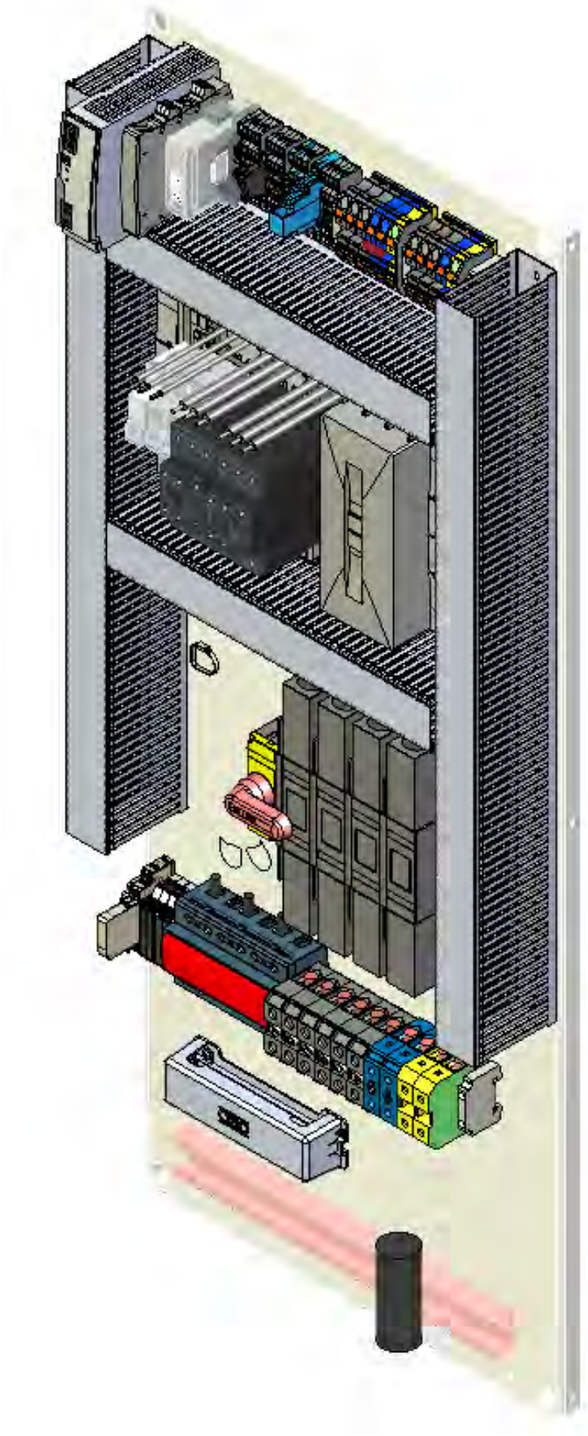
ENABLE
Customer

			Date	20.04.2023			==	= 01
			Ed.	Besitzer				+ S2
			Appr		Grid Service Station 0608		++	mounting plate / Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by		Page 8 / Page 23

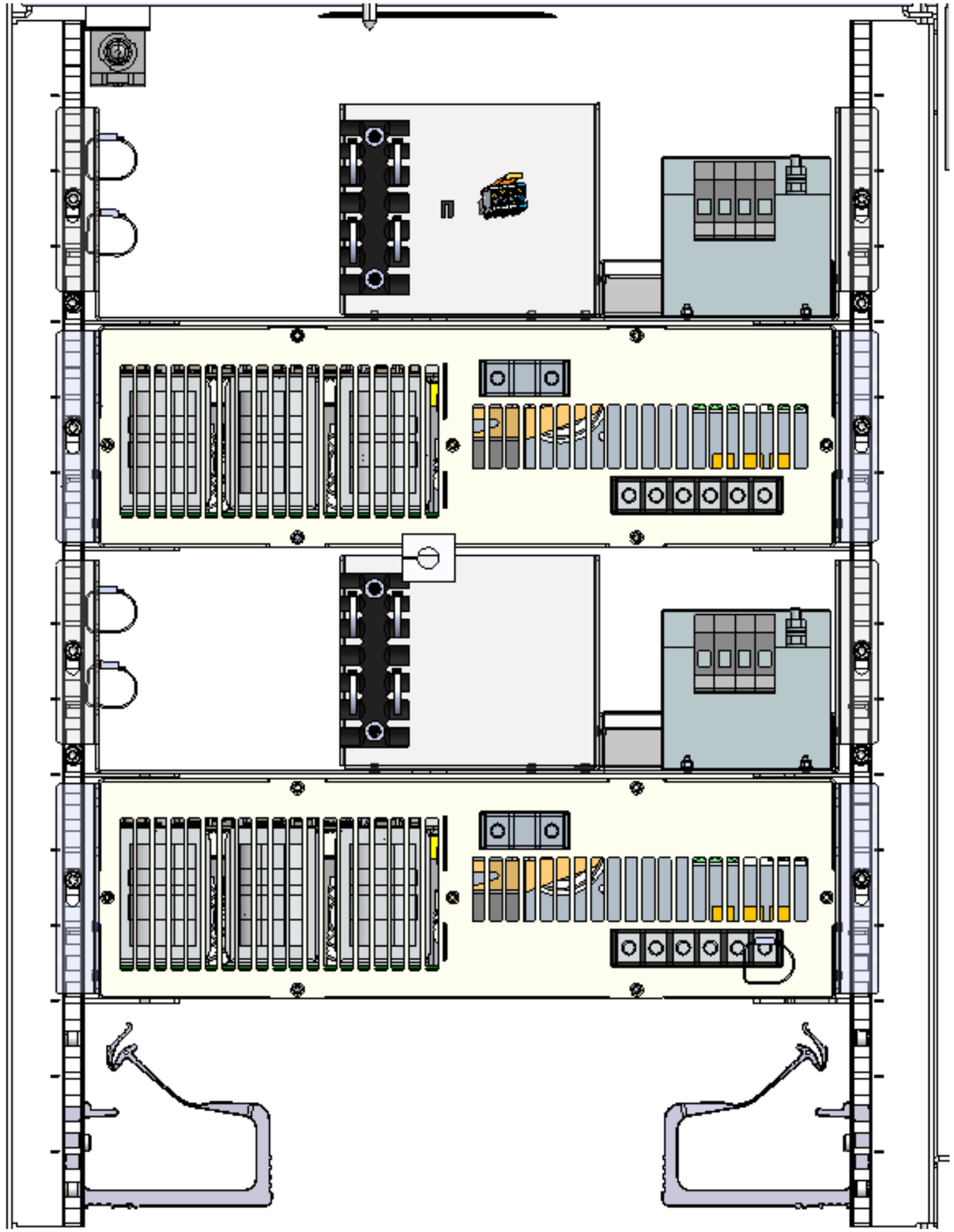
adstec

Customer interface
Overvoltage protection

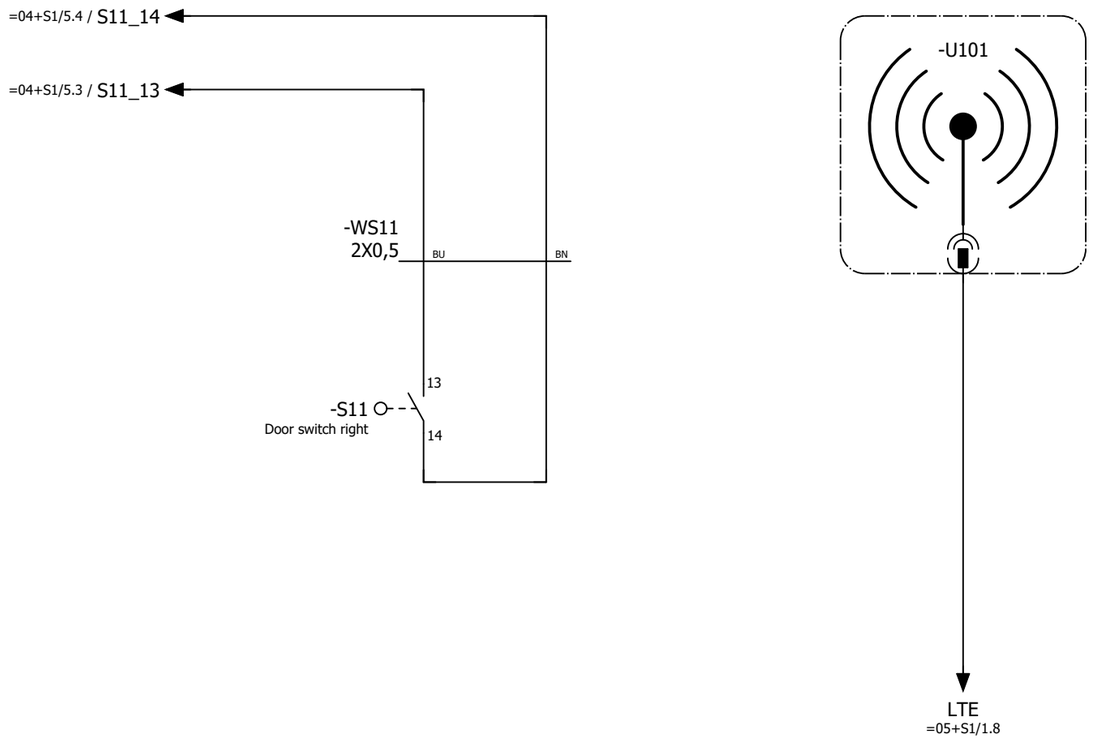




			Date	25.11.2021		adstec	CAD Low voltage distributor View Mounting panel	==	= 01
			Ed.	Besitzer					+ S2
			Appr		Grid Service Station 0608			++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 12 Page 23



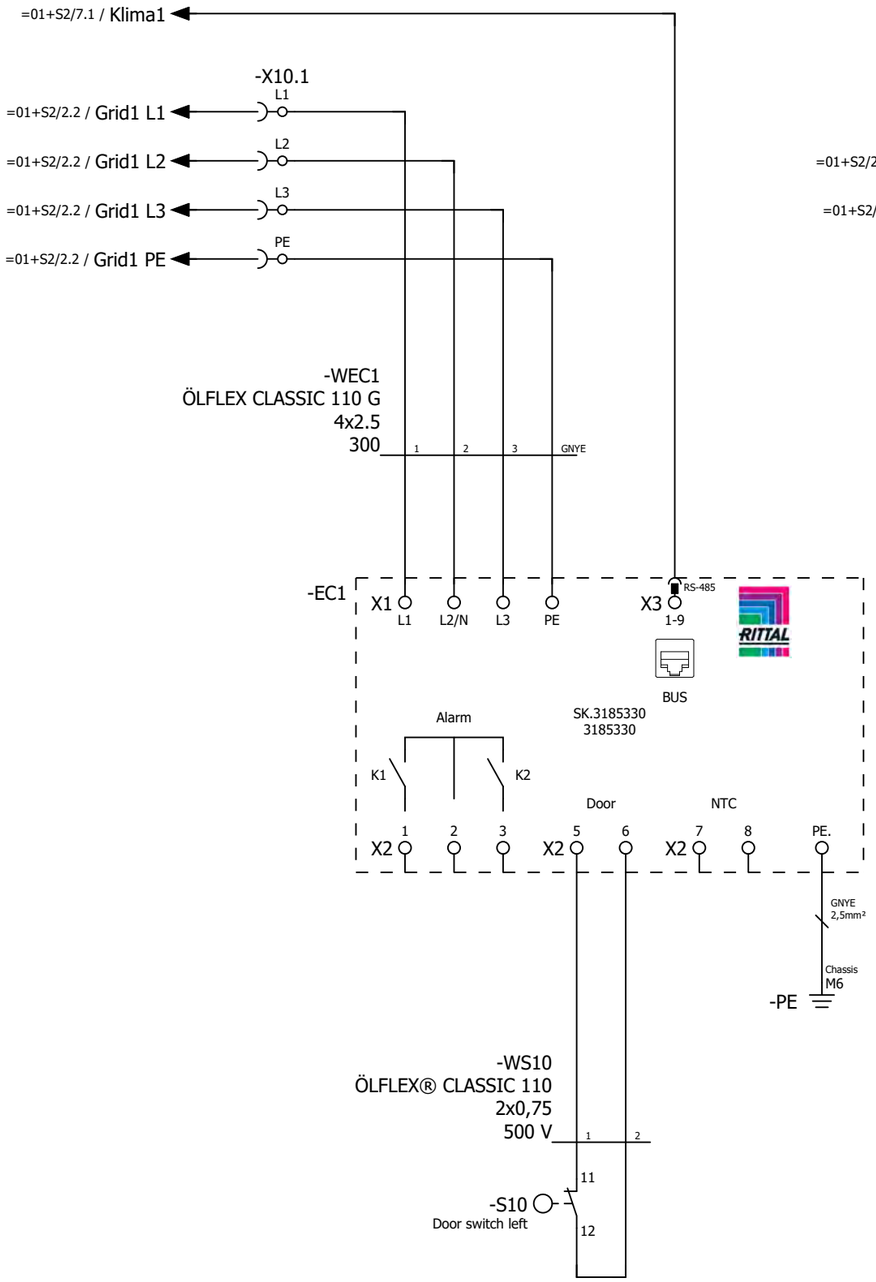
			Date	25.11.2021		adstec	CAD Low voltage distributor View Mounting panel	==	= 01
			Ed.	Besitzer					+ S2
			Appr		Grid Service Station 0608			++	mounting plate Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by			Page 13 Page 23



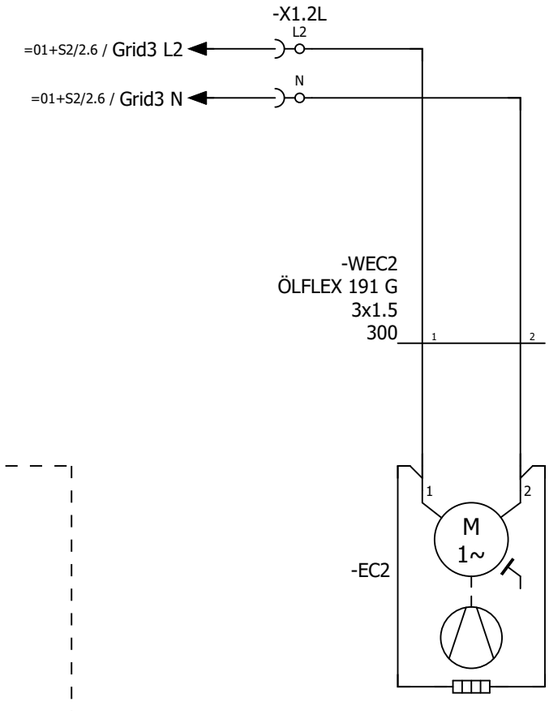
=01+S2/13

6

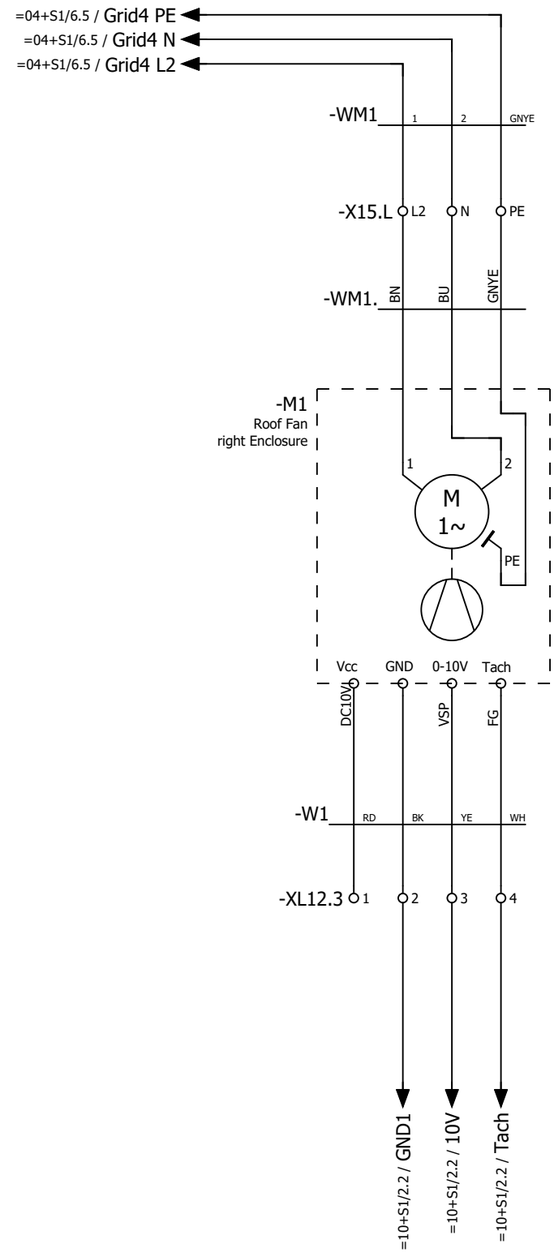
			Date	04.07.2022			Door switch right LTE antenna	==	= 02
			Ed.	Vetter.Benjamin					+ S
			Appr		Grid Service Station 0608			++	Enclosure Enclosure completely
Modification	Date	Name	Original		Replacement of	Replaced by			Page 4 Page 23



Air conditioning unit right Enclosure



Heater left Enclosure



Roof Fan right Enclosure

			Date	04.07.2022			Air conditioning and Heater	==	= 02
			Ed.	Vetter.Benjamin					+ S
			Appr		Grid Service Station 0608			++	Enclosure / Enclosure completely — Page 6 / Page 23
Modification	Date	Name	Original		Replacement of	Replaced by			

=01/3.5 / M13.

=01/3.5 / P13.

DZ-SONS-20192-1/A
-W10.1

-WABB_2_CAN

-U10

DIP Switch Position
on
off
1 2 3 4 5 6 7

-XCAN-XCAN

-WABB_1_CAN

=01/7.6 / ABB_CAN

-XDC

-XAC
N N L3 L2 L1 PE

-U1000
Snap ferrite

-U1001
Snap ferrite

DZ-SONS-20194-0/A
-WDCU100
rt bl

PLUS1
=04+S1/6.7

MINUS1
=04+S1/6.8

-WU100
sw sw sw gn/ge

DZ-SONS-20196-0/A
-WPEU100

-U100
L3 L2 L1 N PE1

BLOCK
HLV 710-500/55

L3' L2' L1' N' PE2

=01/1.6 / ABB1L3
=01/1.5 / ABB1L2
=01/1.5 / ABB1L1
=01/1.5 / ABB1N
=01/1.6 / ABB1PE

ABB Inverter2
PQstorI
2.0

CAN

=02+S/6

2

			Date	04.07.2022			==	= 03
			Ed.	Vetter.Benjamin				+ S2
			Appr		Grid Service Station 0608		++	Converter / Enclosure right
Modification	Date	Name	Original		Replacement of	Replaced by		Page 1 / Page 23

adstec

Connection at ABB inverter 1 Master
Top

=01/3.5 / M14.

=01/3.5 / P14.

DZ-SONS-20192-1/A
-W20.1

-U20

DIP Switch Position
on
off
1 2 3 4 5 6 7

-XCAN-XCAN

1.8 / ABB Inverter2
PQstorI

-XDC

-XAC
N N L3 L2 L1 PE

-U2000
Snap ferrite

-U2001
Snap ferrite

DZ-SONS-20194-0/A
-WDCU200
rt bl

PLUS2
=04+S1/6.7

MINUS2
=04+S1/6.8

-WU200
sw sw sw gn/ge

DZ-SONS-20196-0/A
-WPEU200

-U200
L3 L2 L1 N PE1

BLOCK
HLV 710-500/55
L3' L2' L1' N' PE2

=01/1.8 / ABB2L3

=01/1.7 / ABB2L2

=01/1.7 / ABB2L1

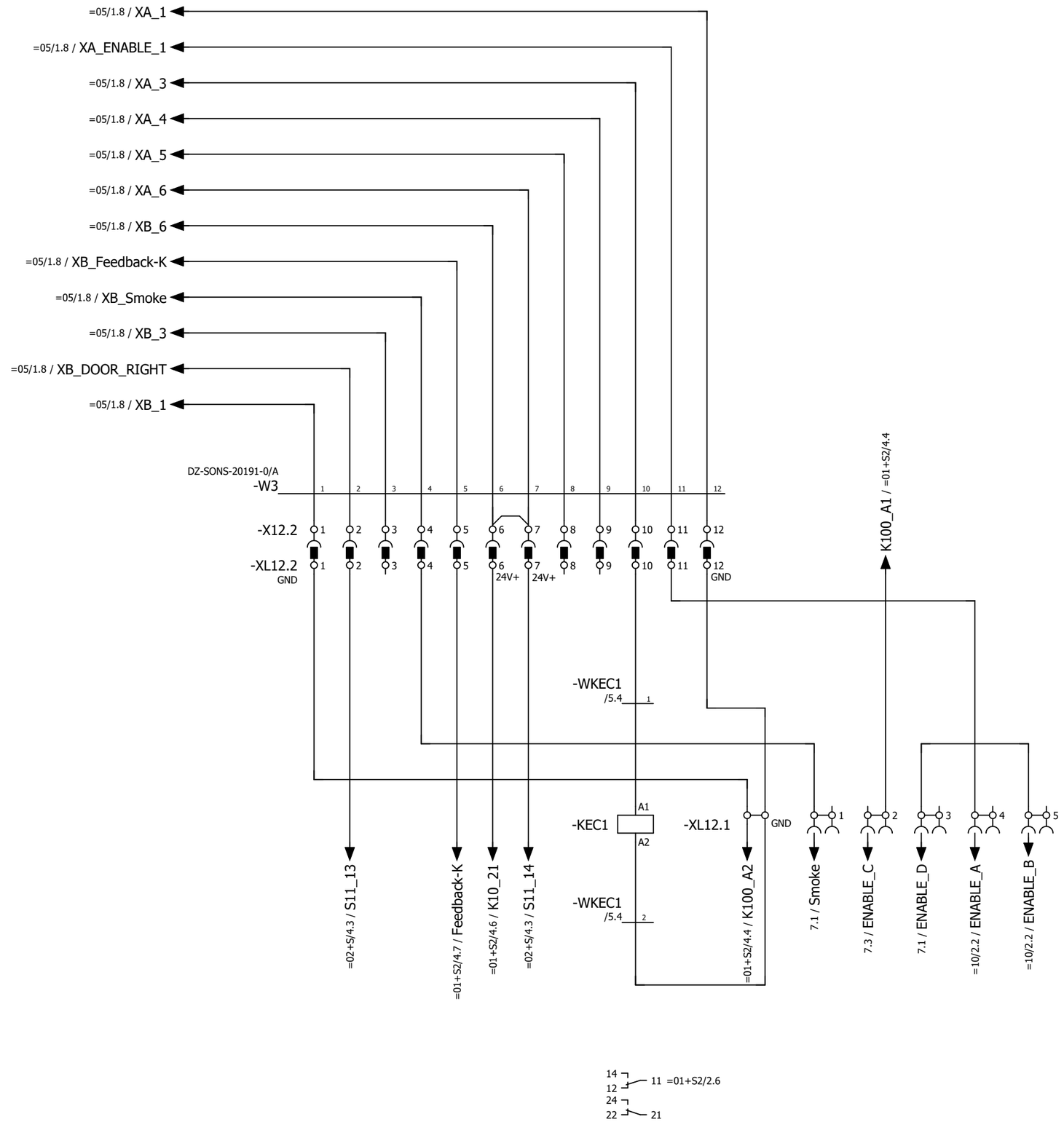
=01/1.5 / ABB2N

=01/1.8 / ABB2PE

1

=04+S1/5

			Date	06.07.2022	Grid Service Station 0608	adstec	Connection at ABB inverter 2 Slave Bottom	== = 03
			Ed.	Vetter.Benjamin				+ S2
			Appr				++	Converter Enclosure right Page 2
Modification	Date	Name	Original		Replacement of	Replaced by		Page 23



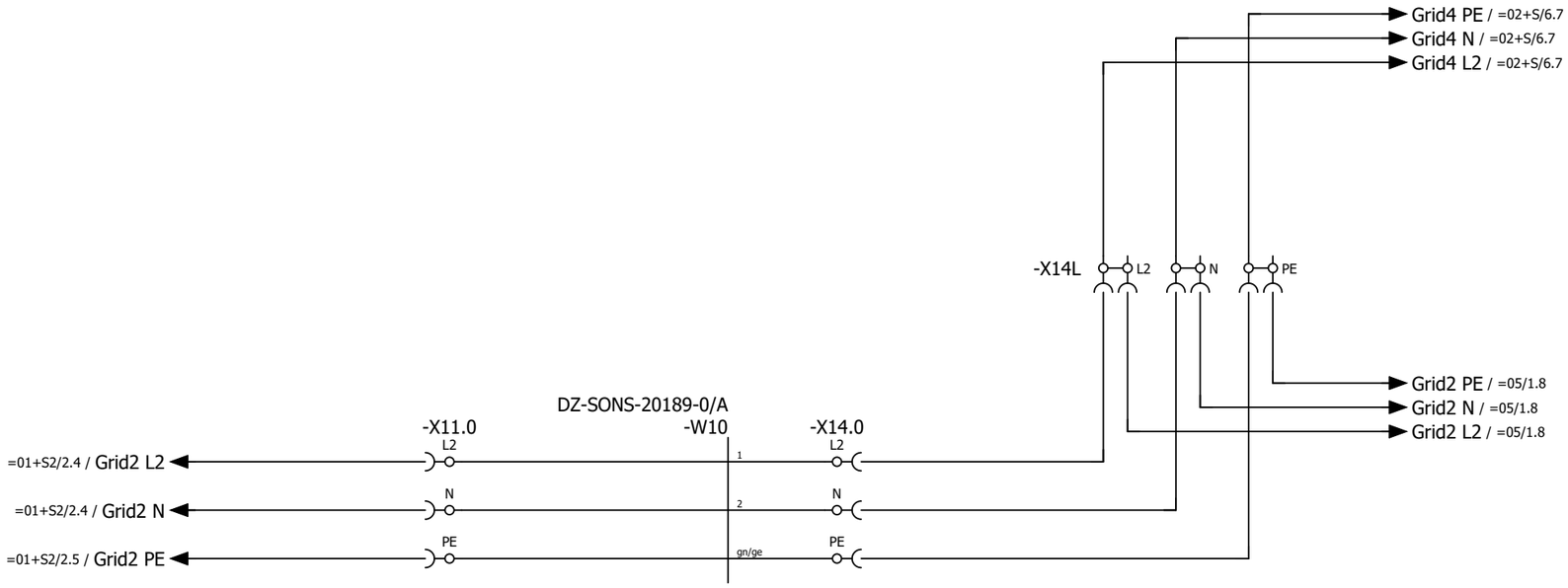
=03+S2/2

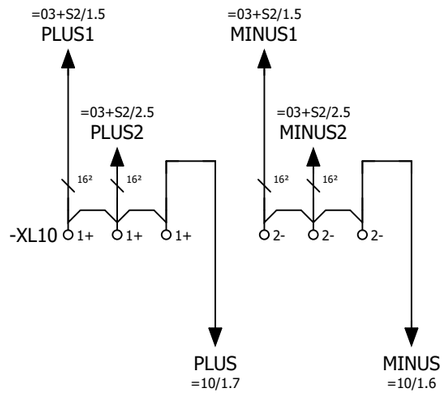
6

			Date	20.04.2023			==	= 04
			Ed.	Besitzer				+ S1
			Appr		Grid Service Station 0608		++	Support rail / Enclosure left
Modification	Date	Name	Original		Replacement of	Replaced by		Page 5 / Page 23

adstec

Signal exchange

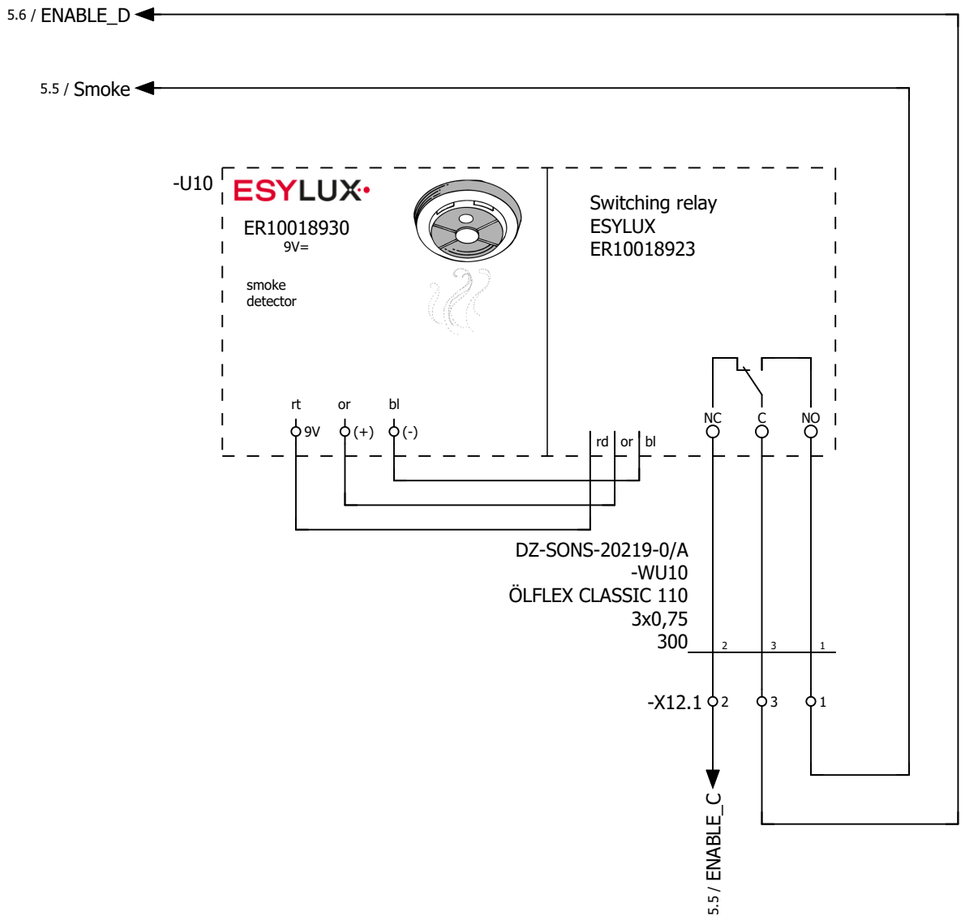




5

7

			Date	04.07.2022		adstec	230V Distribution DC-Distribution	==	= 04
			Ed.	Vetter.Benjamin					+ S1
			Appr		Grid Service Station 0608			++	Support rail Enclosure left
Modification	Date	Name	Original		Replacement of	Replaced by			Page 6 Page 23

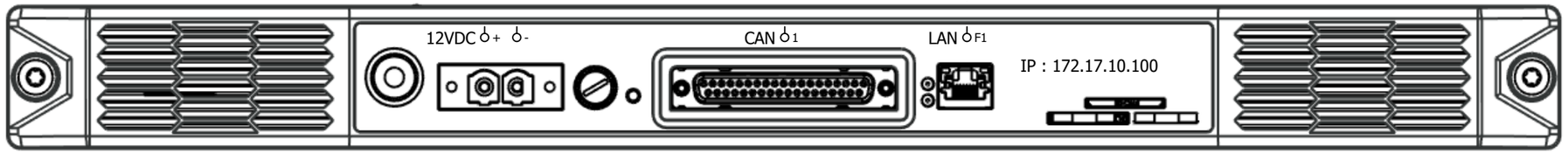


			Date	04.07.2022			smoke detector	==	= 04
			Ed.	Vetter.Benjamin					+ S1
			Appr		Grid Service Station 0608			++	Support rail / Enclosure left — Page 7 / Page 23
Modification	Date	Name	Original		Replacement of	Replaced by			

=02+S/4.6
LTE

=01+S2/8.3 / SERVICE_LAN

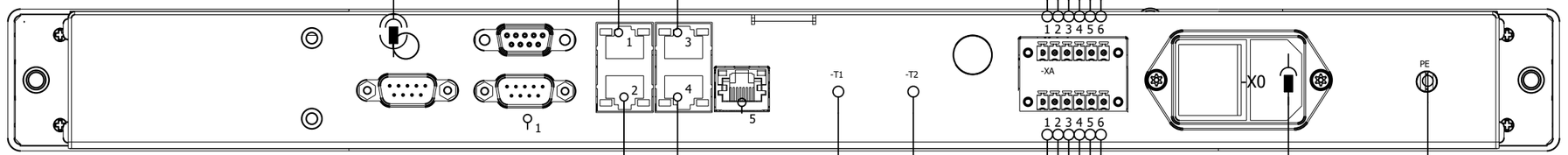
-SRC1



IP : 172.17.10.100

=01+S2/7.5
ABB Inverter1
PQstorI

=01+S2/8.2
CUSTOMER_LAN



XA_1 / =04/5.2
XA_ENABLE_1 / =04/5.2
XA_3 / =04/5.2
XA_4 / =04/5.2
XA_5 / =04/5.2
XA_6 / =04/5.2

XB_6 / =04/5.2
XB_Feedback-K / =04/5.2
XB_Smoke / =04/5.2
XB_3 / =04/5.2
XB_DOOR_RIGHT / =04/5.2
XB_1 / =04/5.2

=01+S2/7.3 / LANEC1.1

SRC1-2
=10/2.2

-T3
Outside temperature
+
-

-T4
Enclosure right
+
-

PE

DZ-SONS-20190-0/A
-WSRC1
bn
bl
gn/ge

-X14.1
L2
N
PE

Grid2 PE / =04/6.5
Grid2 N / =04/6.5
Grid2 L2 / =04/6.5

=04/7

=10/1

			Date	02.02.2022			MASTER-CONTROLLER	==	= 05
			Ed.	Besitzer					+ S1
			Appr		Grid Service Station 0608			++	SRC1 Enclosure left
Modification	Date	Name	Original		Replacement of	Replaced by			Page 1 / Page 23

-W1
NSGAFÖU 1.8/3 kV
1x50
1800/3000V
BK

-WCAN1
CAN Bus

-SRC4310
/2.2

-X300 D-SUB9 -X1600 USB

-WCAN2
CAN Bus

-W9
NSGAFÖU 1.8/3 kV
1x50
1800/3000V
BK

Current
Sensor
LF 310-S

-X300

-W2
NSGAFÖU 1.8/3 kV
1x50
1800/3000V
BK

76-99V DC

-CAN1 -CAN2

-SRB1
SRB5083

8 BATTERY MODULE

608-792V DC

-CAN1 -CAN2

CAN Terminator

-SRB8
SRB5083

Front

SRC4310

CAN-BUS1 USB RESET BATT CR2032

-S1

-X400 -X500 -X2000 -X203 -X401 -X501 -X2001

-S1 13 14 rd bk

-K1 Charge + X1(+) X2(-)

-K2 Discharge- X1(+) X2(-)

-K3 Precharge X1(+) X2(-)

23 24 rd bk

33 34 rd bk

43 44 51 52 61 62

2.6 / 24Vdc

2.6 / GND

600A, aR
Gigavac
1 2
A2-
-K2 /1.4
A1+

450A, aR
SIBA
1 2
A2-
-K1 /1.4 A1+
-K3 /1.5 A1+
25A, gPV
SIBA
1 2
X2000:1
2.3
X2000:2 / 2.3

-K1 /1.4 T1 T2 or wh
-K2 /1.4 T1 T2 or wh
-K3 /1.5 T1 T2 or wh

-X1100
Rear
- +

50² 50²

608-792V DC

MINUS
=04/6.8

PLUS
=04/6.8

HX241CAC /1.7 /1.8

HX241CAC /1.6 /1.8

HX241CAC /1.7 /1.9

=05/1

2

			Date	01.12.2021		adstec	BATTERY STRING 1 SRC4310 front view	==	= 10 + S1
			Ed.	Vetter.Benjamin					
			Appr		Grid Service Station 0608			++	Battery string Enclosure left
Modification	Date	Name	Original		Replacement of	Replaced by			Page 1 Page 23

=02+S/6.8 / GND1
=02+S/6.8 / Tach
=02+S/6.8 / 10V

=01+S2/3.5 / P12.
=01+S2/3.5 / M12.

-X1 M12 P12

-WX1300 1 2 3

-T1 Klima (Air in)
-T2 Klima (Air out)

DZ-SONS-20187-0/A
-WX203
2x0,75
1 2

=05/1.3 / SRC1-2
=04/5.6 / ENABLE_A
=04/5.6 / ENABLE_B

CAN:

Data Out:
1 2
CAN_L 3
CAN_GND 4 5
CAN_SHLD
6 7 CAN_H
8
9

-WX1200 2 1 NO COM
-X1200 2 1
-LAN
-X1300 9 8 7 6 5 4 3 2 1
-X1301 NO NC COM 3 2 1
-SRC4310 /1.3
-X1500 D-SUB9
-X1400 RJ45
-X1701 Mini-DIN4
-X1700 Mini-DIN4
CAN-BUS2
Ethernet
1.6 / 24Vdc
1.6 / GND
1 2 3
1.7 / X2000:1
X2000:2 / 1.7
1 2
-X2000
-R1
60Ohm / 400W
-X203
1 2 3

IP : 172.17.10.101

power Supply 24V DC

1

=+/1

			Date	04.07.2022			BATTERY STRING 1 SRC4310rear view	==	= 10
			Ed.	Vetter.Benjamin					+ S1
			Appr		Grid Service Station 0608			++	Battery string Enclosure left
Modification	Date	Name	Original		Replacement of	Replaced by			Page 2 Page 23

Parts list

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Device tag	Quantity	Designation	Type number	Supplier	Part number
=01+S2-A10	1	Modbus TCP to CAN converter	PQconvM	ABB	ABB.2GCA298532A0070
=01+S2-EC1.1	1	Interface board for Blue e+ cooling units	SK.3124300	RIT	RIT.3124300
=01+S2-F00	1	Surge arrester terminal block 2-pole DEHNconnect SD2	RayDIN 400Y-T1-HV	RAY	REY.RayDIN 400Y-T1-HV
=01+S2-F03	1	Lightning protection LAN CAT6 48V	RayDat NET 6	RAY	REY.706312
=01+S2-F04	1	Lightning protection LAN CAT6 48V	RayDat NET 6	RAY	REY.706312
=01+S2-F10	1	CIRCUIT BREAKER 400V 10KA, 3-POLE, C, 16A, D=70MM	5SY4316-7	SIE	SIE.5SY4316-7
=01+S2-F10	1	SV OM adaptor, 32 A, 690 V, 3-pole, connection cable AWG 10	SV.9340460	RIT	RIT.9340460
=01+S2-F11	1	CIRCUIT BREAKER 10KA 1POL C10	5SY4110-7	SIE	SIE.5SY4110-7
=01+S2-FC10	1	Surge arrester terminal block 2-pole DEHNconnect SD2	RayDat SLH-4-30	RAY	REY.708278
=01+S2-G10	1	Power supply unit	TRIO-PS-2G/1AC/24DC/10	PXC	PXC.2903149
=01+S2-K10	1	CONTACTOR,AC3:37KW 1NO+1NC 20-33VAC/DC	3RT2038-1NB30	SIE	SIE.3RT2038-1NB30
=01+S2-K11	1	CONTACTOR,AC3:37KW 1NO+1NC 20-33VAC/DC	3RT2038-1NB30	SIE	SIE.3RT2038-1NB30
=01+S2-K100	1	Single relay	REL-MR- 24DC/21	PXC	PXC.2961105
=01+S2-K100	1	Relay socket	RIF-0-BPT/1	PXC	PXC.2901873
=01+S2-L1	2	SV Connection adaptor, 250 A, 690 V, 3-pole, cable outet top/bottom	SV.9342250	RIT	RIT.9342250
=01+S2-L1	1	SV OM adaptor, 32 A, 690 V, 3-pole, connection cable AWG 10	SV.9340460	RIT	RIT.9340460
=01+S2-L1	2	SV OM adaptor, 65 A, 690 V, 3-pole, connection cable AWG 6, WH: 55x208 mm	SV.9340410	RIT	RIT.9340410
=01+S2-L1	2	SV End cover, for busbar support, SV 9342000/050	SV.9342070	RIT	RIT.9342070
=01+S2-L1	2	Busbar supports flat copper busbars	SV.9340000	RIT	RIT.9340000
=01+S2-L1	1	Base tray	SV.9340100	RIT	RIT.9340100
=01+S2-L1	1	SV Cover section, L: 700 mm	SV.9340200	RIT	RIT.9340200
=01+S2-L1	2	Busbars E-Cu	SV.3580000	RIT	RIT.3580000
=01+S2-L1	6	Spacer	SV.9340090	RIT	RIT.9340090
=01+S2-L1	1	OM adaptors	SV.9340510	RIT	RIT.9340510
=01+S2-PE	1	Equipotential busbar for outside installation	5015111	OBO	OBO.5015111
=01+S2-Q0	1	OT200U04 switch disconnector 4-pole 200A without handle and shaft	OT200U04	ABB	ABB.1SCA022723R0490
=01+S2-Q0	1	OTV250EK direct handle black	OTV250EK	ABB	ABB.1SCA022763R2700
=01+S2-Q0	4	OTS250G1S / 4 terminal cover	OTS250G1S/4	ABB	ABB.1SCA022731R8400
=01+S2-Q0	4	OZXA200 / 1 connection terminal	OZXA200/1	ABB	ABB.1SCA132044R1001
=01+S2-Q0	4	OTS250G1L / 4 terminal cover	OTS250G1L/4	ABB	ABB.1SCA022731R8230
=01+S2-W1	1	GSS0606 AC power path UV	DZ-SONS-20199-0/A	ADS-TEC	ADS.DZSONS201990A
=01+S2-WABB_1_LAN	1	Patch cable Cat.5e 2.5m straight/straight	DZ-SONS-05091-1/A	ADS-TEC	ADS.DZSONS050911A
=01+S2-WK10	1	GSS0606 Control / Feedback Inverter	DZ-SONS-20188-0/A	ADS-TEC	ADS.DZSONS201880A
=01+S2-WK100	1	ÖLFLEX® CLASSIC 110 2X0,5	ÖLFLEX® CLASSIC 110	LAPP	LAPP.1119752
=01+S2-WLANC	1	Patch cable Cat.5e 3m straight/straight	DZ-SONS-40869-0/A	ADS-TEC	ADS.DZSONS408690A
=01+S2-WLANS	1	Patch cable Cat.5e 3m straight/straight	DZ-SONS-40869-0/A	ADS-TEC	ADS.DZSONS408690A
=01+S2-WPE2	1	GSS0606 PE sub distribution	DZ-SONS-20204-0/A	ADS-TEC	ADS.DZSONS202040A
=01+S2-WPE3	1	GSS0606 PE sub distribution	DZ-SONS-20204-0/A	ADS-TEC	ADS.DZSONS202040A
=01+S2-X0L	6	High-current terminal block	UKH 70	PXC	PXC.3213140
=01+S2-X0L	5	Fixed bridge	FBI 2-20 N EX	PXC	PXC.3213210
=01+S2-X0L	4	End clamp	E/AL-NS 35	PXC	PXC.1201662
=01+S2-X0L	2	High-current terminal block	UKH 70 BU	PXC	PXC.3244601
=01+S2-X0L	2	Ground modular terminal block	UKH 70-PE/S	PXC	PXC.3213141
=01+S2-X1.1L	1	Fuse modular terminal block	PT 4-HESI (5X20)	PXC	PXC.3211861
=01+S2-X1.1L	1	G fuse link 20x5mm	522.725	ESKA	ESKA.522725
=01+S2-X1.1L	1	Feed-through terminal block	PT 2,5 BU	PXC	PXC.3209523
=01+S2-X1.1L	3	Plug-in bridge	FBS 3-5	PXC	PXC.3030174
=01+S2-X1.1L	4	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=01+S2-X1.1L	1	Knife disconnect terminal block	PT 2,5-MT OG	PXC	PXC.3212316
=01+S2-X1.2	1	Plug	PP-H 2,5/ 4	PXC	PXC.3209895
=01+S2-X1.2L	4	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=01+S2-X1L	3	Feed-through terminal block	PT 16 N	PXC	PXC.3212138
=01+S2-X1L	5	End clamp	E/AL-NS 35	PXC	PXC.1201662
=01+S2-X1L	3	Feed-through terminal block	PT 16 N BU	PXC	PXC.3212142
=01+S2-X1L	2	End cover	D-PT 16 N	PXC	PXC.3212060
=01+S2-X1L	2	Plug-in bridge	FBS 2-12	PXC	PXC.3005950

Parts list

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Device tag	Quantity	Designation	Type number	Supplier	Part number
=01+S2-X1L	1	Ground modular terminal block	PT 16 N-PE	PXC	PXC.3212147
=01+S2-X2L	3	Feed-through terminal block	PT 16 N	PXC	PXC.3212138
=01+S2-X2L	3	End clamp	E/AL-NS 35	PXC	PXC.1201662
=01+S2-X2L	1	Ground modular terminal block	PT 16 N-PE	PXC	PXC.3212147
=01+S2-X2L	1	End cover	D-PT 16 N	PXC	PXC.3212060
=01+S2-X10L	3	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=01+S2-X10L	1	End clamp	CLIPFIX 35-5	PXC	PXC.3022276
=01+S2-X10L	1	Ground modular terminal block	PT 2,5-QUATTRO/2P-PE	PXC	PXC.3209688
=01+S2-X11L	2	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=01+S2-X11L	2	Feed-through terminal block	PT 2,5-QUATTRO/2P BU	PXC	PXC.3209675
=01+S2-X11L	1	End cover	D-ST 2,5-QUATTRO/ 2P	PXC	PXC.3040083
=01+S2-X11L	1	End clamp	CLIPFIX 35-5	PXC	PXC.3022276
=01+S2-X11L	1	Ground modular terminal block	PT 2,5-QUATTRO/2P-PE	PXC	PXC.3209688
=02+S-EC1	1	Wall-mounted cooling unit Blue e+ outdoor	SK.3185330	RITTAL	RIT.3185330
=02+S-M1	0	EC centrifugal module	K3G190-RC05-16	PAPST	PAPST.K3G190RC0516
=02+S-M1	1	EC-Radiallüfter	EC72-B250-B31 085-007-B-X00	Dunli	DUNLI.EC72B250B31085007BX00
=02+S-U101	1	Planar built-in antenna GSM/UMTS/LTE	60603141	Celphone	Celphone.60603141
=02+S-WEC1	1	ÖLFLEX CLASSIC 110 4G2,5	ÖLFLEX CLASSIC 110	LAPP	LAPP.1119404
=02+S-WEC2	1	ÖLFLEX 191 3G1,5	ÖLFLEX® 191	LAPP	LAPP.0011137
=02+S-WS10	1	ÖLFLEX CLASSIC 110 2X0,75	ÖLFLEX® CLASSIC 110	LAPP	LAPP.1119802
=02+S-X1.2L	1	Plug	PP-H 2,5/ 2	PXC	PXC.3209879
=02+S-X10.1	1	Plug	PP-H 2,5/ 4 (1GNYE/3GY)	PXC	PXC.3209896
=02+S-X15.L	2	End clamp	CLIPFIX 35-5	PXC	PXC.3022276
=02+S-X15.L	1	Feed-through terminal block	PT 2,5	PXC	PXC.3209510
=02+S-X15.L	1	Feed-through terminal block	PT 2,5 BU	PXC	PXC.3209523
=02+S-X15.L	1	Ground modular terminal block	PT 2,5-PE	PXC	PXC.3209536
=02+S-X15.L	1	End cover	D-ST 2,5	PXC	PXC.3030417
=02+S-XL12.3	1	End clamp	CLIPFIX 35-5	PXC	PXC.3022276
=02+S-XL12.3	4	Feed-through terminal block	PT 2,5	PXC	PXC.3209510
=02+S-XL12.3	1	End cover	D-ST 2,5	PXC	PXC.3030417
=03+S2-U10	1	ABB power inverter	PQSTORL Serie 30kVA	ABB	ABB.PQSTORLSerie30kVA
=03+S2-U20	1	ABB power inverter	PQSTORL Serie 30kVA	ABB	ABB.PQSTORLSerie30kVA
=03+S2-U100	1	EMI-Filter	HLV 710-500/55	BLO	BLO.HLV 710-500/55
=03+S2-U200	1	EMI-Filter	HLV 710-500/55	BLO	BLO.HLV 710-500/55
=03+S2-U1000	1	Snap Ferrit	Wuerth: 74272722	ADS-TEC	ADS.DZSONS409210A
=03+S2-U1001	1	Snap Ferrit	Wuerth: 74272722	ADS-TEC	ADS.DZSONS409210A
=03+S2-U2000	1	Snap Ferrit	Wuerth: 74272722	ADS-TEC	ADS.DZSONS409210A
=03+S2-U2001	1	Snap Ferrit	Wuerth: 74272722	ADS-TEC	ADS.DZSONS409210A
=03+S2-W10.1	1	GSS0606 E-Stop Inverter	DZ-SONS-20192-1/A	ADS-TEC	ADS.DZSONS201921A
=03+S2-W20.1	1	GSS0606 E-Stop Inverter	DZ-SONS-20192-1/A	ADS-TEC	ADS.DZSONS201921A
=03+S2-WDCU100	1	GSS0606 DC disrtibution <--> inverter	DZ-SONS-20194-0/A	ADS-TEC	ADS.DZSONS201940A
=03+S2-WDCU200	1	GSS0606 DC disrtibution <--> inverter	DZ-SONS-20194-0/A	ADS-TEC	ADS.DZSONS201940A
=03+S2-WPEU100	1	GSS0606 PE inverter	DZ-SONS-20196-0/A	ADS-TEC	ADS.DZSONS201960A
=03+S2-WPEU200	1	GSS0606 PE inverter	DZ-SONS-20196-0/A	ADS-TEC	ADS.DZSONS201960A
=03+S2-WU100	3	GSS0606 AC inverter	DZ-SONS-20195-0/A	ADS-TEC	ADS.DZSONS201950A
=03+S2-WU200	3	GSS0606 AC inverter	DZ-SONS-20195-0/A	ADS-TEC	ADS.DZSONS201950A
=04+S1-KEC1	1	Relay, 2 pole, 8 A - DC - 24 V - AgNi - CO (nPDT) - Standard	40.52.9.024.0000	FIN	FIN.40.52.9.024.0000
=04+S1-KEC1	1	Screw terminal socket panel, for 40.51/40.52/40.61	95.05	FIN	FIN.95.05
=04+S1-KEC1	1	Coil indication and EMC suppression module LED green + diode module (standard polarity)	99.80.9.024.99	FIN	FIN.99.80.9.024.99
=04+S1-KEC1	1	Plastic retaining and release clip, S40 (95.55)	095.91.3	FIN	FIN.095.91.3
=04+S1-U10	1	Smoke detector PROTECTOR K 9 V lithium	ER10018930	ESY	ESY.ER10018930
=04+S1-U10	1	Base for PROTECTOR K surface-mounted box, H = 27mm	ER10018985	ESY	ESY.ER10018985
=04+S1-U10	1	Switching relay changeover for PROTECTOR K 9 V lithium	ER10018923	ESY	ESY.ER10018923
=04+S1-W3	1	GSS0606 inputs/outputs SRC1xxx	DZ-SONS-20191-0/A	ADS-TEC	ADS.DZSONS201910A
=04+S1-W10	1	GSS0606 AC supply distributor	DZ-SONS-20189-0/A	ADS-TEC	ADS.DZSONS201890A
=04+S1-WU10	1	GSS0606 smoke detector cable 3x0.75 1.4m	DZ-SONS-20219-0/A	ADS-TEC	ADS.DZSONS202190A

1 1.b

Parts list

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Device tag	Quantity	Designation	Type number	Supplier	Part number
=04+S1-X12.1	3	Feed-through terminal block	PT 2,5	PXC	PXC.3209510
=04+S1-X12.2	1	COMBI receptacle	PPC 1,5/S/12	PXC	PXC.3213483
=04+S1-X12.2	1	Plug-in bridge	FBS 2-3,5	PXC	PXC.3213014
=04+S1-X14L	1	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=04+S1-X14L	1	Feed-through terminal block	PT 2,5-QUATTRO/2P BU	PXC	PXC.3209675
=04+S1-X14L	1	Ground modular terminal block	PT 2,5-QUATTRO/2P-PE	PXC	PXC.3209688
=04+S1-XL10	6	Feed-through terminal block	UKH 50	PXC	PXC.3009118
=04+S1-XL10	2	Fixed bridge	FBI 2-20	PXC	PXC.0201346
=04+S1-XL12.1	5	Feed-through terminal block	PT 2,5-QUATTRO/2P	PXC	PXC.3209662
=04+S1-XL12.1	1	Plug-in bridge	FBS 2-5	PXC	PXC.3030161
=04+S1-XL12.1	1	Feed-through terminal block	PT 2,5-QUATTRO	PXC	PXC.3209578
=04+S1-XL12.2	12	Feed-through terminal block	PT 1,5/S/1P	PXC	PXC.3208582
=04+S1-XL12.2	1	End cover	D-PT 1,5/S	PXC	PXC.3208142
=05+S1-SRC1	1	Battery controller	SRC1420UMTS	ADS-TEC	ADS.SRC1420UMTS
=05+S1-T3	1	One wire temperature sensor SRC2xxx	ADS.098430A	ADS-TEC	ADS.098430A
=05+S1-T4	1	One wire temperature sensor SRC2xxx	ADS.098430A	ADS-TEC	ADS.098430A
=05+S1-WSRC1	1	GSS0606 AC supply SRC1xxx	DZ-SONS-20190-0/A	ADS-TEC	ADS.DZSONS201900A
=10+S1-LAN	1	Patch cable Cat.5e 1m straight/straight	DZ-SONS-05194-0/A	ADS-TEC	ADS.DZSONS051940A
=10+S1-R1	1	High Power Aluminum Case Resistor	Fullde: RXLG400J	GUAN	GUAN.RXLG400W60RJ
=10+S1-SRB1	1	High performance energy storage	SRB5083	ADS-TEC	ADS.SRB5083
=10+S1-SRB8	7	High performance energy storage	SRB5083	ADS-TEC	ADS.SRB5083
=10+S1-SRB8	1	CAN terminating connector	DZ-SONS-09837-0/A	ADS-TEC	ADS.DZSONS098370A
=10+S1-SRC4310	1	Battery controller	SRC4310	ADS-TEC	ADS.SRC4310
=10+S1-SRC4310	1	High Voltage Battery Disconnect with Passive Function; 1000 V; ontinuous Current 400 A	GFP410	GIG	GIG.GFP410
=10+S1-SRC4310	1	Fuse-links with bolted blade connections	2072332.450	SIB	SIB.2072332450
=10+S1-SRC4310	1	Fuse-links for photovoltaic applications	5023926.25	SIB	SIB.502392625
=10+S1-SRC4310-K1	1	1500 VDC Contactor; 400 ADC; Main contact	HX241CAC	GIG	GIG.HX241CAC
=10+S1-SRC4310-K2	1	1500 VDC Contactor; 400 ADC; Main contact	HX241CAC	GIG	GIG.HX241CAC
=10+S1-SRC4310-K1	1	1500 VDC Contactor; 400 ADC; Main contact	HX241CAC	GIG	GIG.HX241CAC
=10+S1-SRC4310-K2	1	1500 VDC Contactor; 400 ADC; Main contact	HX241CAC	GIG	GIG.HX241CAC
=10+S1-SRC4310-K3	1	1500 VDC Contactor; 400 ADC; Main contact	HX241CAC	GIG	GIG.HX241CAC
=10+S1-SRC4310-S1	1	CONTROL ELEMENT ROUND KEY SWITCH, RONIS,	3SB3500-4AD01	SIE	SIE.3SB35004AD01
=10+S1-SRC4310-S1	2	ACTUATOR-/INDICATOR COMPONENT CONTACT BLOCK	3SB3400-0B	SIE	SIE.3SB34000B
=10+S1-T1	1	One wire temperature sensor SRC2xxx	ADS.098430A	ADS-TEC	ADS.098430A
=10+S1-T2	1	One wire temperature sensor SRC2xxx	ADS.098430A	ADS-TEC	ADS.098430A
=10+S1-W1	1	Power cable SRB <-> SRC-- 50mm²	DO-002211 999-ZZ/AB	ADS-TEC	ADS.DO0022119999ZZAB
=10+S1-W2	7	Power cable SRB <-> SRB + - 50mm² 450mm	DZ-MECH-40116-0/D	ADS-TEC	ADS.DZMECH401160D
=10+S1-W9	1	Power cable SRB <-> SRC ++ 50mm² 2300mm	DZ-MECH-40116-9/B	ADS-TEC	ADS.DZMECH401169B
=10+S1-WCAN1	1	CAN communication SRC <-> SRB 130mm	DZ-SONS-09836-2/A	ADS-TEC	ADS.DZSONS098362A
=10+S1-WCAN2	7	CAN communication SRB <-> SRB 370mm	DZ-SONS-09836-1/A	ADS-TEC	ADS.DZSONS098361A
=10+S1-WX203	1	GSS0606 24VDC supply SRC2xxx	DZ-SONS-20187-0/A	ADS-TEC	ADS.DZSONS201870A
=10+S1-X1	2	Plug	PP-H 2,5/ 2	PXC	PXC.3209879
=10+S1-X1300	1	Printed-circuit board connector	MC 1,5/ 9-ST1F-5,08	PXC	PXC.1900950
=10+S1-X1301	1	Printed-circuit board connector	MC 1,5/ 3-ST1F-5,08	PXC	PXC.1900895

DATA SHEET

PROTECTOR K RELAY

Item number	GTIN
ER10018923	4015120018923

Product description

- Switching relay for triggering external devices such as sirens, flash lights and alarm horns
- Can be used with PROTECTOR K 9 V, PROTECTOR K 9 V Lithium, PROTECTOR GD 230 V and PROTECTOR K 230 V
- Separate surface- or recessed-mounted switchbox required

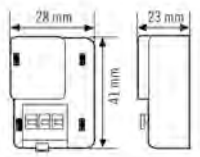
Technical data

GENERAL	
Device category	Electrical accessories
Remote controllable	–
Conformity	CE, EAC, RoHS
Relay switching capacity	230 V/50 Hz, 5 A (cos phi = 0) 24 V DC, 10 A

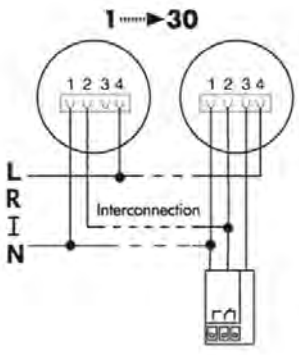
ATTACHMENT	
Installation position	Device

HOUSING	
Dimensions	Length 41 mm x Width 28 mm x Height/Depth 23 mm
Weight	2,4 g
Colour	white, similar to RAL 9010

Scale drawing

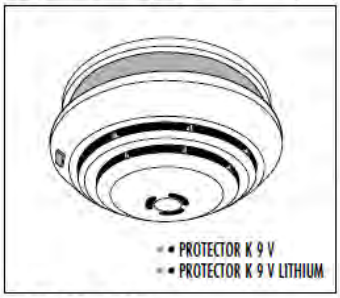


Circuit diagram



Connection 230 V AC and interconnection + external switching relay (optional) for switching of external devices such as sirens, flashlights and telephone diallers.

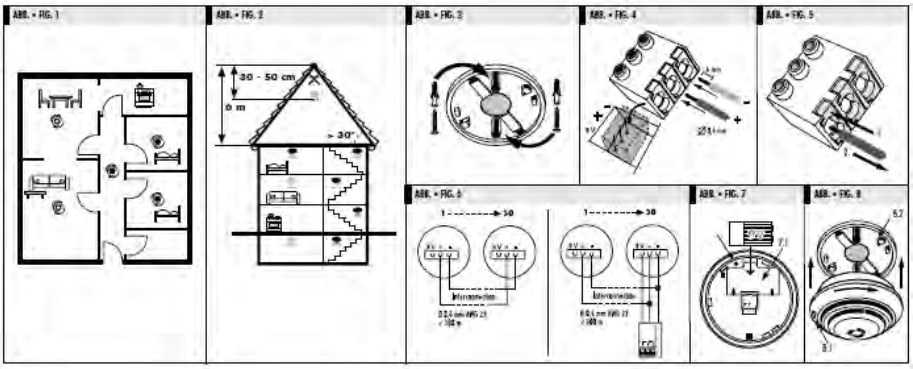
DE RAUCHWARNMELDER
GB SMOKE DETECTOR
FR DETECTEUR DE FUMÉE
NL ROOKMELDER
DK RØGALARM
SE RÖKDETEKTOR



• PROTECTOR K 9 V
• PROTECTOR K 9 V LITHIUM

ESYLUX

www.esylux.com



- TECHNISCHE DATEN • TECHNICAL DATA • DONNÉES TECHNIQUES • TECHNISCHE GEGEVENS • TEKNISKE DATA • TEKNISKA UPPGIFTER

BATTERIEBETRIEB BATTERY OPERATION PILE	9 Volt	BATTERIJVOEDING DRIFT MED BATTERI BATTERIDRIFT
EMPFOHLENE BATTERIEN RECOMMENDED BATTERIES MODÈLES DE PILES RECOMMANDÉS	Energizer 6LR61, Power Line 6LR61, Duracell MN1604, Ultralife U9VL-J-P	AANBEVOLEN BATTERIJEN ANBEFALEDE BATTERIER REKOMMENDERADE BATTERIER
GEPRÜFT NACH TESTED TO CONFORME À	EN 14604:2005/AC:2008	GEKEURD VOLGENS AFPRØVET IFØLGE KONTROLLERAD ENLIGT
LUFTFEUCHTIGKEIT HUMIDITY TAUX D'HUMIDITÉ DE L'AIR	10 % - 95 %	LUCHTVOCHTIGHEID LUFTFUGTIGHED LUFTFUKTIGHET
SIGNALLAUTSTÄRKE SIGNAL VOLUME VOLUME DU SIGNAL	ca. 85 dB/3 m	STERKTE GELUIDSSIGNAAL SIGNALETS LYDSTYRKE SIGNALLJUDSTYRKA

Technische und optische Änderungen ohne Ankündigung vorbehalten • Technical and design features may be subject to change • Des modifications techniques et esthétiques peuvent être apportées sans préavis • Technische en optische wijzigingen zonder kennisgeving voorbehouden • Ret til tekniske og optiske ændringer uden varsel forbeholdes • Vi förbehåller oss rätten till tekniska och utseendemässiga ändringar utan föregående meddelande.

GB • SMOKE DETECTOR

Congratulations on your purchase of this high-quality ESYLUX product. To ensure proper operation, please read these user instructions carefully and keep them for future reference.

1 • SAFETY INSTRUCTIONS

Use this product only as intended (as described in the user instructions). Changes or modifications to the product or painting it will result in loss of warranty. You should check the device for damage immediately after unpacking it. If there is any damage, you should not install the device under any circumstances. If you suspect that safe operation of the device cannot be guaranteed, you should turn the device off immediately and make sure that it cannot be operated unintentionally.

2 • DESCRIPTION

The ESYLUX PROTECTOR K is a reliable photoelectric smoke detector designed for use in residential buildings. It triggers the alarm as soon as smoke is detected.
A beam of light is generated every 10 seconds in the PROTECTOR K's smoke chamber. If smoke enters the chamber, the light is reflected onto a light-sensitive cell which triggers an alarm signal (approx. 85 dB). When an alarm is triggered, the detector automatically resets itself if there are no longer any particles in the smoke chamber. The detector can also be switched off manually by removing the battery.

Application possibilities:
- Stand-alone mode
- Wire interconnection of up to 30 PROTECTOR detectors

For optimum protection of your home, install smoke detectors in all rooms, corridors, basements and store rooms. Ensure basic protection by installing PROTECTOR smoke detectors in all bedrooms, playrooms and in the corridors on all floors **(fig. 1 + 2)**.

If used in stand-alone mode or with wire interconnection, external devices such as sirens, flash lights and alarm horns can be triggered via the PROTECTOR K switching relay.

3 • INSTALLATION/ASSEMBLY/CONNECTION

- Install the base on the ceiling as centrally as possible in the room **(fig. 3)**. We recommend that you use PROTECTOR K surface- or recessed-mounted boxes (accessories) if you intend to network several detectors together.
- Protect the device from dust when drilling holes.
- Up to 30 smoke detectors can be networked together by wire. Remove the terminal from the detector and insert the wires into the terminal at the **+ and - connection (fig. 4)**. Press the orange button to release the wire from the terminal **(fig. 5)**.
- Check the wiring to ensure that the alarm signal will be relayed to all networked detectors in the event of fire **(fig. 6)**.

NOTE:
In the case of wire interconnection, do not link the 9 V relay connection of individual detectors together, but only the + and - connection **(fig. 6)**.

- The total wire length must not exceed 300 m. Use J-Y(St)Y2x2x0.6 or AWG 23 wires.
- Fit the battery into the device **(fig. 7.1)**. The red LED will flash every 45 seconds to indicate that the battery is fitted correctly **(fig. 8.1)**. The smoke detector features a mounting lock **(fig. 7.2)**, which prevents the detector from being mounted if the battery is not fitted correctly.
- Fit the terminal back inside the detector **(fig. 4)**.
- Mount the detector on its base and turn until it clicks into place **(fig. 8.2)**. Perform a function test (see 5, Testing/Maintenance).
- If a PROTECTOR K switching relay is being used, the PROTECTOR K smoke detector must be mounted on a recessed box. The PROTECTOR K switching relay is placed in the recessed box and wired using matching connector sleeves (0.2 - 0.25 mm²/AWG 24). (possible recessed boxes: for example Kaiser types 1055-04, 1055-62, 9264-21, 9066-01, 9064-01, 9063-01, 9061-00).
- In the event of any technical problems, contact the manufacturer or your local distributor.

Wiring **(fig. 6)**

Detector connection	Relay wire colour	Function
–	blue	common minus
+	orange	interconnection, activates the relay
9 V	red	relay connection (permanent positive)

NOTE:
- Mount the detector on the ceiling in the centre of the room.
- Do not install smoke detectors in bathrooms (high ambient humidity), garages (exhaust fumes), draughty environments or lofts **(fig. 2)**.
- On roofs which slope by more than 30° the detector can be mounted on the pitched roof area.
- Maintain a distance of 50 cm from walls, ceiling joints (beams) and lights.
- Several detectors need to be installed in rooms of over 60 m² and corridors measuring over 10 m.
- Maintain a distance of 4 m from open fireplaces and cookers.
- A central power supply or remote powering is not permitted. Each detector needs to be powered by its own battery fitted into the battery compartment.

4 • FUNCTION TABLE

Alarm signal	Red LED	Description
Intermittent alarm signal	Flashes at the same time as the audible alarm signal	Alarm triggered on individual detector if smoke is detected.
Intermittent alarm signal	No LED	Alarm triggered by networked detector. The triggered detector can be identified by the intermittent alarm signal and flashing LED.
Short signal emitted every 45 seconds	Flashes at the same time as the audible signal	Battery needs to be replaced.
No signal	Flashes every 45 seconds	Device is ready for use
Short signal emitted > every 45 seconds	Flashes alternately with the audible signal	Device is faulty. Detector needs to be replaced.

5 • TESTING/MAINTENANCE

The detector can be fully tested using the LED test button **(fig. 8.1)**: battery test, electronic smoke chamber test and pulsating electronics test. Perform a test at least once a year and every time you replace the batteries.
Press the test button (for up to 20 seconds) until a loud, pulsating alarm signal (c. 85 dB) can be heard. The test alarm automatically resets itself a few seconds after the test button has been released. When necessary (usually about twice a year), wipe the device with a clean, dry cloth and clean the outside with a vacuum cleaner. The device automatically performs a test approx. every 45 seconds which checks the pulsating electronics, voltage and battery internal resistance. The red LED flashes briefly **(fig. 8.1)** to indicate that this test is being performed. If the 9 V battery supply falls beneath a certain value, the detector will emit an audible signal (approx. every 45 seconds), approx. 30 days before the battery needs to be replaced (see 3. Installation/Assembly/Connection). The life of a battery is highly dependent on, among other things, local conditions, for example temperature, temperature fluctuations, humidity and the number of test alarms/alarms. Alkaline: approx. 2 - 3 years. Lithium: up to approx. 5 years. The use of rechargeable batteries is not permitted. Test the equipment each time after replacing the battery. If the device is faulty, the red LED will flash approx. every 45 seconds alternately with the audible signal. This indicates that the detector needs to be replaced. When an alarm is triggered, the detector automatically resets itself if there are no longer any particles in the smoke chamber. The detector can also be switched off manually by removing the battery.

NOTE:

- Where detectors are linked together, a low battery signal from one detector does not get relayed via the network to the others. It is displayed only on the one unit.
- Where detector are linked together, when one detector is checked using the test feature run via the LED test button **(fig. 8.1)**, all of the networked alarms are automatically triggered, i.e. just as in the event of a real alarm, a pulsating alarm sound (of limited duration) is emitted and on the tested detector the red LED **(fig. 8.1)** flashes in tandem with this sound, while the others emit only the sound without the LED coming on.
- An excessive amount of dust, damp or other particles in the smoke chamber can trigger smoke detectors.

NOTE: this device must not be disposed of as unsorted household waste. Used devices must be disposed of correctly. Contact your local town council for more information.

NOTE: used batteries must not be disposed of as unsorted household waste. Used batteries must be recycled and may be returned free-of-charge to the place of sale. Batteries contain substances which are harmful to the environment and to human health and must therefore be disposed of correctly.

6 • ACCESSORIES

ESYLUX PROTECTOR K surface-mounted box H20mm
ESYLUX PROTECTOR K surface-mounted box H27mm
ESYLUX PROTECTOR K switching relay

7 • CORRECT ACTION IN THE EVENT OF A FIRE

Keep calm!
Alert the fire service.

It is important that the fire service is told the following information:

- Your name (name, phone number)
- The location of the fire (address)
- What has happened (extent of fire)
- How many people are injured
- Then wait to see if the operator has any questions.

Alert all the people who live with you.
Help aged, sick and disabled persons.
Close all windows and doors.
Do not use lifts.

If you have any doubts as to whether or not it is a genuine alarm, still act as if there is a real fire.

8 • ESYLUX MANUFACTURER'S GUARANTEE

The ESYLUX manufacturer's warranty can be found online at www.esylux.com.

ads-tec GmbH

SRB5083

UNT 38.3 Confirmation

Manufacturer	ads-tec GmbH Heinrich-Hertz-Straße 1, 72622 Nürtingen, Germany Tel: +49 07022 2522 0 E-Mail: mailbox@ads-tec.de Web: www.ads-tec.de		
Classification	UN 3480, Rechargable Lithium ion battery, class 9		
Productname	SRB5083		
Productnumber	DVG-SRB5083 001-AA AB.01	Date of test	2017-08-24 – 2017-08-30
Testmethod & judgement criteria	United Nations Recommendations on the Transport of Dangerous Goods, 2015, amendment revision 6th, section 38.3		

Battery information

Nominal energy	8.3 kWh
Nominal capacity	94 Ah
Nominal voltage	87,6 V
Max. charge voltage	99 V
Min. discharge voltage	72.72 V
Dimensions (W x H x T)	620 x 485 x 220 mm
Regular gross weight	70 kg
Number of cells per module	24s1p
Cell type	Prismatic, NMC
Overcharge Protection	Not included on module level

Test information

Relevant section / paragraph	38.3.3. (g)
Test items	T5: External Short Circuit T7: Overcharge
Test sites	Overcharge-Test is performed by ads-tec GmbH Heinrich-Hertz-Straße 1 72622 Nürtingen
	Short-Circuit-Test is performed by TÜV Rheinland LGA Products GmbH Tillystraße 2 90431 Nürnberg
Conclusion	**Samples have passed UN38.3 test, and the test results proved to be qualified.**

Tested & checked by:	L. Mez [Tester/Organisator]	Date:	7.9.2017
Reviewed by:	i.V. [Fachabteilungsleitung]	Date:	7.9.2017
Approved by:	i.V. [QM]	Date:	7.9.2017

Test results

Test item		Acceptance criteria	Test results
T5	External Short Circuit	No disassembly No rupture No fire External temperature < 170°C	Pass
T7	Overcharge	No disassembly No fire	Pass

Test procedure

Testnumber	DUT
Test preparation	DUT 1 is fully charged
Overcharge-Test	DUT 1 (1 x SRB50831) + 1 x SRC2
Short-Circuit-Test	DUT 1 (1 x SRB5083)

Picture of Testsample

Attached documents

SDI 94 Ah Module UNT-Declaration

NCT CO., LTD.
2F, 553 Wonseol-ro, Baegam-myeon, Cheoin-gu,
Yongin-si, Gyeonggi-do, Republic of Korea 449-859
TEL: +82-31-323-6070 FAX: +82-31-323-6071

TEST CERTIFICATE

Report reference Number	:	NS1706-B005
Applicant	:	SAMSUNG SDI Co., Ltd.
Address of Applicant	:	508 Sungsung-Dong, Chonan City, Chungchongnam-Do, Korea
Product Name	:	94 Ah 1C 8S1P Module
Model / Type Designation	:	ELPM272-00004
Ratings	:	29.44 V d.c., 94 Ah, 2.767 kWh
Test Standard	:	ST/SG/AC.10/11/Rev.6 Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria, Part III, Sub-Section 38.3 – Lithium metal and lithium ion batteries

Test items and Results	:	**Test T.1:**	**Altitude simulation**	**Pass**
		Test T.2:	**Thermal test**	**Pass**
		Test T.3:	**Vibration**	**Pass**
		Test T.4:	**Shock**	**Pass**
		Test T.5:	**External short circuit**	**Pass**

Date of Issue	:	June 28, 2017

We here by verify that the mentioned sample(s) complied with the requirements in the UN Manual of Tests and Criteria, Part III, Subsection 38.3, Fifth revised edition, Amendment 1 and US DOT 49CFR 173-185.

Authorized Signatory:

Kyung-Hyun, Cha
Technical Manager, Safety Team

NCT CO., LTD.

010351

1. Product and Company Identification USA, EU

Important Note: As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use. This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The information contained in this Material Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Commercial product name
MODEL CM0940R0008A (94Ah capacity)

Use of the substance/preparation
Lithium-Ion battery

Company/undertaking identification

Manufacturer
SAMSUNG SDI Co. LTD
428-5 Gongse-dong, Giheung-gu, Yongin-si,
Gyeonggi-do, 446-577 Korea
Telephone: ++82 31 210 8120
Telefax: ++82 31 210 7555

Contact person: Young-chul Chang

Telephone:

Responsible Department: Development Team

Emergency telephone number: (001) 82 10 7205 9252 (24 h)
Responsible for the safety data sheet: y-c.chang@samsung.com

Further Information
Battery-System: Lithium-Ion (Li-ion)
Voltage: 3.68V
Anode (negative electrode): based on intercalation graphite
Cathode (positive electrode): based on lithiated metal oxide (Cobalt, Nickel, Manganese)

Remark:

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SAMSUNG SDI Co., Ltd. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

2. Hazards Identification USA

Route(s) of Entry

There is no hazard when the measures for handling and storage are followed.

Signs and Symptoms of Exposure

In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

OSHA Hazard Communication: This material is not considered hazardous by the OSHA Hazard Communication Standard 29CFR 1910.1200.

Carcinogenicity (NTP): Not listed
Carcinogenicity (IARC): Not listed
Carcinogenicity (OSHA): Not listed

Special hazards for human health and environment

There is no hazard when the measures for handling and storage are followed.
In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

2. Hazards Identification USA, EU

Explication of special hazards for human health and environment

Not classified as dangerous according to directive 1999/45/EEC
There is no hazard when the measures for handling and storage are followed.
In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

3. Composition/information on ingredients USA, EU

Hazardous components

EC-No.	CAS-No.	Chemical name	Quantity	EU-Classification
215-154-6	1307-96-6	Cobalt oxide	< 30 %	Xn, N R22435053
215-202-6	1313-13-9	Manganese dioxide	< 30 %	Xn R20/22
215-215-7	1313-99-1	Nickel oxide	< 30 %	Carc. Cat. 1, T R49-43-48/23--53
231-153-3	7440-44-0	Carbon	10 - 30 %	
		Electrolyte (*)	10 - 20 %	Carc. Cat. 3, C, R10-34-40-43
	24937-79-9	Polyvinylidene fluoride (PVdF)	< 10 %	
231-072-3	7429-90-5	Aluminium foil	2 - 10 %	
231-159-6	7440-50-8	Copper foil	2 - 10 %	
		Aluminium and inert materials	5 - 10 %	

Full text of each relevant R phrase can be found in heading 16.

Further Information
For information purposes:
(*) Main ingredients: Lithium hexafluorophosphate, organic carbonates

Because of the cell structure the dangerous ingredients will not be available if used properly.
During charge process a lithium graphite intercalation phase is formed.

Mercury content:	Hg < 0.1mg/kg
Cadmium content:	Cd < 1mg/kg
Lead content:	Pb: < 10mg/kg

4. First Aid Measures USA, EU

General information
The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.
Undamaged, closed cells do not represent a danger to the health.

After inhalation
Ensure of fresh air. Consult a physician.

After contact with skin
In case of contact with skin wash off immediately with plenty of water. Consult a physician.

After contact with eyes
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical treatment by eye specialist.

After ingestion
Drink plenty of water.
Call a physician immediately.

5. Fire Fighting Measures USA, EU

Suitable extinguishing media
Cold water and dry powder in large amount are applicable.
Use metal fire extinction powder or dry sand if only few cells are involved.

Special hazards arising from the chemical
May form hydrofluoric acid if electrolyte comes into contact with water.
In case of fire, the formation of the following flue gases cannot be excluded:
Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus and protective suit.
Additional information
If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent. Cell is not flammable but internal organic material will burn if the cell is incinerated.

6. Accidental Release Measures USA, EU

Personal precautions
Use personal protective clothing.
Avoid contact with skin, eyes and clothing.
Avoid breathing fume and gas.

Environmental precautions
Do not discharge into the drains/surface waters/groundwater.
Methods for cleaning up/taking up
Take up mechanically and send for disposal.

7. Handling and Storage USA, EU

Handling

Advice on safe handling
Avoid short circuiting the cell. Avoid mechanical damage of the cell. Do not open or disassemble.
Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage rooms and vessels
Storage at room temperature (approx. 20°C) at approx. 20-50% of the nominal capacity
(OCV approx. 3.5-3.7 V).
Keep in closed original container.

8. Exposure Controls/Personal Protection Exposure limit values Exposure limits USA

8. Exposure controls/personal protection Exposure limit values Exposure limits (EH40) EU

CAS-No.	Chemical name	ml/m³	mg/m³	F/ml	Category	Origin
7440-44-0	Graphite, respirable	 -	4 -		TWA (8 h) STEL (15 min)	WEL WEL

Additional advice on limit values
During normal charging and discharging there is no release of product.

Occupational exposure controls
No specific precautions necessary.

Protective and hygiene measures
When using do not eat, drink or smoke. Wash hands before breaks and
after work.

Respiratory protection
No specific precautions necessary.

Hand protection
No specific precautions necessary.

Eye protection
No specific precautions necessary.

Skin protection
No specific precautions necessary.

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9. Physical and Chemical Properties USA, EU

Appearance

Form:	Solid
Color:	Various
Odor:	Odorless

Important health, safety and environmental information

Test method	
pHValue:	n.a.
Flash point:	n.a
Lower explosion limits:	n.a.
Vapour pressure:	n.a.
Density:	n.a.
Water solubility:	Insoluble
Ignition temperature:	n.a.

10. Stability and Reactivity USA, EU

Stability
Stable

Conditions to avoid
Keep away from open flames, hot surfaces and sources of ignition. Do not puncture, crush or incinerate.

Materials to avoid
No materials to be especially mentioned.

Hazardous decomposition products
In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.

Possibility of Hazardous Reactions
Will not occur

Additional information
No decomposition if stored and applied as directed.

11. Toxicological Information USA, EU

Empirical data on effects on humans
If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known.

12. Ecological Information USA, EU

Further information
Ecological injuries are not known or expected under normal use. Do not flush into surface water or sanitary sewer system.

13. Disposal Considerations USA, EU

Advice on disposal
For recycling consult manufacturer.

Contaminated packaging
Disposal in accordance with local regulations.

14. Transport Information USA, EU

US DOT 49 CFR 172.101

Proper shipping name
Lithium-ion batteries

ID Number:	UN3480
Hazard Class or Division:	9
Packing group:	II
Label:	9

Land transport (ADR/RID)

UN number:	3480
ADR/RID class:	9
Classification code:	M4

Warning plate
Hazard label: 9

ADR/RID packing group:	II
Limited quantity:	LQ 0
Tunnel restriction code:	E
Description of the goods	Lithium-ion batteries

Other applicable information (land)
LQ 0: No exemption under the conditions of 3.4.2.
Transport category: 2

Marine transport

UN number:	3480
IMDG code:	9
Marine pollutant:	No
Hazard label:	9

IMDG packing group:	II
EmS:	F-A, S-I
Limited quantity:	None
Description of the goods	Lithium-ion batteries

Air transport

UN/ID number:	3480
ICAO/IATA-DGR:	9
Hazard label:	9

ICAO packing group:	II
Limited quantity Passenger:	-
IATA-packing instructions - Passenger:	965
IATA-max. quantity - Passenger:	5 kg G
IATA-packing instructions - Cargo:	965
IATA-max. quantity - Cargo:	35 kg G
Description of the goods	Lithium-ion batteries

Other applicable information

Lithium equivalent:	48.2 g
Wh-rating per cell:	345 Wh

15. Regulatory Information USA

U.S. Regulations

National Inventory TSCA
SAMSUNG SDI certifies that all chemical components of the Model CM0940R0008A (94 Ah capacity) Lithium-Ion Battery are listed on the US EPA TSCA 8(b) Inventory or are exempt from listing.

SARA
To the best of our knowledge this product contains no toxic chemicals subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act (SARA/EPCRA) and the requirements of 40 CFR Part 372.

15. Regulatory information EU

Labeling

Hazardous components which must be listed on the label

As an article the product does not need to be labeled in accordance with EC directives or respective national laws.

EU regulatory information

1999/13/EC (VOC): 0 %

16. Other Information USA

Hazardous Materials Information Label (HMIS)

Health: 0
Flammability: 1
Physical Hazard: 0

NFPA Hazard Ratings

Health: 0
Flammability: 1
Reactivity: 0
Unique Hazard:

16. Other Information EU

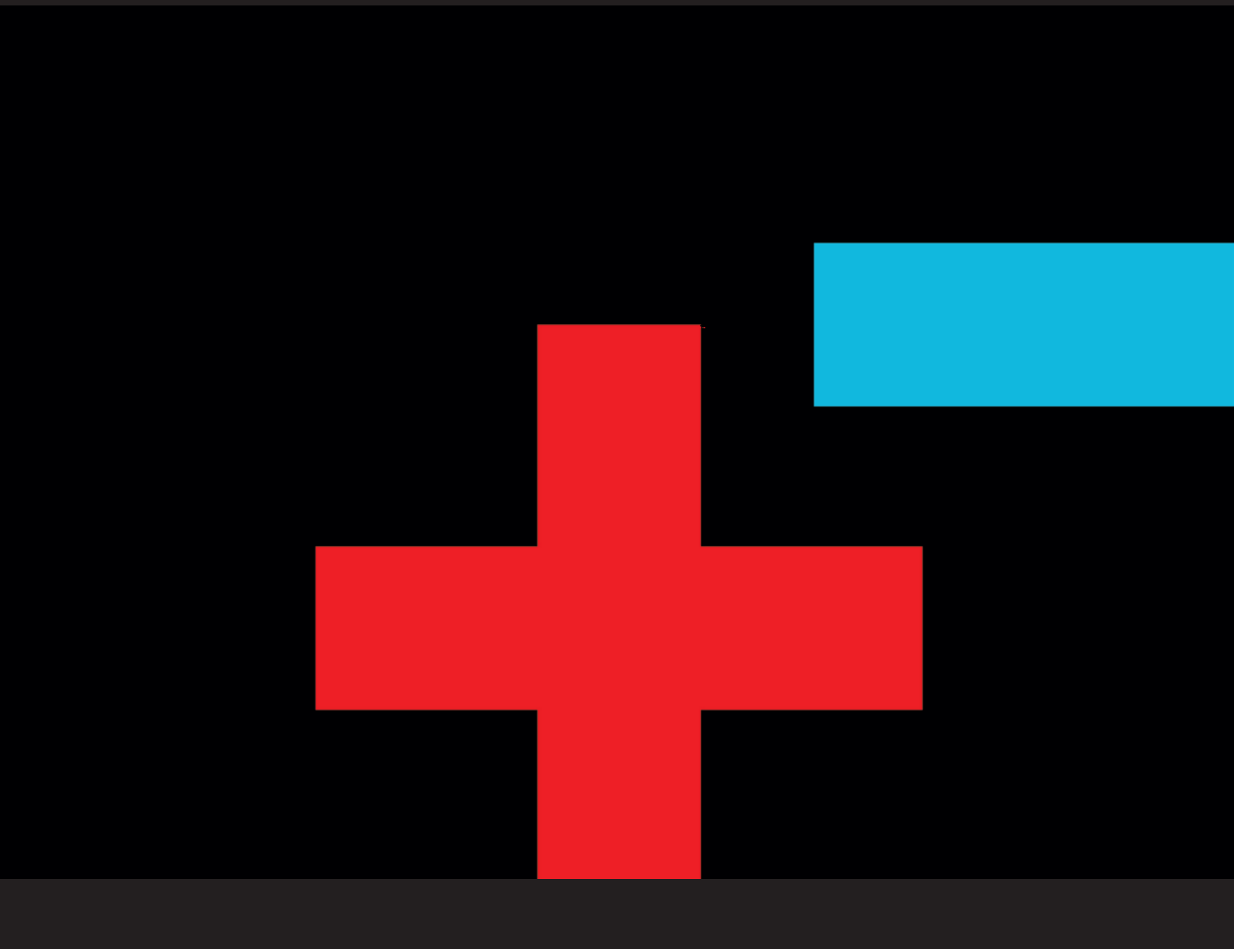
Full text of R-phrases referred to under sections 2 and 3

R10	Flammable.
R20/22	Harmful by inhalation and if swallowed.
R22	Harmful if swallowed.
R34	Causes burns.
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitization by skin contact.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49	May cause cancer by inhalation.
R50	Very toxic to aquatic organisms.
R53	May cause long-term adverse effects in the aquatic environment.

Further Information USA, EU

Data of sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product
(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"

The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.



ads-tec Energy GmbH
Heinrich-Hertz-Str. 1
72622 Nuertingen
Germany

Phone +49 7022 2522-201
Email: energy-storage@ads-tec-energy.com
Home: www.adstec-energy.com

adstec Energy