Version 1.8
Translation of the original instruction manual

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Installation and operation

ChargePost CPT

All-in-one fast charging system

DVK-CPT1024 000-AA
DVK-CPT1124 000-AA
DVK-CPT1224 000-AA

Last changed: 04/2023

adstec Energy

Manufacturer contact details

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1 General information

1.1 About this document

This Operating manual must be accessible to all persons who are involved with assembly, operation and disassembly, and must be read and understood before work is commenced. The system provider is responsible for providing appropriate documentation for the company operating the system. Safety instructions and handling instructions must be obeyed in order to ensure that work is carried out safely. When using the product, the system provider or the operating company are required to comply with the laws, guidelines and specifications or regulations applicable in the respective country at national, federal, European and international level. The system provider and the operating company are independently responsible for the compliance with and observance of all usual obligations of the operating company and any corresponding technical or new legal requirements. This also applies to any authorisation or registration requirements. 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.

1.1.1 Legal regulations and other information

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 information in this instruction manual has been compiled according to the current state of technical development and experience.

1.1.2 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 and variations of the figures have different characteristics and are intended for basic understanding. These are symbolically represented in individual cases.

1.1.3 Definition of technical terms

Terms used in this document:

Manufacturer:	Manufacturer of the fast charging system for system providers as customer
System provider	Provider of the fast charging system for operating companies
Operating company	Operator of the fast charging system (e.g. operators of filling stations, shopping centres, etc.)

1.2 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.

1.3 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.

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1.4 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.
All other third-party trademarks used are hereby acknowledged.
In the case of infringement of trademark rights, the manufacturer reserves the right to exercise all rights.

1.5 Copyright

1.6 Warranty / repairs

Assembly, commissioning, decommissioning as well as repair and maintenance may be performed only by specially trained personnel who have been authorised to do so. 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 system by unauthorised persons, operation of the product outside of its specifications and use of non-approved replacement parts as well as any other activity that deviates from this instruction manual.

1.7 Service Agreement

In addition to the statutory warranty, it is recommended to enter into a service agreement, which should be concluded at the latest 8 weeks after handover of the system. The service agreement regulates arrangements for monitoring and remote service, maintenance, support as well as battery cell performance for a fixed warranty period of up to 10 years. Please contact your system provider for further details.

2 Safety

2.1 Basics

If maintenance or repair work is to be performed, it must be carried out only by qualified and trained persons. If the system is opened up by an unauthorised person, the user may be subject to hazards and the warranty is invalidated.

Information from the following sections helps to ensure that the system is used safely. The information is intended for the operating company and the personnel tasked with installation, commissioning and maintenance. Before beginning any activities, the operating company and personnel must have read and understood the information in this chapter.

The system was manufactured according to the current state of the art and in line with the applicable safety regulations. It has all the protective, monitoring and emergency-stop devices required to ensure the maximum degree of safety for the operating company and its personnel.

2.2 Safety instructions and warning notices

2.2.1 Structure of safety instructions and warning notices

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 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.

2.2.2 Overview of 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.
	No naked flames; fire, open ignition sources and smoking prohibited
	Access prohibited for persons with cardiac pacemakers or implanted defibrillators
	Follow the instructions
	Warning of a danger area
	Warning of electrical voltage
	Warning of electrical high voltage
	Warning of flammable materials
	Warning of toxic materials
	Warning of a suspended load
	Warning of obstacles on the ground
	Warning of hazards from charging batteries
	Explosion warning
	Warning of escaping gas

	Warning of hand injuries from rotating fan blades
	Warning of hot surfaces
	Environmental hazard
	Symbol for DC voltage
	Provide earth connection before use

Table 2: Overview of symbols

2.3 General safety instructions

The system contains electrical voltages. Installation, maintenance and service activities may be performed by trained and authorised specialists only.

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 all-in-one fast charging system out of operation before beginning service or maintenance work.

DANGER

Risk of death due to high voltages!

High voltages can result in death.

- ➡ Before starting any work, make sure that the system is in a de-energised state and is secured to prevent it from being switched on again.
- ➡ 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.

The system contains lithium-ion batteries (➲ *2.6 Lithium-ion batteries)*. Unforeseen external influences or defects can cause hazard to persons and the environment.

DANGER

The system contains lithium-ion batteries!

Batteries can pose a hazard to people and the environment.

- ➡ Where applicable, the operating company must ensure that any additionally required local safety instructions are provided on the outside of the system.

CAUTION

Hazard due to sharp edges!

Cables and hoses can be damaged.

➡ Do not pull cables and hoses through the system with excessive force because not all edges are protected.

CAUTION

Hazard due to kinked cables and hoses!

Kinked cables and hoses can impair performance.

➡ Lay cables and hoses without kinks.

CAUTION

Hazard due to damaged seals!

Damaged seals impair performance and cause leaks.

➡ Do not stand on seals already bonded to the base.
➡ Damaged seals can lead to failure of the system.

– Check that no fuses belonging to the system are switched on. 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.

2.4 Special rules of conduct in the event of fire

The system is equipped with a smoke detector that outputs an acoustic signal and shuts down the system in the event of smoke emission.

NOTE

Ensure fire protection of the entire system.

Fire can cause major damage.

➡ The fire protection of the entire system and its effects are the responsibility of the operating company.
➡ According to the local conditions, the operating company is obliged to provide an instruction sheet in the system area on conduct in case of fire with the corresponding local conditions. For an example of the instruction sheet, see the attachment.

Note the safety instructions from the German Energy Storage Association (Bundesverband Energiespeicher Systeme e.V.):
(attachment: *Preventive and defensive fire protection for large lithium-ion storage systems)*

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 death due to the propagation of gases!

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

- ➡ Leave the danger area immediately.
- ➡ 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 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 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).
- Contact the fire brigade immediately and inform them that lithium-ion batteries are involved in the fire.
- Switch off all fuses whose cable lines lead to the system
- Secure the danger area extensively.
- Carry out extinguishing measures only in the case of fire outside the system and taking into consideration the hazards due to high voltage of the system and connected installations.

2.5 Residual risks

The system corresponds to the state of the art and was built in accordance with the recognised safety regulations. It 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. For this reason it is essential that all activities at the system are carried out in accordance with the information in this instruction manual.

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

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

NOTE

Observe qualifications.

- All work on the system may be performed only by qualified electricians who have received the relevant product training!

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.

- Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- 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.
- After opening the display door on the inverter side, set the main switch to the **OFF** position.
- After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- Before making any changes to the interior, check that the fan has stopped.
- Lock the system to prevent access by unauthorized persons.

2.5.2 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 Lithium-ion batteries

CAUTION

Risk of burns due to electrolyte escaping!

Injuries to skin, eyes and respiratory tract or severe damage possible due to incorrect handling.

- ➡ Check the packaging of the battery modules for visible damage.
- ➡ Avoid contact with escaping fluids.
- ➡ Pay attention to the nominal voltage and capacity of the battery modules.

CAUTION

Risk of damage to property due to improper storage and transport!

The fast charging system contains battery modules. They are delivered on separate pallets. The battery modules are temperature-sensitive and can be damaged if stored incorrectly.

- ➡ Store the battery modules in the original packaging in a dry place (preferably in an air-conditioned room) until installation in the system. Optimum storage conditions: 0 to 25 °C (32 to 77 °F) at less than 80% humidity.
- ➡ Protect the battery modules from direct sunlight with high heat and from frost.
- ➡ Protect the packaging from rain and penetrating moisture. The packaging is not waterproof.

2.6.1 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.

Classification (as of 2019):

	Shipment name: lithium-ion batteries UN number: UN 3480 Classification: Class 9, danger sign 9A

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 1 April 2016.

The transport temperature of lithium-ion batteries is at least 0 °C to a maximum of +25 °C. The battery modules may be stored between 0°C and 25°C at a relative humidity of <80% (non-condensing). Exceeding or falling below this temperature (even only temporarily) leads to a decrease in the guaranteed number of cycles. In case of doubt, it is the responsibility of the person responsible for the transport and storage conditions to prove this.

Lithium-ion batteries SRB 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 SRB 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.

The battery packaging should be stored in case the battery needs to be returned or reused.

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. Please also note ➲ *16 Disposal*.

2.6.2 Transportation of defective or damaged lithium-ion batteries

Defective or damaged lithium-ion 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, freely available online).

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 **damaged/defective** lithium-ion batteries (SV376; P908; LP904, freely available online) 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; LP906 apply.

2.6.3 Storage and supply of new and used lithium-ion batteries

Observe the manufacturer specifications and safety data sheets of the lithium-ion batteries

- 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. The battery modules may be stored between 0°C and 25°C at a relative humidity of <80% (non-condensing). Exceeding or falling below this temperature (even only temporarily) leads to a decrease in the guaranteed number of cycles. In case of doubt, it is the responsibility of the person responsible for the transport and storage conditions to prove this.
- Avoid direct sunlight, large temperature fluctuations and frost.

2.6.4 Storage and supply of defective or damaged lithium-ion batteries

Observe the manufacturer specifications and safety data sheets of the lithium-ion batteries. You can find these in the appendix.

It is strongly advised that directive VDS-3103: 2019-06 (freely available online) also be observed.

- Separate the defective lithium-ion batteries (quantity restriction).
- Remove damaged or defective lithium-ion 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 lithium-ion 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.

3 Product description

3.1 General

The ChargePost CPT all-in-one fast charging system enables ultra-fast charging in any location. In many cases, the integrated battery storage system eliminates the need for a network expansion, and the installation requires minimal space and time.

The ChargePost continuously stores the energy provided by the low-voltage network. The energy can then be supplied extremely quickly as soon as it is required. This enables sufficient charging for a range of up to 100 km in approx. 5 minutes.

- Up to 300-kW charging capacity for one e-vehicle, or 2 x 150 kW, if two vehicles are charged simultaneously.
- With a 10" touch-screen for easy, intuitive operation and an integrated, contactless credit card terminal [1] for contactless payment.
- Depending on the version, with up to two high-resolution 75" displays with ultra HD resolution, for displaying individual HD advertising content.
- Communication takes place via LTE.

FIGURE 1: OVERALL VIEW

- ✓ Up to 300-kW charging capacity for one e-vehicle, or 2 x 150 kW for two vehicles simultaneously.
- ✓ Battery capacity of up to 201 kWh.
- ✓ 75" displays with ultra HD resolution, for displaying individual HD advertising content.
- ✓ DC power meter for energy measurement and invoicing in compliance with calibration regulations.
- ✓ 2 x 3-m charging cables CCS2 (uncooled).

[1] Currently, ad-hoc charging is neither supported nor certified.

3.2 Applicable documents and online link

Please observe the additional information and applicable documents.

- Manual for the all-in-one fast charging system with instruction manual, maintenance manual, electrical diagram, safety data sheets, accessories.
- Transport and preliminary information
- Checklists

Download link and QR code for the online manual with overall documentation /

https://share.ads-tec.de/index.php/s/xJe643r8Nta4nkt

3.3 Dimensions and weight

Weight:	Approx. 3.2 t, fully equipped
Overall dimensions (L x W x H):	See the technical data (➲ *3.5 Technical data*).

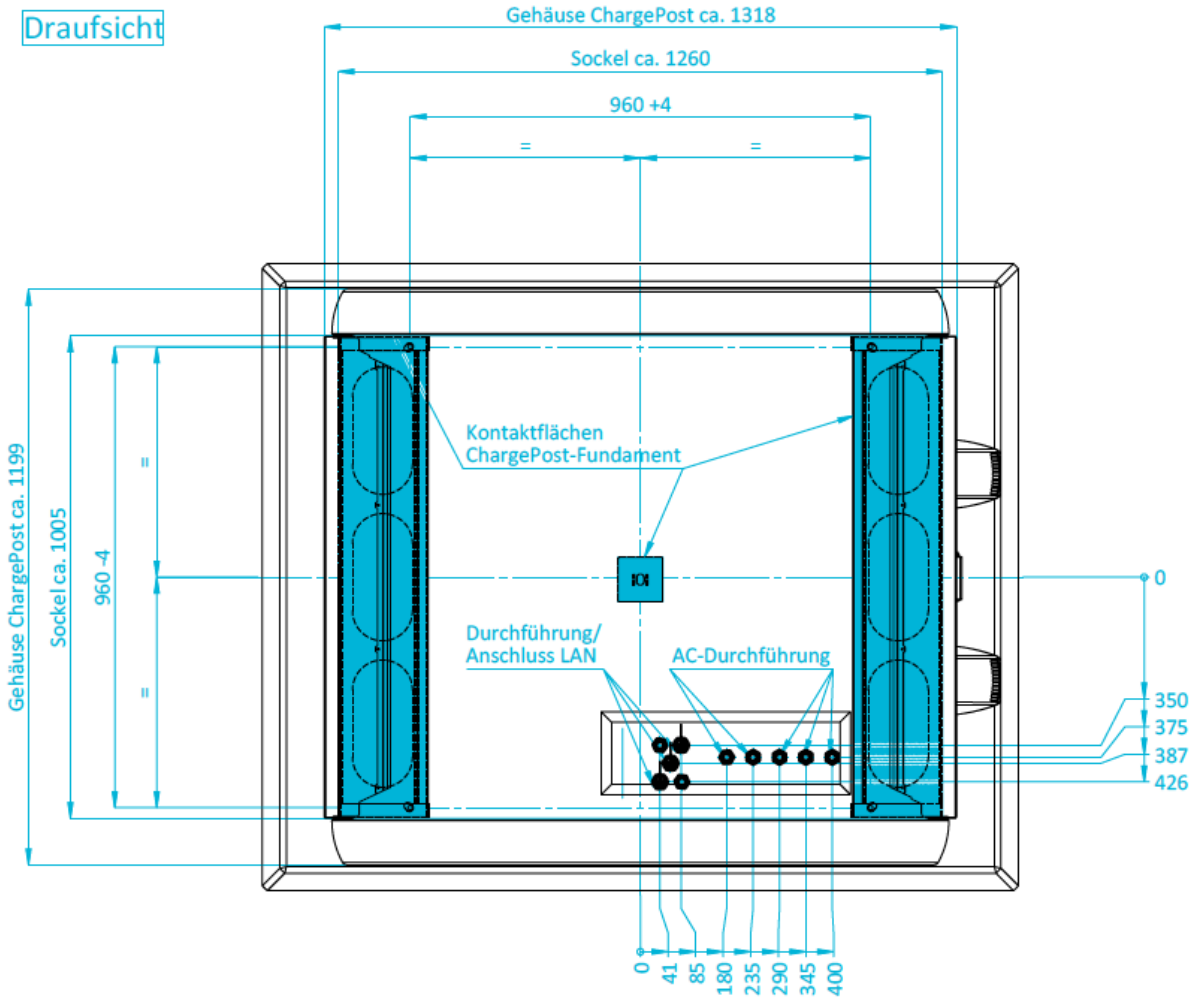


FIGURE 2: SYSTEM DIMENSIONS (TOP VIEW, DETAIL FROM CONSTRUCTION DRAWING)

Note the transport dimensions and weights including packaging given in the chapter Transport / Scope of delivery (➲ *6.1 Scope of delivery*).

3.4 Overview

3.4.1 View of inverter side + user side

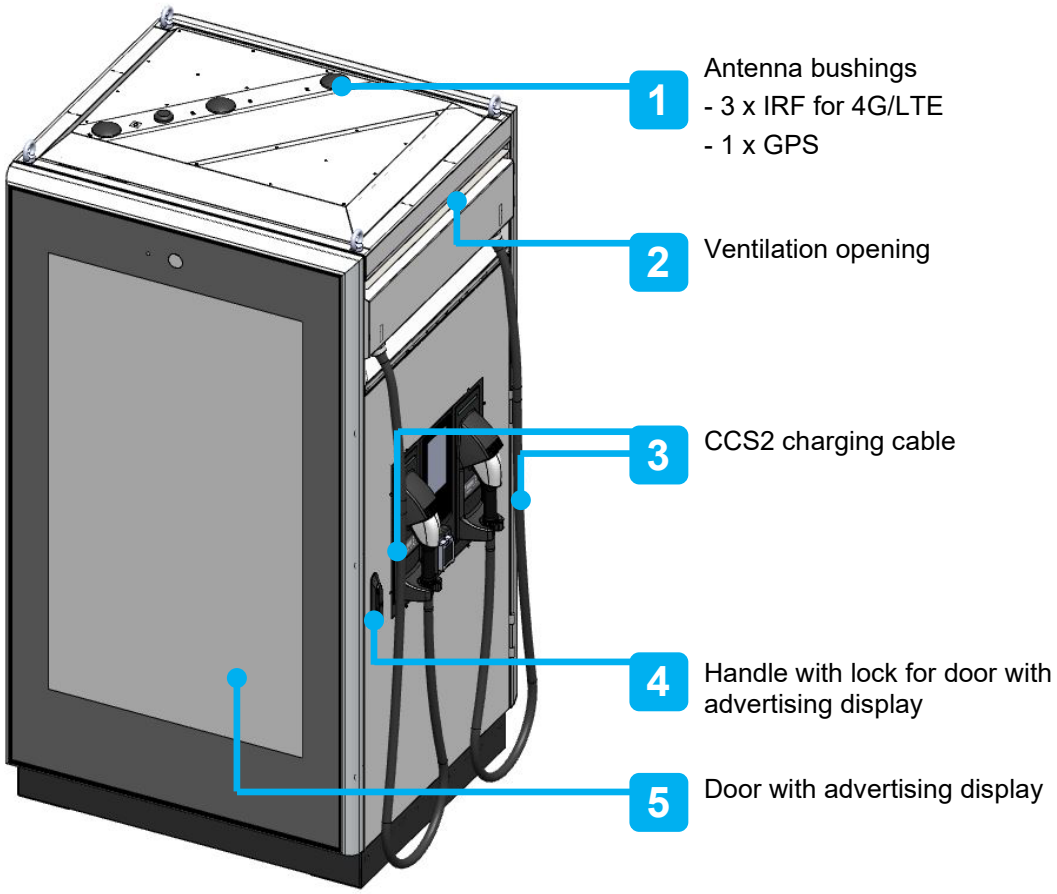


FIGURE 3: VIEW OF INVERTER SIDE + USER SIDE

FIGURE 4: VIEW WITH INVERTER SIDE OPEN

3.4.2 View of battery side + rear side

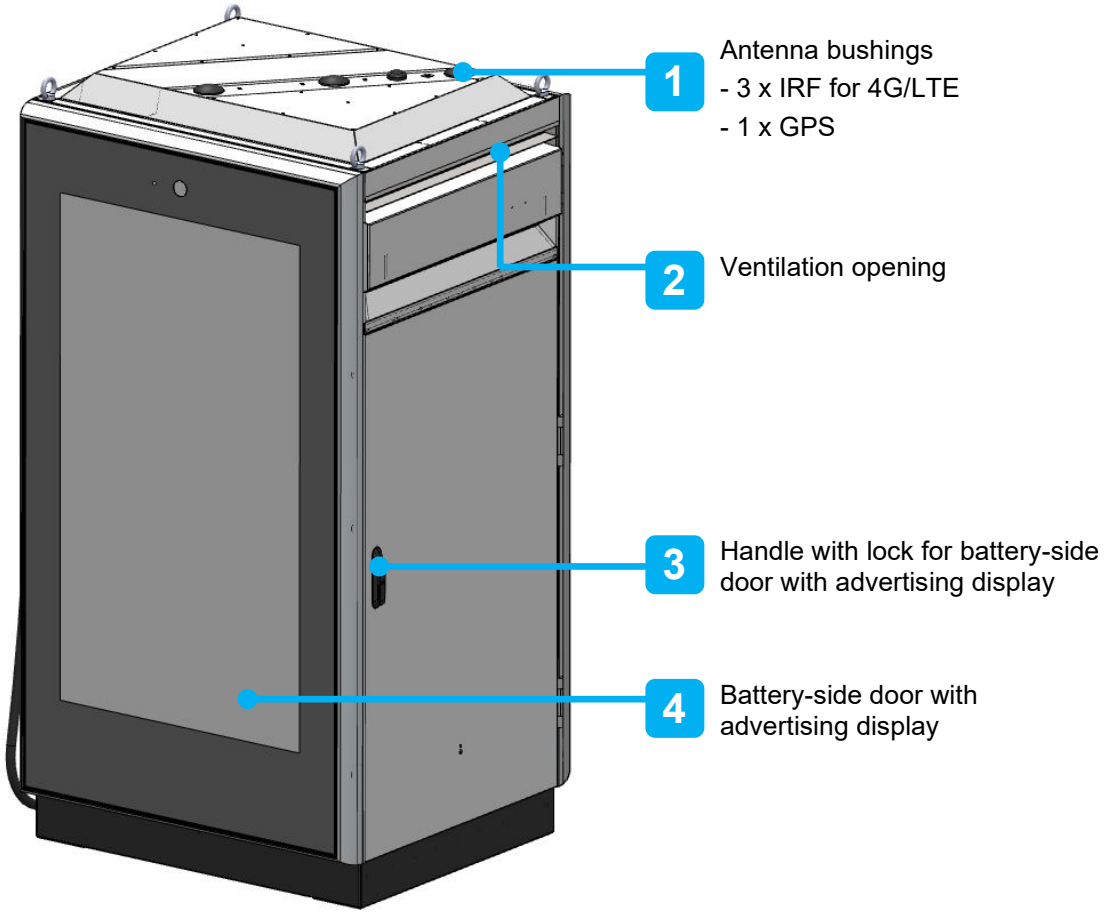


FIGURE 5: VIEW OF BATTERY SIDE + REAR SIDE

FIGURE 6: VIEW WITH BATTERY SIDE OPEN

3.4.3 View of user side

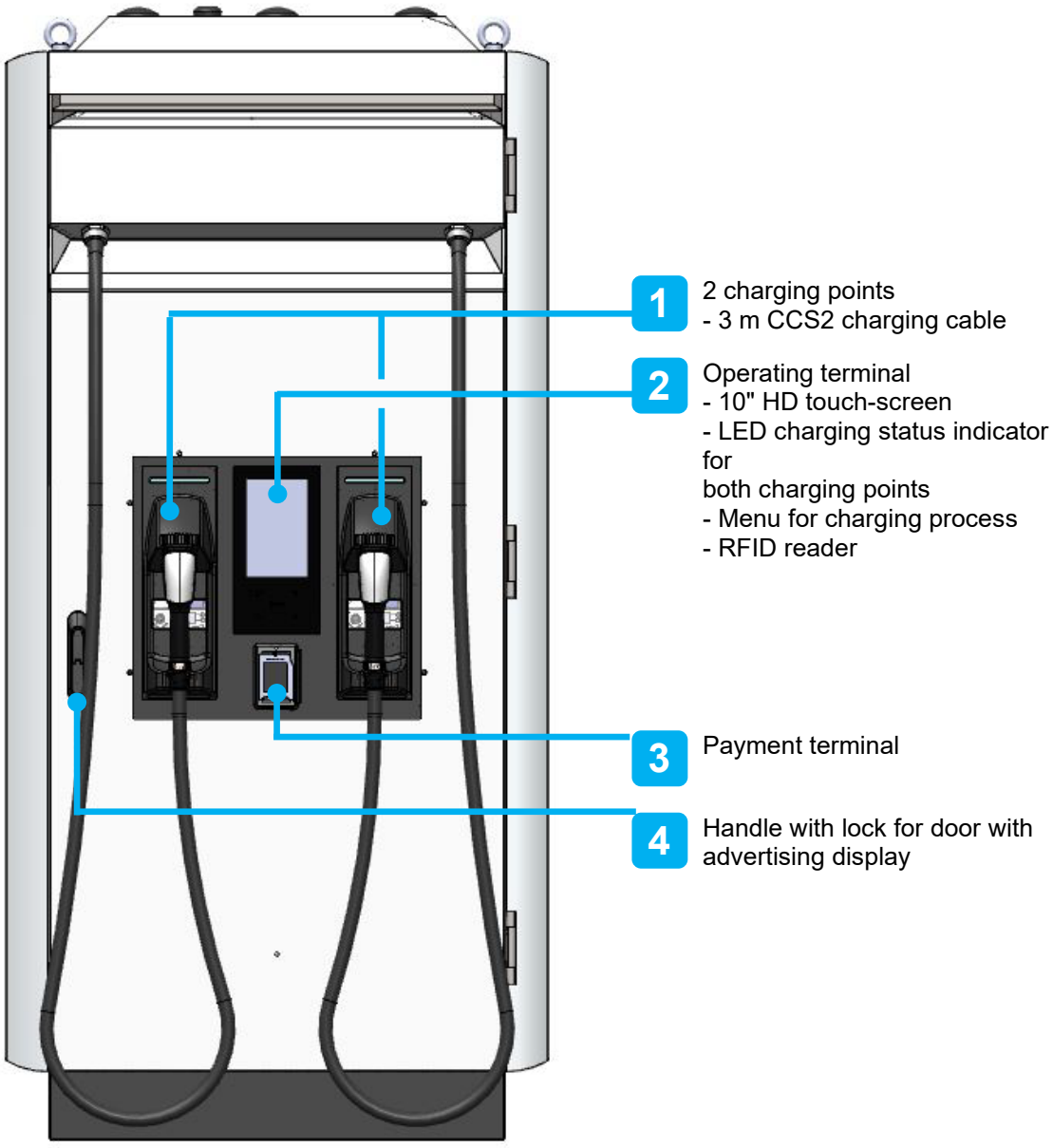


FIGURE 7: VIEW OF USER SIDE

3.5 Technical data

	All-in-one fast charging system Charge Post DVK-CPTXXX YYY-ZZ/RR	
Category	**Specification**	**Requirements in technical product data sheet**
Product versions	DVK-CPT1024-000	No advertising display, gross capacity 147 kWh, 2 charging points
	DVK-CPT1124-000	One 75" advertising display, gross capacity 147 kWh, 2 charging points
	DVK-CPT1224-000	Two 75" advertising displays, gross capacity 147 kWh, two charging points
General data	Type	Max. 2 displays / 2 charging points
	Dimensions (L x W x H) with charging cables, without attachments, e.g. lashing lugs, and without additional specific attachments	1,300 x 1,500 x 2,500 mm* (*dimensions without tolerance specifications)
	Weight	Max. 3.2 t (incl. batteries)
	Certification	CE certification
	Protection class	IP54
	Protection class	IK10 payment terminal IK8, HMI unit IK8.5
	Operating conditions	
	Operating temperature range	-20 °C to +40 °C
	Humidity	5-90% without condensation
	Operating altitude	Max. 2000 m above sea level
	Storage conditions	
	Storage temperature range for battery modules	Indoors from 0°C to +25 °C (<80% relative humidity).
	Storage temperature range for system, without battery modules (without grid supply and climate control)	Indoors from +5 to +35 °C (<80% relative humidity). Outdoors for brief period only (max. 5 days) from +5 °C to +35 °C (<80% relative humidity, no direct sunlight).
	Storage temperature range for system, fully equipped with battery modules (without grid supply and climate control)	Outdoors for brief period only (max. 5 days) from +5 °C to +35 °C (<80% relative humidity, no direct sunlight).
	Communication	Mobile data (4G/LTE, 3G and 2G depending on local availability), Ethernet RJ45 10/100 Mbit/s
	Communication channels	Channel 1 for OCPP1.6J Channel 2 for advertising content Channel 3 for Big-LinX Energy
	GPS tracking	Yes
	Impact detection	Crash sensor

	Back-end protocol	OCPP1.6J
	Number of charging points	2
	Charging cable	One charging cable per charging point, non-cooled, external, without cable retraction, with holder for plug (plug garage)
	Length of charging cable	Approx. 3 m
	Charging connector (vehicle interface)	CCS2
	DC power meter	Integrated, one per charging point, each with a viewing window. Meter approved for Germany in compliance with calibration regulations.
	Noise emission*	Certification for industrial areas Certification for residential areas in preparation. *The respective approval refers to the system under test conditions. Refer to the information for the operating company regarding noise emissions (➲ *5.1.2 Responsibility for installation location).*
User interface	Human-machine interface	1x 10" HD touch-screen, sunlight-optimised
	Modification of 10" HD touch-screen	On request (at a cost): Customer-specific adaptation of colours, logos and welcome screen (screen saver).
	Payment terminal	1x credit and debit card reader with PIN pad; magnetic strip and chip readers, contactless payment (NFC); min. VISA, Mastercard, Maestro[2] (Dependent on the selected payment processor, contract required between the customer/operating company and the payment provider).
	Height of DC meter window	1,100 mm to 1,200 mm above installation surface
	Height of HMI component	970 mm to 1,530 mm above installation surface
	Load status display	LED, multicolour, for each charging point, colour selection according to charging state
Transport	Transport	Vehicle class N3, heavy truck (MEGA version), articulated vehicle
	Loading and unloading equipment	Forklift (preferred), crane
	Installation	Crane
	Transport safety devices	Lashing lugs on top of housing

[2] Currently, ad-hoc charging is neither supported nor certified.

Advertising display	Size	75" with aspect ratio of width 9 to height 16.
	Resolution	QWUXGA (2160 x 3840 px)
	Luminance	3,000 cd/m²
	Unit comprising display with glass panel	Monitor system as unit: Front panel with display and integrated electronics for control
	Brightness sensor	Integrated
	Night mode	Automatic reduction of advertising display brightness depending on measured ambient brightness
	Number of monitors	Max. 2 (version dependent)
Mechanical	front panel	Laminated safety glass, anti-reflective with UV filter. Structure: glass 3 or 4 mm, IR film, UV film, 3 or 4 mm glass. IK10
	Position with two displays	Opposing
	Orientation of video material	Vertical
	Ease of repair	Replacement of entire door unit, consisting of monitor and laminated safety glass, by trained service personnel
Electronics	Interface in ChargePost	DisplayPort
	Storage capacity	SSD, 512 GB (2x 256GB)
	Advertising content	Version with two advertising displays: identical content on both displays
	Remote upload of advertising content	Yes, content client of customer
	Controllable brightness	Yes, brightness can be regulated
	Still images	Still images displayed for less than 1 h (to avoid pixel errors)
	UV resistance	Yes, test standard: EN ISO 4892-1/-2; test class: A (artificial weathering)
Mechanical	Frame material	Steel
	Colour	RAL 9003 signal white
	Access	Maintenance doors on both sides; access with matching key
	HVAC/air-conditioning system	For cooling batteries, power electronics and advertising displays; air and liquid cooling
	Corrosion protection	Powder coating, partially anodised or stainless steel
	Corrosion class	C3M according to DIN EN 12944
	Roof load (roof)	8.5 kN/m²
	Roof load (sides)	1.2 kN/m²
Electronics	Charging capacity	Max. 300 kW or 2x 150 kW in grid-connected mode and depending on grid connection capacity and type / charge state of the internal battery modules

	Output voltage DC		150-920 VDC
	Max. charging current (output)		Max. 400 A with non-cooled charging cable
	Minimum output quantity		0.1 kWh
	Control	Energy management	Via integrated energy management system
	Battery	Gross capacity	Max. 201 kWh (depending on the type and installation of the battery modules)
		Net capacity	Approx. 80% of gross energy, depending on the module type
		Cell technology	Lithium-ion
	Installation types	Grid-connected mode	Yes
		Secured power cable	Yes, fixed installation with connection terminals
	Grid input	Grid type	3-phase + N + PE
		Grid type	TN-S
		Grid frequency	50 Hz
		Grid input voltage AC	400 V (+/- 10%)
		Grid input power	87 kVA
		Grid input current	Max. 125 A (87 kVA)
		Electrical AC insulation	Yes
		Grid meter and connection box	Connection in sub-distribution system. No direct connection to public grid.
		Circuit breaker	Integrated
		AC counter	Built-in
		Current and voltage measurement	Yes, directly downstream of grid input connection terminals
		EMC	Class A according to EN 61000-6-4
Service & operation	Access		Maintenance door(s), lockable, access using matching key
	Operation		Permanent operation at one location

4 Requirements regarding installation location

4.1 Environmental conditions

The system may only be installed, connected and commissioned under the specified environmental conditions.

Failure to observe any one of these conditions will invalidate the warranty of the system. The manufacturer cannot be held liable for any damages arising from improper use and handling.

CAUTION

Risk of irreversible damage to the components!

Insufficient air supply or exposure to other heat sources can lead to irreversible damage.

➡ Ensure that ventilation grilles remain free and that the distances to the next building structure are maintained (➲ 4.2 Requirements regarding installation location)..

DIN EN 60721-3-3 specifies the following environmental condition categories:

Biological environmental conditions: **Up to class 3B1**	Installation sites with no particular risk of exposure to biological environmental influences. Protective measures such as special product design, appropriate measures at the installation site in order to counteract fungal growth or the effect of animal pests.
Chemically active substances: **Up to class 3C2**	Installation sites with levels of air pollution usually found in densely populated areas in which industrial plants are distributed across the entire area or which have a high traffic density.
Mechanically active substances: **Up to class 3S2**	Installation sites without special measures to reduce sand or dust accumulation. However, these installations sites are not close to sources of sand or dust and are not in areas where sandstorms occur.
Mechanical environmental conditions: **Up to class 3M1**	The category is intended for installation sites at which no significant vibrations or impacts occur.

Table 3: Environmental conditions

4.2 Requirements regarding installation location

Note that the all-in-one fast charging system may be installed and operated at the installation location only if the following requirements are met:

- Max. 2000 m altitude above sea level.
- Not in buildings, garages, courtyards and other covered structures.
- Not in areas where there is a risk of flooding.
  The product must be protected against water. If installed in areas where there is a risk of flooding, constructional countermeasures must be taken that prevent the penetration of water into the system.
- Not in the vicinity of sea water. The corrosion protection class "C3M" according to ISO 12944 stands for urban and industrial atmospheres with moderate SO_2 concentrations and temperate climate.
- Not in areas where there is a risk of fire and explosion.
  Distances to areas with a risk of fire and explosion (e.g. filling stations) must be defined for each individual location by the operating company according to TRGS 751
  (➲ *5.1 Obligations of the operating company*).
- Not in the vicinity of combustible materials.
- Not in areas with sandstorms and not in the vicinity of sources of sand and dust.
- Not in the vicinity of escape routes.
- Where possible, position the display sides so that they do not face the sun. In direct sunlight, the digital displays may be available only to a limited extent.

NOTE

Observe installation location!

For fire safety reasons, the system must not be installed in buildings, garages, courtyards and other covered structures.

➡ It is also not permitted to operate under roofing without walls for fire protection reasons if the roofing is directly connected to an existing building.
➡ A roofing without walls is permitted if it is not directly connected to a building. Observe the distances specified in the installation conditions.

CAUTION

Hazard from thick smoke and fire!

Smoking is prohibited, as failure to comply may result in smoke or fire.

➡ Smoking is prohibited at the installation location.

Installation conditions:

The checklist "Installation and commissioning requirements" must be completed and signed (*attachment: CPT_installation_commissioning_checklist*).

- Observe the following floor space requirements for the system:
  - The floor space provided at the installation location must be such that it takes into account the local circumstances, legal conditions as well as the technical data (➲ *3.5 Technical data*) and must be cordoned off in advance by the operating company.
  - The footprint must be perfectly horizontal.
  - Observe the dimensions and cable glands in the base drawing (➲ *9.2 Securing the system at its final location*)
  - Cable entry is from below.
  - The floor space has the required load capacity for the 3.20 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.
  - Also take into account any potential climate-related roof loads (reference value up to 8.5 kN/m^{2,}).
  - The condition of the floor space must be suitable for the transport equipment (forklift or crane).
  - Sufficient drainage of the floor space must be ensured.
- An earth electrode that complies with local and country-specific regulations and practices must be present.
  Observe the corresponding information in the electrical diagram (➲ *18.6 Detail from electrical diagram* / *Electrical diagram)*.
- Protect the system against penetrating water (e.g. against temporary flooding).
- Keep the doors of the system locked.
- Observe the required minimum distances
  - Charging side:
  Recommended: 2.5 m to adjacent structures (door opening and escape route).
  Take into account additional distances required for charging electric vehicles.
  - Inverter and battery side (display/door sides):
  - Recommended for installation/removal: 6 m distance from adjacent structures to ensure manoeuvring with a forklift (➲ *6.2.1 Forklift for moving the system to its final location (without pallet)*. The surface of the manoeuvring area must be suitable for forklifts and must not contain any obstacles such as kerbs, street lamps, bollards, etc..
  - Recommended for service activities: 4 m to adjacent structures (to ensure manoeuvring with a forklift for service activities (➲ *6.2.3 Forklift for service activities*)

- **From ground to canopy:**
  - 4.8 m recommended (in the case of installation under a canopy) to ensure transportation and service activities with a forklift (➲ 6.2.1 *Forklift for moving the system to its final location (without pallet)*)
  - When installing under a canopy, only a forklift can be used.

- 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.
  When installing in purely residential areas, spa resorts, close to hospitals and care homes, it may be necessary to implement additional constructional measures such as noise barriers to reduce the impact of noise emissions.
- Where possible, the display sides of the system should not face the sun or should be in the shade in order to ensure maximum availability of the digital displays.
- When selecting the installation location, take into consideration the potential dazzling effect that the 3000 cd/m^2 display may have on persons/drivers.
- The operating company is responsible for the installation location. Check in advance whether the planned installation location is subject to legal requirements.

Power connections:

NOTE
Check the properties of the on-site supply lines! ➡ Observe the information given in the electrical diagram (➲ 18.6Detail from electrical diagram) ➡ Observe beforehand the local and country-specific requirements regarding installation, cable qualities and the necessary protective measures to be taken by the customer.

- 5 supply lines are required (L1, L2, L3; N, PE):
  - 400 V 50 Hz 63 / 87 kVA
- Observe the characteristics of the backup fuse on the AC side given in the electrical diagram (➲ *18.6 Detail from electrical diagram)*
- Ensure that the cross section of the supply line used is large enough for the conditions.Terminal connection point: flexible = max. 70mm², rigid = max. 95mm².
- Observe connection of the supply lines (➲ *9.4 Electrical connection*).

Earth electrode / foundation earth electrode:

- The earth connection is made via an earth electrode/foundation earth electrode, which must be attached to the bolt provided using an M12 nut in accordance with local/country-specific conditions and regulations (➲ *9.4.2 Earth connection*).

Electrical diagram

See appendix (➲ *18.6 Detail from electrical diagram*)

5 Operating instructions

5.1 Obligations of the operating company

5.1.1 Documentation storage obligation

The technical documentation required for the installation and operation of the system must be kept on site at the location (unless provided by a user interface) so that if required it is available to all persons to which these activities are assigned. The printed manual is a quick guide which is stored in one of the document pockets behind the door on the inverter side. It has a QR code/link to the online manual (with the complete documentation).

The operating company must observe and comply with the locally applicable safety regulations during installation, commissioning, operation, maintenance and repair of the system. The local regulations regarding safety markings must be observed. If required, additional safety markings such as prohibition and information signs must be attached by the operating company.

5.1.2 Responsibility for installation location

- The operating company is responsible for the installation location. Observe the requirements regarding the installation location (➲ *4.2 Requirements regarding installation location*) and check in advance whether the planned installation location is subject to legal requirements.
- At the installation location, take suitable precautions to prevent damage caused by collisions or to reduce their severity, e.g. by erecting mechanical barriers.
  (➲ *7.6 Attach collision protection*).
- It is the responsibility of the operating company to check the noise emissions at the respective installation location. Certification of the fast charging system for use in industrial and residential areas refers to the pure system under test conditions. Depending on the installation location, the operating company must take additional measures to comply with the technical instructions for protection against noise, particularly in residential areas. Suitable measures are, for example, noise barriers.

5.1.3 Responsibility for safety

NOTE

Ensure fire and explosion protection of the entire system.

Fire and explosion can cause major damage.

- ➡ The fire protection of the entire system and its effects are the responsibility of the operating company.
- ➡ According to the local conditions, the operating company is obliged to provide an instruction sheet on site in the system area regarding conduct in case of fire together with the corresponding information. For an example of the instruction sheet, see the attachment.
- ➡ The distances to areas with a risk of fire and explosion (e.g. filling stations) must be defined for each location by the operating company according to TRGS 751.

Note also the safety instructions from the German Energy Storage Association (Bundesverband Energiespeicher Systeme e.V.):
(attachment: *Preventive and defensive fire protection for large lithium-ion storage systems)*
(Attachment*: Safety instructions for users of battery storage systems in the event of water damage and flooding*).

- All work on the system may only be assigned to persons who are familiar with the basic regulations on work safety and accident prevention. The assigned personnel must be at least 18 years old. The responsibilities of the personnel must be clearly defined.
- The operating company or person authorised by the operating company must regularly check that the work of persons assigned to the work is performed in a safety-conscious and hazard-aware manner in compliance with the safety regulations applicable on site.
- If necessary, this document must be supplemented by instructions, including supervisory and reporting obligations, which contain special operational features, e.g. with regard to work organization, work processes, the personnel used and the national or locally applicable provisions.
- When selecting the installation location, the potential dazzling effect that the displays may have on persons/drivers should be taken into consideration.

5.1.4 Responsibility for the environment

CAUTION

Hazard due to environmental and property damage!

Non-compliance can result in damage to the environment as well as the product.

- ➡ The operating company must ensure that all local safety regulations are observed when any work is performed on the system.
- ➡ If the requirements for the installation location change, the environmental conditions and compliance with the requirements regarding the installation location must be observed.

CAUTION

Risk of environmental pollution and minor injuries!

- ➡ A leakage of substances hazardous to water in a not only insignificant quantity must be reported immediately to the competent authority or a police station.
- ➡ Suspected leaks or leaks of substances hazardous to water must be reported immediately to the competent authority or a police station.
- ➡ Reporting is also required as to who has caused the leakage of substances hazardous to water or is carrying out measures to identify or eliminate substances hazardous to water that have leaked from the product.
- ➡ If third parties, in particular the operating companies of waste water facilities or water supply companies, may be affected, the system operator shall inform them immediately.
- ➡ Observe the safety data sheets.
- ➡ Wear safety goggles and safety gloves.

5.1.5 Notes on statutory calibration

The product should be checked every 8 years by the statutory calibration authority. It may be necessary to replace the LEM DC meter for a cost. Replacement of the LEM DC meter is necessary according to calibration regulations and must be performed by a service technician authorised by the conformity assessment body.

Calibration is performed via the energy. Conformity is confirmed with a calibration regulation certificate.

5.1.6 Locking system

The fast charging system has a universal locking system (40 mm standard lock). It is easily possible and recommended to replace this locking system and therefore to limit and define the persons authorised to use the system.

5.2 Intended use

The system can only be used to provide charging power for charging electric vehicles in compliance with environmental conditions and the requirements regarding the installation location.

Should the system 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.

The operator alone shall be responsible for ensuring that all operator obligations are observed and for complying with any technical or statutory amendments that may arise.

5.3 Improper use

Operation other than or beyond that described for the system shall be deemed improper use. Therefore, the system must not be put into operation in the case of transport damage, non-observance of the environmental conditions and non-observance of the requirements regarding the installation location and, if necessary, must be taken out of operation if conditions change. 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, it must be immediately shut down and secured against being started up accidentally.

In the case of improper use, the manufacturer shall not accept responsibility or liability for injury or damage that is directly or indirectly attributable to the handling of the system.

5.4 Personnel qualification

Safe operation requires the 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 assign and make known the responsibilities for activities on the system.
- If more than one person is to work on the system, the responsibilities for the individual activities must be clearly assigned and observed.
- 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.

5.4.1 Electricians

Electricians must satisfy the following qualification criteria and requirements according to DIN VDE 0105-100 in order to perform work on the system and to recognise and avoid hazards independently:

- Professional training and experience.
- Professional training and experience.
- Product training with verification of a previously successful confirmation by the manufacturer or a third party authorised by the manufacturer.
- Knowledge of relevant standards and regulations.

5.4.2 Transport personnel

Transport personnel must meet the following qualifications and requirements in order to be able to carry out transport work at 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 with certificates of training in or participation in the transport of battery systems.
- Due to physical, mental and character qualities suitable for driving conveyor vehicles and lorries.
- Commissioned in writing by the operating company with the transport.

5.4.3 Instructed personnel

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

- Transport and installation must always be performed in accordance with the instructions from the transport personnel.

5.4.4 Target group matrix

Life phases	Electricians	Transport personnel	Instructed personnel
Transport		x	x
Installation		x	x
Installation	X (trained)		
Commissioning	X (trained)		
Maintenance	X (trained)		
Repair	X (trained)		
Air-conditioning system	X (trained)		
Decommissioning	X (trained)		

Table 4: Target group matrix

5.5 Personal protective equipment

To prevent personal injury and damage to the system, 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 are in good order and condition and are voltage-proof. The following protective clothing is recommended:

- Protective clothing and suitable workwear for installation of an electrical product with voltages up to 1000 V:

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

5.6 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.

6 Transport

6.1 Scope of delivery

The system is delivered standing upright on a pallet, the battery modules on 2 separate pallets.

(dimensions: L x W x H):

- 1 x special pallet with fast charging system
  (approx. 160 x 140 x 270 cm, weight: net approx. 2.05 t, gross approx. 2.2 t).
- 2 x pallets with a total of 42 SRB battery modules (UN3480):
  (Each measuring approx. 80 x 120 x 110 cm, weight: net approx. 483 kg each / gross approx. 575 kg each;
  weight per battery module: net approx. 23 kg / gross approx. 25 kg).
- Box containing power cables, communication cables, installation material, keys (integrated in one of the pallets).
- Manual in the document pockets in the device.

Note that the warranty shall be rendered invalid in the event of damage caused by incorrect transport or installation of the system.

6.2 Transporting the system

CAUTION

Risk of injury and damage!

Incorrect transport can endanger persons and cause irreversible damage to components.

- ➡ Use only means of transport that are designed for the weight of the fast charging system and battery modules (gross weight: approx. 3.20 t / weight without batteries: approx. 2.20 t).
- ➡ Transport the battery modules to the final location separately from the system.
- ➡ Transport the system to the final location in an upright position and with the help of a crane or a forklift.
- ➡ Bear in mind that the centre of gravity of the fast charging system is not positioned centrally. Refer to the transport drawing in the appendix (➲ *18.4 Detail from transport drawing*).
- ➡ Move the system only when in a lifted state.
- ➡ Use non-slip mats on any surfaces where the system will have to be set down temporarily.
- ➡ Observe the loading regulations for lorries.

WARNING

Hazard from heavy loads!

If the fast charging 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 packaging is not resistant to moisture. Protect the product from the weather.

– Make sure that the load capacity and condition of the access roads and manoeuvring areas are suitable for transporting the system to its final location.
(➲ *4.2 Requirements regarding installation location*).

– Without pallet, the system may be moved to its final location using a forklift or crane only.

6.2.1 Forklift for moving the system to its final location (with and without pallet)

NOTE

Observe the transport drawing.

➡ Observe the weights, centre of gravity, fork dimensions, etc. specified in the transport drawing (➲ *18.4 Detail from transport drawing)*

- With pallet recommended for loading and unloading.
- Optional if no crane is available to set up:

  Forklift with sufficient loading height (min. 3.5 m) and suitable loops for attaching to the forklift tines available.
- Bear in mind that the system weighs 3.2 t. Where applicable, also take into consideration the weight of additional transport equipment (total weight: approx. 3.2 t / weight without batteries: approx. 2.2 t).
- Observe the load diagram of the forklift.
- The quick loading system is suitable for moving with a forklift and without a pallet. Note that the forklift used then has the following dimensions:

  - Fork length: 1400 mm
  - Fork outer edge to fork outer edge: 1200 mm
  - Fork inner edge to fork inner edge: 950 mm
  - Fork height at shaft: < 75 mm
  - Width of each fork: 125 mm

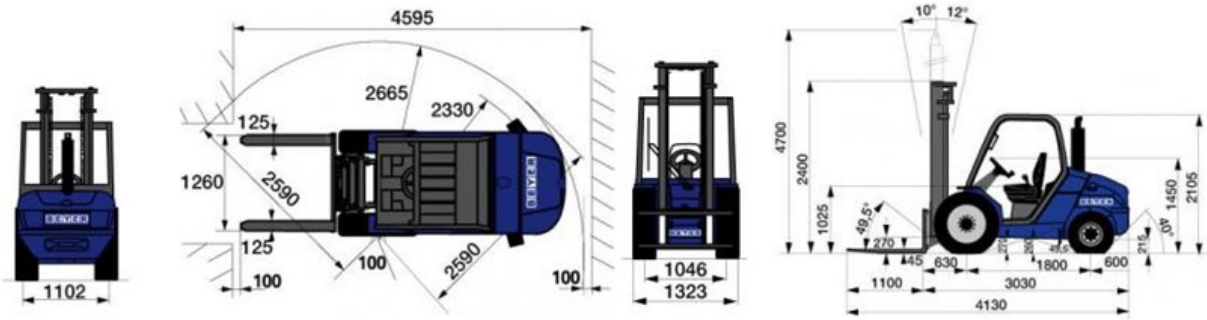


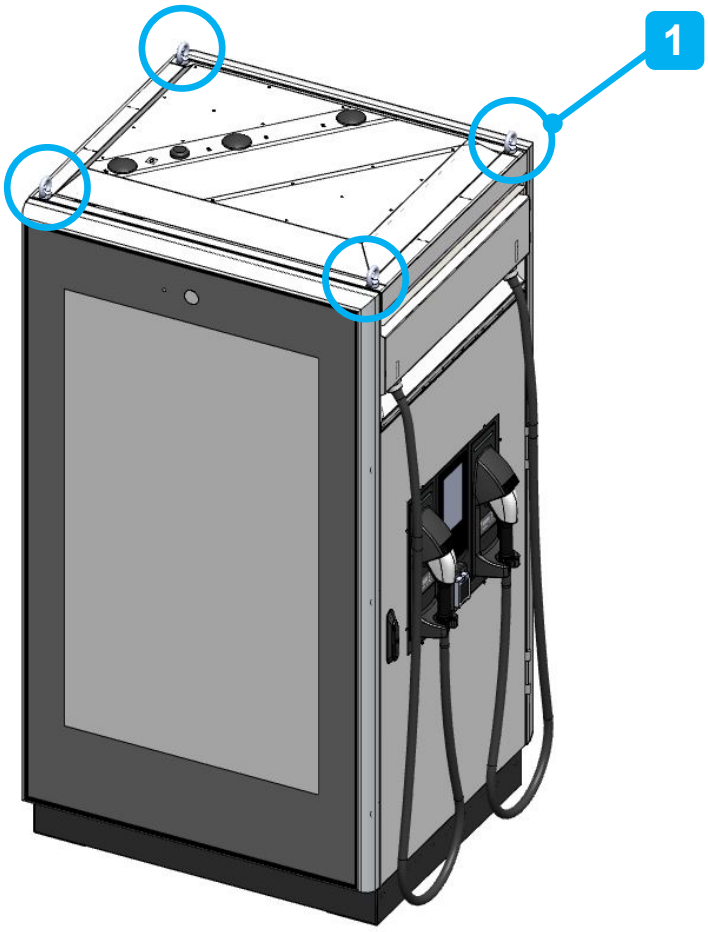
FIGURE 8: MANOEUVRING DIMENSIONS OF A SUITABLE FORKLIFT

6.2.2 Crane for moving the system to its final location (without pallet)

NOTE

Observe the transport drawing.

➡ Observe the weights, centre of gravity, lifting angles, etc. specified in the transport drawing (➲ 18.4 Detail from transport drawing)



Moving the system:

Transport lugs

➡ Use only means of transport that are designed for the weight of the fast charging system and battery modules.
➡ Also take into consideration the weight of additional transport equipment.
➡ Use the transport lugs on the top of the housing to move the system using a crane.
➡ Make sure that the transport lugs are screwed in completely.
➡ Note that the centre of gravity of the system is not central when transporting without batteries.
➡

FIGURE 9: TRANSPORT LUGS FOR MOVING SYSTEM WITH CRANE (EXEMPLARY FIGURE)

6.2.3 Forklift for service activities

– A small forklift that is suitable for loads of up to 400 kg is sufficient for service activities such as installing/removing battery modules or other components.

6.3 Temporary storage of the system and batteries

The system is suitable for outdoor installation only if the voltage supply and climate control is provided. If the system is not to be put into operation immediately, please observe the following information on temporary storage.

6.3.1 Temporary storage of the battery modules

CAUTION
Observe correct storage of the battery modules!
Incorrect storage can result in damage to the components.
➡ Until the battery modules are installed, store them properly according to the specifications in chap. 2.6 (➲ 2.6.3 Storage and supply of new and used lithium-ion batteries) at a temperature range from 0 to +25 °C. ➡ Avoid direct sunlight and large temperature fluctuations.

6.3.2 Temporary storage of the system

CAUTION
Observe correct storage of the system!
Incorrect storage can result in damage to the components.
➡ Until the fast charging system is installed, store it at a dry and covered location at a temperature range of +5 to +35 °C. ➡ Avoid direct sunlight and large temperature fluctuations. The display sides of the system must not be exposed to direct sunlight. ➡ Climate control of the system and display sides only starts when the system is put into operation.

6.3.3 Temporary storage of the fully equipped system outdoors (brief period only)

CAUTION
Do not install outdoors without providing the voltage supply and climate control!
Without climate control, components can be damaged.
➡ Without climate control, the system may be installed outdoors only for a short period, otherwise humidity can form. ➡ Avoid direct sunlight and large temperature fluctuations. The display sides of the system must not be exposed to direct sunlight.

Note that the voltage supply and climate control must be switched on for correct operation of the system outdoors.

Temporary storage of the system outdoors without the voltage supply and climate control switched on must always be avoided or must be kept as short as possible (max. 5 days, depending on the prevailing environmental conditions), otherwise components can be damaged and the warranty invalidated.

Therefore make preparations for installation, modification or service work in good time prior to delivery or shutdown of the system.

7 Checking installation requirements

7.1 General

NOTE

Observe requirements regarding installation location.

- ➡ Observe the environmental conditions as well as the installation location requirements (➲ 4.2 Requirements regarding installation location).
- ➡ Make sure that the intended floor space/foundation is prepared (➲ *4.2 Requirements regarding installation location*), that no obstacles are in the surrounding area and that it is thereby possible to open all doors.
- ➡ Assembly must be performed only by qualified and trained specialists.
- ➡ The 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.

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 system is delivered preassembled. Only installation and cabling of the battery modules is necessary on site.

Ensure that the doors are freely accessible for installation, service and operation. It must be possible to open all doors without obstructing or blocking an escape route or possible escape doors in the installation area (➲ *4.2 Requirements regarding installation location)*.

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.

7.2 Preparing the floor space / foundation

- Plan the arrangement of the system according to the information in the system drawing (➲ *18.4 Detail from transport drawing*).
- Check that all necessary supply lines are present in the correct position and are not soiled. See also (➲ *7.5 Checking suitability of supply lines)*.

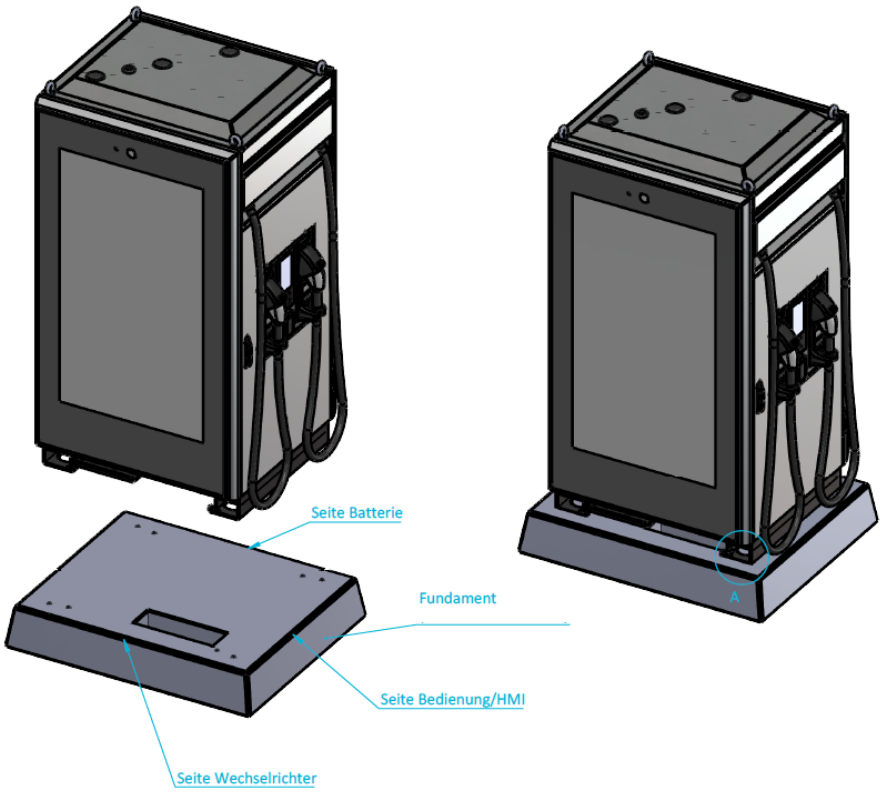


FIGURE 10: PLANNING THE FOUNDATION/FLOOR SPACE FOR THE OVERALL SYSTEM (DETAIL FROM THE CONSTRUCTION DRAWING)

- Observe the required contact surfaces and recesses according to the construction drawing (blue surfaces).

Observe the required recess for the AC supply line and the LAN supply line according to the construction drawing.

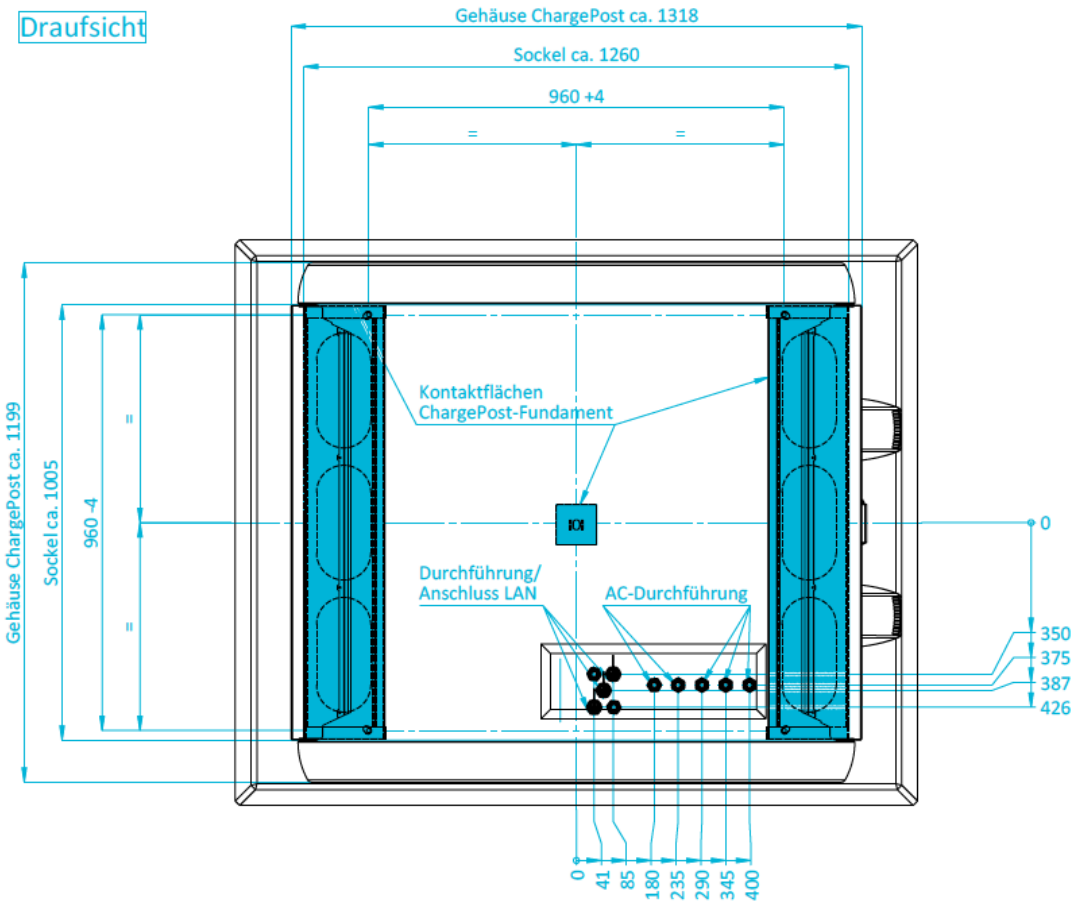


Figure 11: Planning the overall system, top view (detail from the construction drawing)

- Prepare the foundation / floor space while taking into consideration the requirements regarding the installation location (➲ *4 Requirements regarding installation location*) and the information in the construction drawing of the overall system.
- The floor space / foundation must be prepared at the installation location. During this process, take into consideration the local circumstances of the prevailing substrate.
- It is the responsibility of the operating company to commission prefabricated foundations while taking into consideration the local circumstances, the construction drawing of the overall system and the requirements regarding the installation location.

- A prefabricated foundation is available from ADS-TEC upon request
  (➲ *CPT prefabricated foundation*).

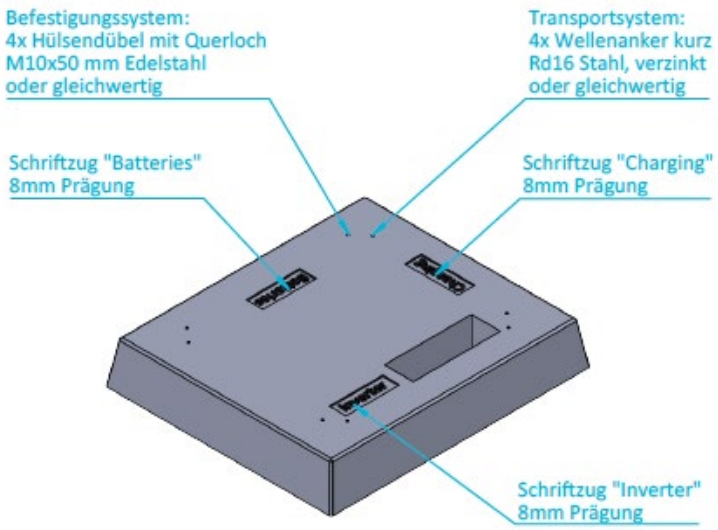


FIGURE 12: EXAMPLE OF A PREFABRICATED FOUNDATION (DETAIL FROM CONSTRUCTION DRAWING)

7.3 Acclimatising the battery modules to the outside temperature

- If the battery modules were in storage prior to installation, they must be acclimatised to the outside temperature in order to prevent condensation from forming inside the system.
- Only then may the system be installed.

7.4 Meeting requirements for access roads/manoeuvring areas

- Make sure that the load capacity and condition of the access roads and manoeuvring areas are suitable for moving the system to its final location.
  (➲ *4.2 Requirements regarding installation location*).
- Before taking the system to the installation location, check whether an additional special vehicle is required due to ramps/steps.
- Before taking the system to the installation location, also check that the load height is sufficient (at least 3.5 m) and that there are suitable straps for hanging on the forklift forks.

7.5 Checking suitability of supply lines

NOTE

Check the properties of the on-site supply lines!

- ➡ Observe the information given in the electrical diagram (➲ 18.6Detail from electrical diagram / electrical diagram attachment).
- ➡ Observe the local/country-specific requirements regarding installation, cable qualities and the necessary protective measures to be taken by the customer.
- ➡ The supply lines provided by the customer should be highly flexible.
- ➡ The operating company is responsible for the provided supply lines.

Make sure that the following requirements are met:

- National and regional regulations and directives must be observed and complied with:
- All supply lines are present and laid underground in the correct positions
- The cable types or the conductor cross sections are correct.
- The supply lines are long enough to be routed to the connection point in the housing.
- The supply lines are absolutely clean.

NOTE

Ensure that the supply lines are clean!

- ➡ All supply lines must be absolutely clean. No dirt must get into the supply lines!

7.6 Attach collision protection

NOTE

Observe the instruction sheet

➡ The operator has a duty to provide a collision protection system in accordance with VdTÜV instruction sheet 965-1 (collision protection of above-ground storage tanks at filling stations).

- Install collision protection in front of each fast charging system to ensure its protection and safety.
- Make sure that vehicles can still be charged without problem using the charging cable.
- Note that the collision protection should be removable in case it is blocking access or prevents manoeuvring.

7.7 Documenting and approving installation

- Document the assembly requirements in the document "Transport and assembly" (checklist in the appendix) and have the work confirmed by the operating company (➲ *document "Transport and assembly – preliminary information"*).
- If all installation requirements are met:

  The system can be installed.
- If not all installation requirements are met:

  Have all defects repaired before installing the system.

8 Assembly on the foundation / floor space

8.1 Securing the system at its final location

CAUTION

Risk of injury!

There is a risk of impact and crushing during installation of the storage system.

- ➡ Wear the appropriate protective equipment. (Helmet, gloves and safety footwear).
- ➡ Do not stand underneath suspended loads.
- ➡ Maintain an orderly installation location and avoid danger from impact and tripping points.

– Observe the dimensions for screwing the system to the floor space:

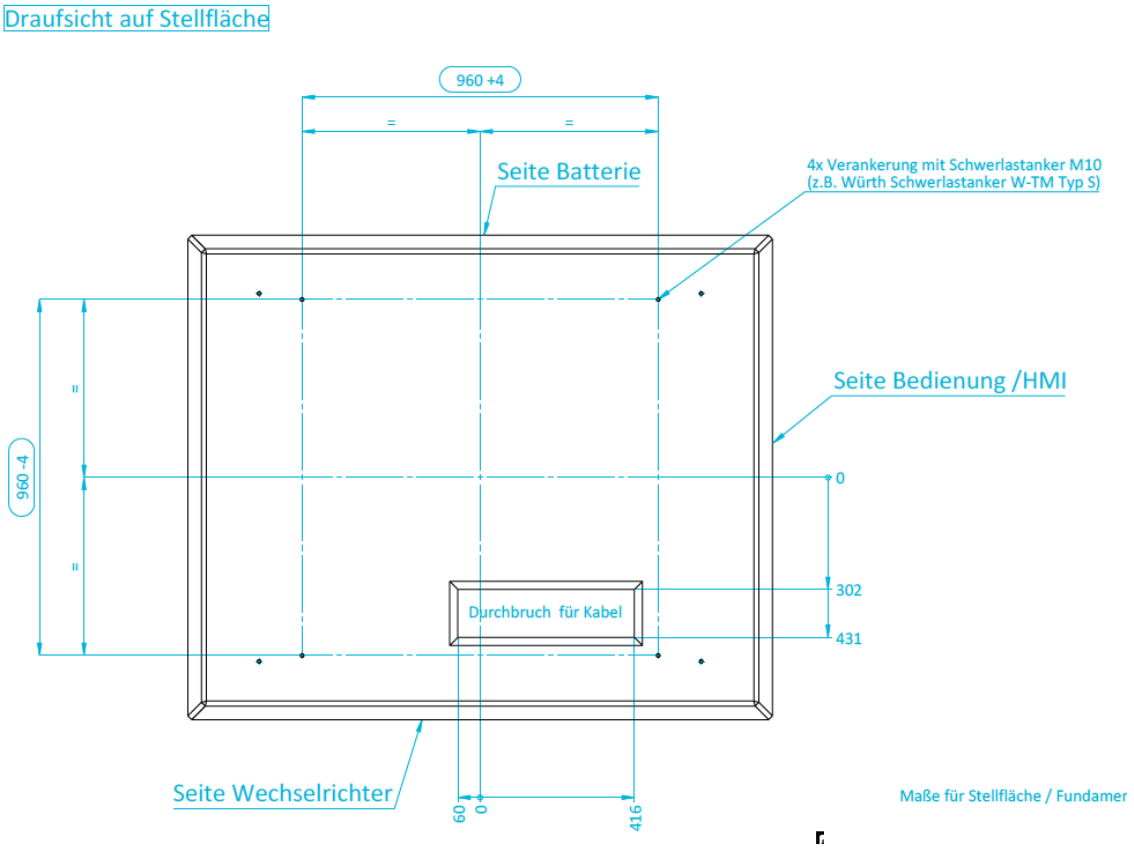


FIGURE 13: DIMENSIONS FOR SCREW CONNECTION TO FLOOR SPACE/FOUNDATION (DETAIL FROM CONSTRUCTION DRAWING)

Located on the bottom of the system are recesses for screwing to the floor.

– Screw the system securely to the prepared floor space in accordance with the drawing view.

– Use screws and anchors suitable for the substrate (not necessary when using the CPT prefabricated foundation from ADS-TEC).

Recommendation: Use M10 screws, anchors with min. length of 50 mm and matching washers.

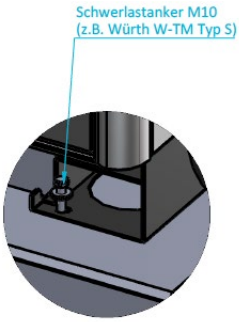
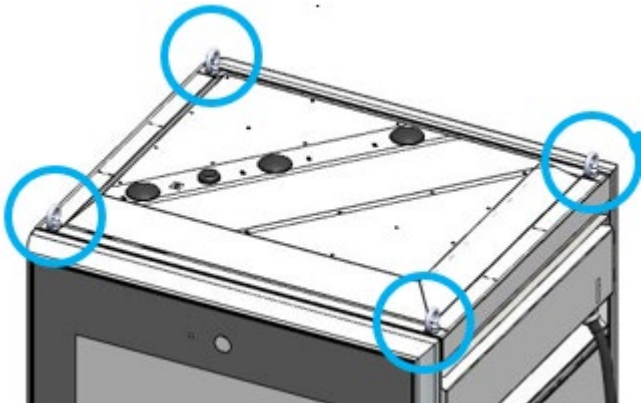


FIGURE 14: SCREW CONNECTION IN DETAIL (DETAIL FROM CONSTRUCTION DRAWING)

– Leave the eye bolts on the system. There is also the option to replace the eye bolts with the special screws included (in planning).



8.2 Documenting and approving assembly on the foundation

– Document the assembly in the document "Transport and assembly" (checklist in the appendix) and have the work confirmed by the operating company
(➲ *document "Transport and assembly – preliminary information"*).

– If all assembly tasks have been completed:

  The electrical installation can be carried out.

– If not all assembly tasks have been completed:

  Repair all defects before carrying out the electrical installation.

9 Installation of the electrical connections

NOTE

Observe qualifications.

➡ The fast charging system may be installed only by qualified electricians who have received the relevant product training!

NOTE

Observe the safety instructions!

➡ Observe the safety instructions (➲ 2 Safety)

NOTE

Observe personal protective equipment!

➡ Wear gloves.
➡ Wear safety footwear.
➡ Wear personal protective equipment.

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.

➡ Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
➡ 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.
➡ After opening the display door on the inverter side, set the main switch to the **OFF** position.
➡ After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
➡ Observe a waiting period of 10 minutes to reliably exclude residual voltages.
➡ Before making any changes to the interior, check that the fan has stopped.
➡ Lock the system to prevent access by unauthorized persons.

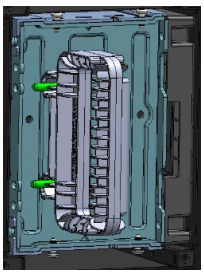
9.1 Tool list

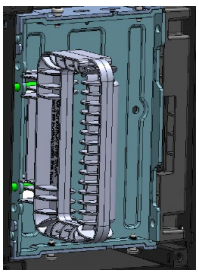
Transport / assembly / installation

- Lifting device with sufficient lifting height (>4.5 m) and load capacity (min. 5 t)
- Lifting chains or slings
- Folding ladder with a height of at least 2.5 m
- Tool for securing to foundation
  - 4 x threaded bolts M10
  - 4 x anchors, suitable for the substrate
  - Ratchet spanner WAF17 or ratchet
  - Impact drill
  - Ring spanner or ratchet spanner WAF19 for connecting M12 foundation earth electrode
- Allen key 6 mm Terminals
- Voltmeter DUSPOL
- Torx 30 EMC panel
- Torx 40 EMC panel
- Open-end spanner WAF30 For tightening AC cable glands
- Pipe spanner For tightening AC cable glands
- Cable end sleeves (provided at the installation location) Suitable for diameter of AC supply lines
- Crimping pliers for cable end sleeves Cable end sleeves for AC supply lines
- Small flat-tip screwdriver Disassembly/assembly of IRF
- Torch For checking coolant level

Installing / uninstalling the battery:

- Torx 25 — Covers left + right
- Battery extraction tool (positioned top right in battery rack) — To remove battery, insert the pins marked green to the left into the opening in the battery module





Position of battery extraction tool for removal:

Using battery extraction tool:

Service work:

- Torx 30 — Cover plate, EMC plate
- Torx 40 — EMC plate, air-conditioning system retainer
- Open-end spanner WAF30 — For tightening AC cable glands
- Pipe spanner — For tightening AC cable glands
- Large flat-tip screwdriver

9.2 Preparatory and final activities

CAUTION

Risk of system failure due to humidity!

Humidity in the system can lead to system failure.

- ➡ Always make sure that the system is dry before closing the display door.
- ➡ Any water outside the tanks can cause the system to be blocked by the installed sensor system in order to protect the electrical components.

WARNING

Risk of crushing!

Crushing of hands, arms and other limbs may occur when opening and closing the display door if the following rules are not followed. These can lead to serious injuries.

- ➡ Only open the display door when there is no wind or in light wind without gusts up to wind force 2 (max. 12 km/h).
- ➡ Comply with the sequence of the opening and closing procedure.

9.2.1 Opening the display door

FIGURE 15: OPENING KEY FLAP

1 Open the cover.

2 Turn the key clockwise
→ The lever moves outwards.

FIGURE 16: TURNING LEVER BY 180°

3 Turn the lever by 180°
→ The lock releases and the display door opens.

NOTE:

Hold the display door to prevent uncontrolled opening.

4 Open the display door in a controlled manner as far as the stopper.

NOTE:

This procedure applies to both the front and rear display door.

9.2.2 Closing the display door

FIGURE 17: ARRESTER HOOK IN POSITION

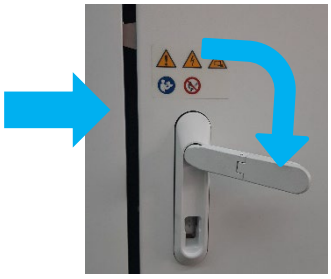


FIGURE 18: DISPLAY DOOR FIXED IN POSITION BY ARRESTER HOOKS

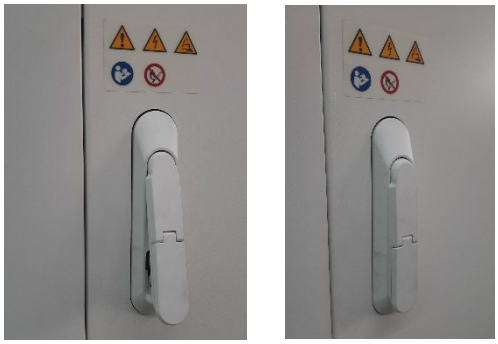


FIGURE 19: DOOR LEVER IN VERTICAL POSITION

1. Close the display door in a controlled manner until just before the arrester hook (gap of approx. 3 cm).

   NOTE:

   Hold the display door to prevent uncontrolled reopening.
2. Turn the lever upwards by 180°.
   → The three arrester hooks move into position.
3. Close the display door completely.
4. Turn the lever 90° clockwise.
   → The three arrester hooks fix the display door in position.
5. Turn the lever downwards until it is vertical.
   → The display door is locked.
6. Push the lever inwards to its original position.
7. Remove the key.
8. Close the cover.

   NOTE:

   This procedure applies to both display doors.

9.2.3 Detaching the cover plate (base covering)

FIGURE 20: REMOVING SCREWS OF BASE COVERING

1 Undo and remove 4x M6x10 screws
(2x on each side at top).

FIGURE 21: FOLDING DOWN BASE COVERING

2 Fold down the base covering.

3 Remove the earthing cable from the base covering if the base covering is to be removed completely.

NOTE:
The procedure applies to both the front base covering and the rear base covering.

9.2.4 Attaching the cover plate (base covering)

FIGURE 22: FOLDING UP BASE COVERING

1 Attach the earthing cable to the base covering if the base covering was removed completely and the earthing cable was detached.

2 Fold up the base covering.

FIGURE 23: INSTALLING SCREWS OF BASE COVERING

3 Install 4x M6x10 screws.

NOTE:
The procedure applies to both the front base covering and the rear base covering.

9.2.5 Removing the cover plate from the main switch

FIGURE 24: DETACHING COVER PLATE FROM MAIN SWITCH

Check that the external voltage supply is switched off before continuing.

1 Undo and remove 2x Torx40 screws and the two contact washers at the bottom.

2 Undo and remove 2x Torx30 screws and the two contact washers at the top.

3 Detach the earthing cable at the bottom left and remove the cover plate.

9.2.6 Attaching the cover plate to the main switch

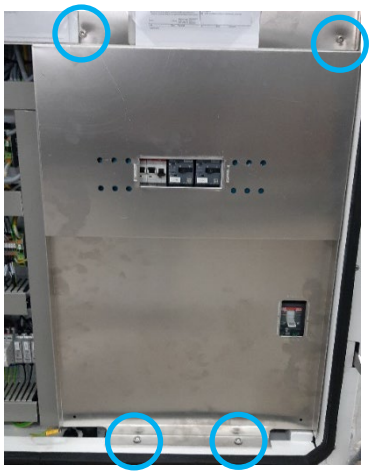


FIGURE 25: ATTACHING COVER PLATE TO MAIN SWITCH

Check that the external voltage supply is switched off before continuing.

1. Attach the cover plate and connect the earthing cable at the bottom left.
2. Install 2x Torx30 screws and the two contact washers at the top.
3. Install 2x Torx40 screws and the two contact washers at the bottom.

9.3 Electrical connection

NOTE

Observe qualifications.

- All electrical connection work may be performed only by qualified electricians who have received the relevant product training!
- The installation may be performed only by the ADS-TEC service team or optionally via the service HMI.
- Follow the electrical diagram documentation for all electrical connections.
- Observe the electrical connection sequence given in the following chapters.

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.

- Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- 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.
- After opening the display door on the inverter side, set the main switch to the **OFF** position.
- After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- Before making any changes to the interior, check that the fan has stopped.
- Lock the system to prevent access by unauthorized persons.

NOTE

Take connection characteristics into consideration.

- The backup fuse and supply lines must be dimensioned according to the connection characteristics.
- Observe the corresponding information given in the electrical diagram documentation
  (➲ 18.6 Detail from electrical diagram).

9.3.1 Cable feed-through from outside (customer side)

Cable feed-throughs and the earth connection are made on the inverter side at the bottom at the base.

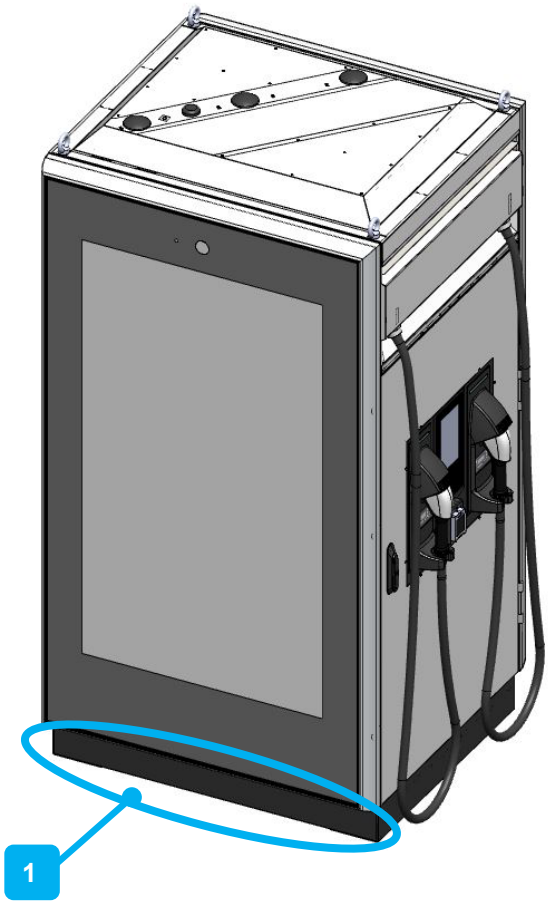


FIGURE 26: POSITION OF CABLE GLANDS AND EARTH CONNECTION

1 Open the display door on the inverter side (➲ *9.3.1 Opening the display door*).

2 Remove the base covering (➲ *0 Detaching the cover plate (base* **covering)**).

3 Remove the cover plate from the main switch (➲ *9.3.5 Removing the cover plate from the main switch*)

1 Base covering on inverter side

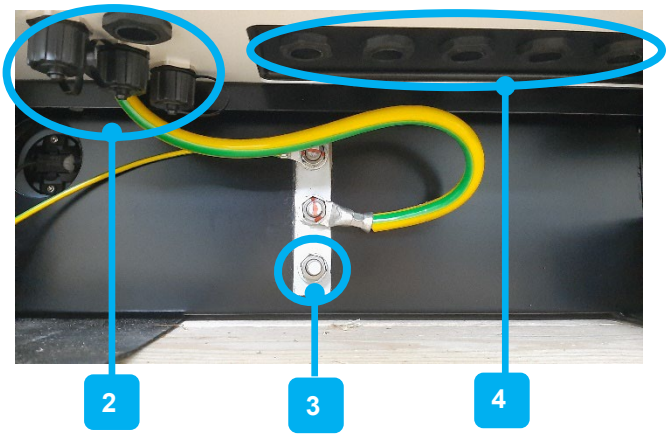


FIGURE 27: EARTH CONNECTION AND CABLE FEED-THROUGHS FROM OUTSIDE

Area for cable feed-throughs and earth connection

2 Bushings for communication lines

3 Connection (bottom) for foundation earth electrode

4 Bushings for AC supply lines

9.3.2 Earth connection

NOTE

Observe the earth connection.

- The housing system must be properly earthed using an earthing cable at the marked position (➲ 18.6 Detail from electrical diagram).
- The earth connection is made via a foundation earth electrode, which must be installed according to local/country-specific conditions and regulations.
- The device includes interference suppressor filters with increased earth leakage currents. Ensure that the earthing cable has at least half the cross section of a phase conductor.

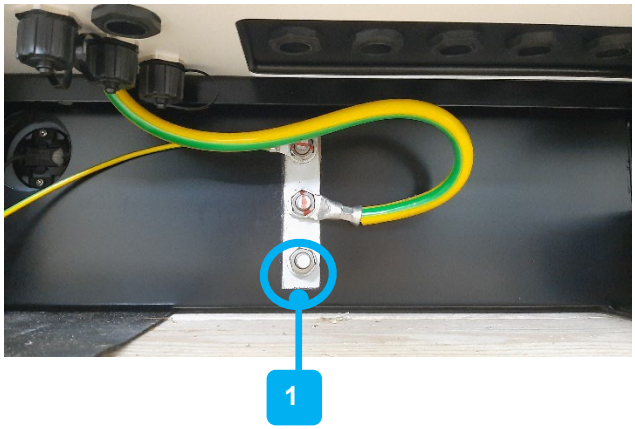


FIGURE 28: CONNECTING THE FOUNDATION EARTH ELECTRODE

Follow the electrical diagram for all electrical connections.

1 Earth connection

1 Make a standard-compliant earth connection with min. 16 mm² in accordance with local regulations and circumstances. (➲ *Electrical diagram).*

2 Remove the contact washers and the nut from the lower of the 3 bolts.

3 Securely connect the earthing cable together with the contact washers and M12 nut.

9.3.3 AC power connection

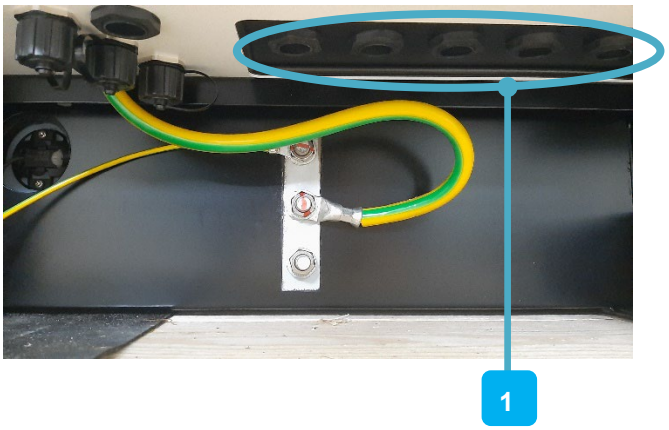


FIGURE 29: ROUTING AC POWER CABLES

Follow the electrical diagram for all electrical connections.

INFO:

To make routing easier, use highly flexible AC cable lines (provided at the installation location).

Pay attention to the cable cross section of the 5-wire AC supply line specified in the electrical diagram (➲ *Electrical diagram*).

1 5 wires of AC supply line

1 Attach suitable cable end sleeves to the 5 wires of the AC supply line (provided at the installation location).

2 Feed the 5 wires of the AC supply line (from left to right: L1, L2, L3, N, PE) correctly from outside through the PG cable glands:

- Open the cable screw connection.
- Remove the black inner part.
- Depending on the cable thickness, also remove the inner blue ring.
- Feed the cable through.
- Keep the removed parts in a safe place.
- Tighten PG cable glands using an open-end spanner and pipe spanner.

NOTE:

It is essential to keep the inner parts in order to seal the PG cable gland again if the cable is removed at a later time.

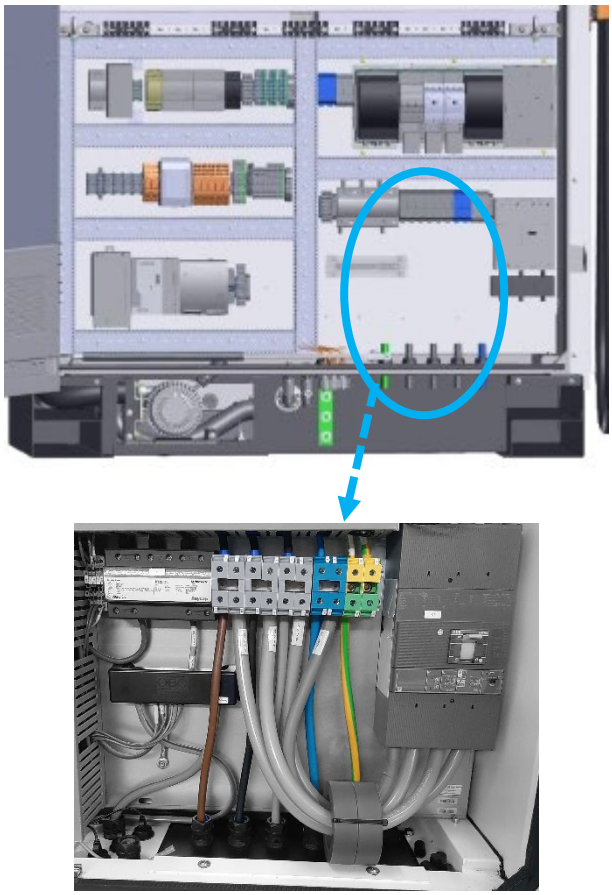


FIGURE 30: CONNECTING THE AC POWER CABLE

.

3 Connect the wires of the AC supply line to the left of each AC terminal (torque 10 Nm).

Observe the sequence of the supply lines:

(from left to right)

L1 – L2 – L3, N, PE

4 Connect the external power supply.

5 Check the clockwise rotation by means of a rotary field test from L1 to L2 and from L2 to L3.

NOTE:

If the L1, L2 and L3 sequence is incorrect, the inverters will not work and the air-conditioning system may become damaged!

6 Disconnect the external power supply.

7 Check that all seals of the supply lines and cable glands are undamaged and are seated correctly.

9.3.4 Communication port

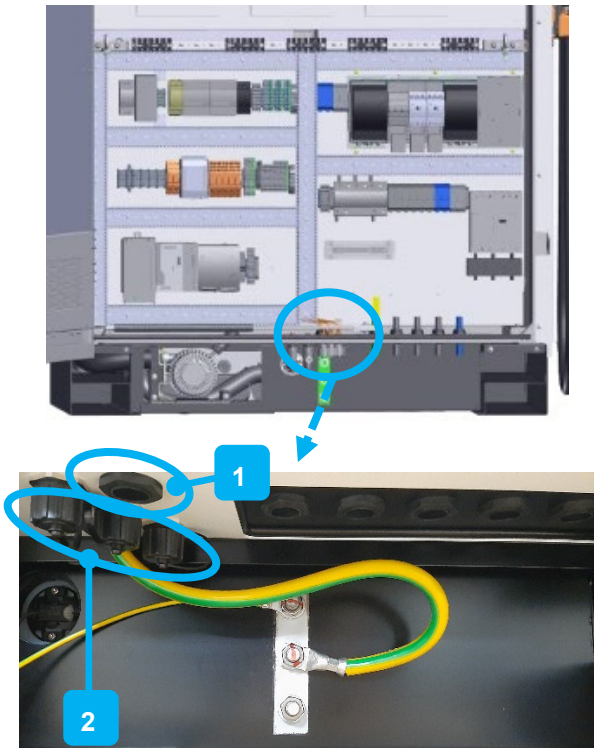


FIGURE 31: POSITION OF CONNECTIONS FOR EXTERNAL COMMUNICATION LINES

Follow the electrical diagram for all electrical connections.

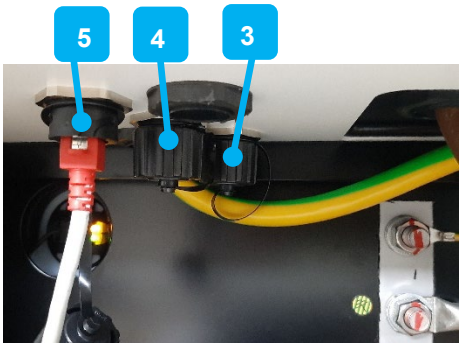
1 Two cable glands for I/O signals (permanently installed)

2 Three cable glands for communication lines

1 Optional/customer-specific: Feed a PLC customer interface through at the position provided and connect this interface.

NOTE:

Install the cable connections correctly.



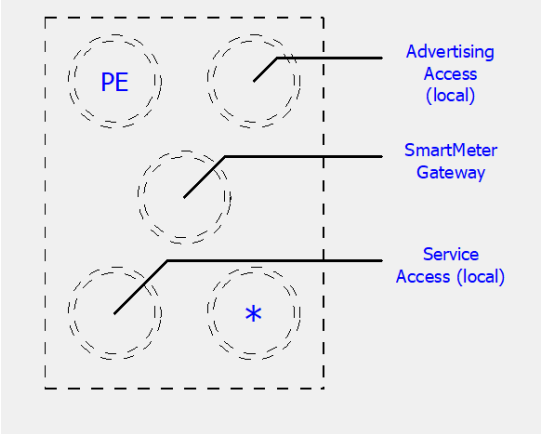


FIGURE 32: CONNECTING COMMUNICATION LINES

2 Connect the network cables as follows:

3 Connect the communication line to the advertising displays to "Advertising Access".

4 Plug in the communication line for the OCPP back-end at "Smart Meter Gateway (Customer)".

5 Optionally for service purpose, connect the LAN communication line to "Service".

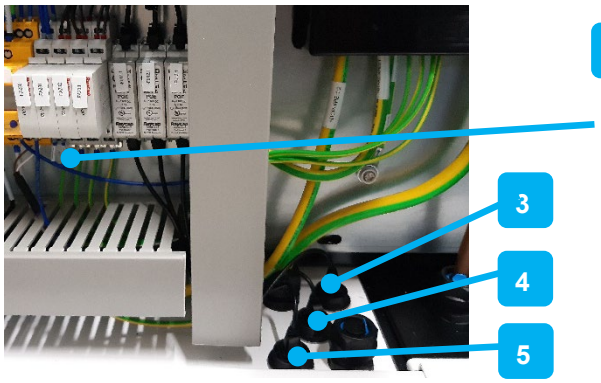


FIGURE 33: INTERNAL COMMUNICATION LINES – PREINSTALLED

NOTE:

6 Do not remove the two blue cable bridges (optionally prepared for customer-specific applications).

NOTE:

The internal cables are installed ex factory.

9.4 Installation of battery modules

NOTE

Observe qualifications.

- Battery modules may be installed only by qualified electricians who have received the relevant product training!
- The installation may be performed only by the ADS-TEC service team or optionally via the service HMI.
- Follow the electrical diagram documentation for all electrical connections.
- Observe the electrical connection sequence given in the following chapters.

It is essential that the hazard information is observed during the initial installation according to the progress of the installation.

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.

- Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- 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.
- After opening the display door on the inverter side, set the main switch to the **OFF** position.
- After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- Before making any changes to the interior, check that the fan has stopped.

WARNING

Hazard from heavy loads!

The heavy battery modules (approx. 24 kg per module) can cause serious injuries if they are dropped or slip.

- Risk of crushing injuries to parts of the body, e.g. feet, caused by falling loads.
- There is a risk of crushing injuries to parts of the body caused by loads being dropped or slipping during installation.

CAUTION

Hazard due to damaged battery modules!

If battery modules fall down, they can be damaged and must be replaced**.**

- Installation of a dropped battery module is not permitted.
- Replace the dropped battery module according to the following instructions
  ➲ (2.6.2 Transportation of defective or damaged lithium-ion batteries).
- Battery modules must be installed on the day of commissioning
  ➲ 7.3 Acclimatising the battery modules to the outside temperature.

WARNING

Risk of crushing!

Crushing of hands, arms and other limbs may occur when opening and closing the display door if the following rules are not followed. These can lead to serious injuries.

- ➡ Only open the display door when there is no wind or in light wind without gusts up to wind force 2 (max. 12 km/h).
- ➡ Furthermore, a tent/windbreak must be built around, which limits the wind load to wind force 2.
- ➡ Comply with the sequence of the opening and closing procedure.

9.4.1 Checking system shutdown

Observe the following safety instructions when performing electrical connection work:

DANGER

Risk of death due to electric shock!

The AC supply must be switched off before any work is performed on the system, otherwise a potentially fatal electric shock can occur.

- ➡ Comply with national and international safety rules and regulations for working on electrical systems.
- ➡ 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.
- ➡ After opening the display door on the inverter side, check that the main switch is in the **OFF** position (see ➲ below).
- ➡ After opening the display door on the battery side, check that both SRC4 key switches are in the **OFF** position to ensure that the DC circuit is disconnected.

FIGURE 34: MAIN SWITCH IN "OFF" POSITION

1. Open the display door on the inverter side (➲ *9.3.1 Opening the display door)*.
2. Check that the main switch is in the "OFF" position.

FIGURE 35: SRC4 KEY SWITCH IN "OFF" POSITION

3. Open the display door on the battery side (➲ *9.3.1 Opening the display door)*.
4. Check that both SRC4 key switches are in the OFF position.

9.4.2 Removing the cover plate

1 Remove the PE connections at the top of the cover plate.

2 Detach the cover plate by undoing and removing 32x M5x10 Torx 25 screws (only right cover plate in figure).

3 Remove the cover plate

9.4.3 Installation of battery modules

NOTE

Do not swap battery modules from left to right!

➡ Do not swap battery modules from the left string to the right string because the charge states of the individual battery modules within a string are matched to each other.

NOTE

Insert battery modules securely!

➡ Insert the battery module about 80%.
➡ Then carefully push in the remaining 20% of the battery module until it connects with the contact plate on the rear side. This makes the electrical contacts.
➡ After inserting all modules, check again that all modules have correct contact. Contact with the contact plate must be ensured.
➡ To interrupt the DC circuit during installation, on the left and right strings, insert battery modules 1 and 21 only until they are approx. 10 cm from the rear wall (➲*Step 5: 9.5.3 Installation of battery modules)*.

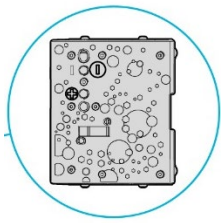


FIGURE 36: BATTERY MODULE CONNECTIONS (EXEMPLARY FIGURE)

FIGURE 37: INSTALLATION POSITION OF BATTERY MODULE

1. Carefully remove the battery module from the packaging.

   Keep the packaging as it can be used to safely return the battery module, should this be necessary.

2. Before installing each battery module, ensure that the rear connections are undamaged.

Note:

Before installing, make sure that the position of the battery module corresponds to the figure.
The black plastic cover is on the right (arrow) and the type label is upside down.

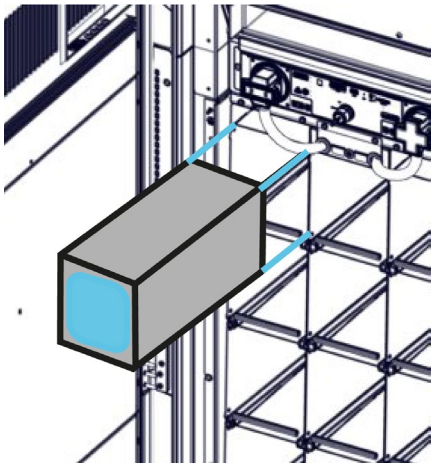


FIGURE 38: BATTERY MODULE INSTALLATION - 1 (EXEMPLARY FIGURE)

3 ➡ Insert the first battery module roughly 80% of the way into the left string. Rotate the battery module slightly to make insertion easier.
➡ Recommendation:
➡ Due to their heavy weight, install the battery modules within a string from bottom to top.

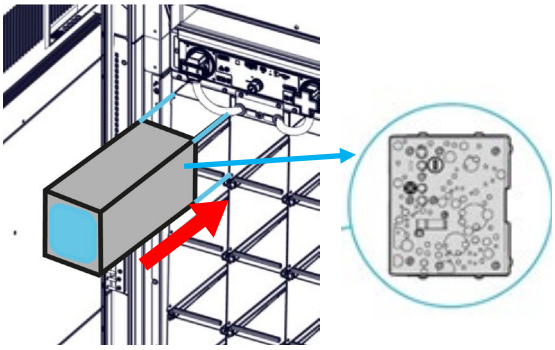


FIGURE 39: BATTERY MODULE INSTALLATION - 2 (EXEMPLARY FIGURE)

4 ➡ Then carefully push in the remaining 20% of the battery module until it connects with the contact plate on the rear side. This makes the electrical contacts.

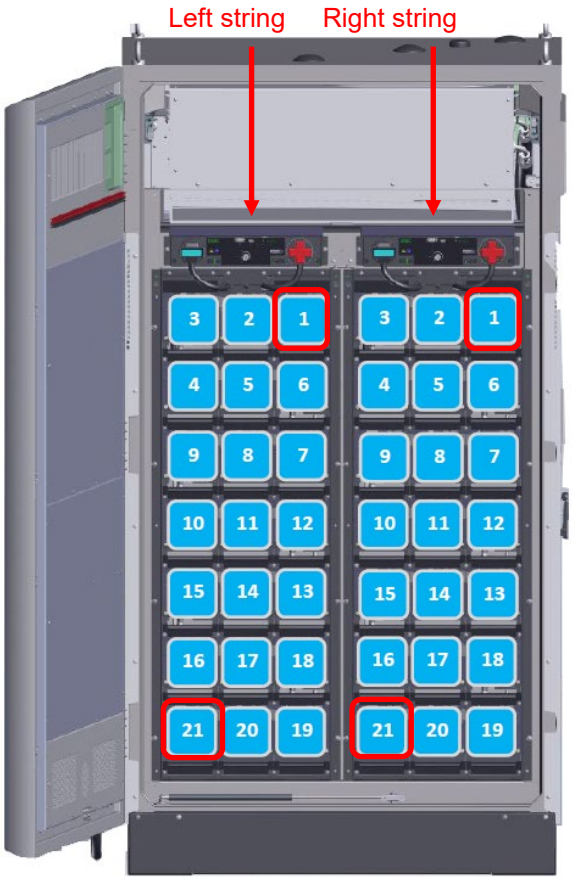


FIGURE 40: BATTERY MODULE INSTALLATION – 3 (EXEMPLARY FIGURE)

5 During installation, it is essential that modules **1** and **21** are not fully inserted; instead, they should be positioned 10 cm from the rear wall (for each string, left and right).
INFO: This increases safety by interrupting the DC circuit.

6 Insert all other battery modules into the left string.

7 Insert all other battery modules into the right string.

8 After inserting all modules, check again that all modules have correct contact. Contact with the contact plate must be ensured.

9 Separately for each string, insert battery modules 1 and 21 and check for correct electrical functionality.

9.4.4 Reattaching the cover plate

1 Attach the cover plate using 32x M5x10 Torx 25 screws (only right cover plate in figure).

2 Attach the PE connections at the top of the cover plate.

9.5 Completing installation

9.5.1 Checking the fluid level and leak tightness of the cooling circuit

FIGURE 41: COOLANT LEVEL OF THE AIR-CONDITIONING SYSTEM

1 Fold down the base covering on the battery side

2 To complete installation, check the fluid level of the air-conditioning system.

3 Top up the fluid if necessary (attachment: *Maintenance manual*).

NOTE:

The fluid level should be just below the maximum mark.

A torch is needed to see the fluid level.

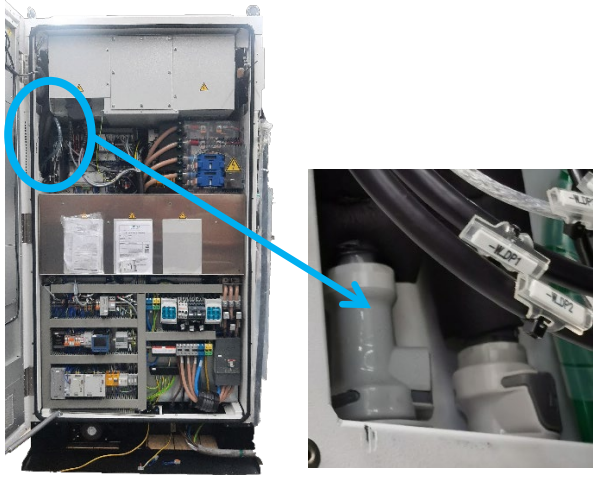


FIGURE 42: CHECKING COOLING HOSES (INVERTER SIDE)

4 To complete installation, check the cooling hoses inside on the inverter side for leaks. There must not be any coolant on the cooling hoses.

FIGURE 43: CHECKING BASE AREA FOR MOISTURE (INVERTER SIDE)

5 On the inverter side, check the base area/floor pan inside for fluid.

9.5.2 Attaching the base covering (cover plate)

FIGURE 44: ATTACHING AND FOLDING UP BASE COVERING

6 Attach the base covering on the inverter side. (➲ 9.3.4 **Attaching the cover plate (base covering)**).

7 Make sure that the earthing cable is attached to the base covering.

8 Check that the installed cables cannot be crushed when the door is closed.

9 Fold up the base covering and screw it on securely.

9.5.3 Final activities

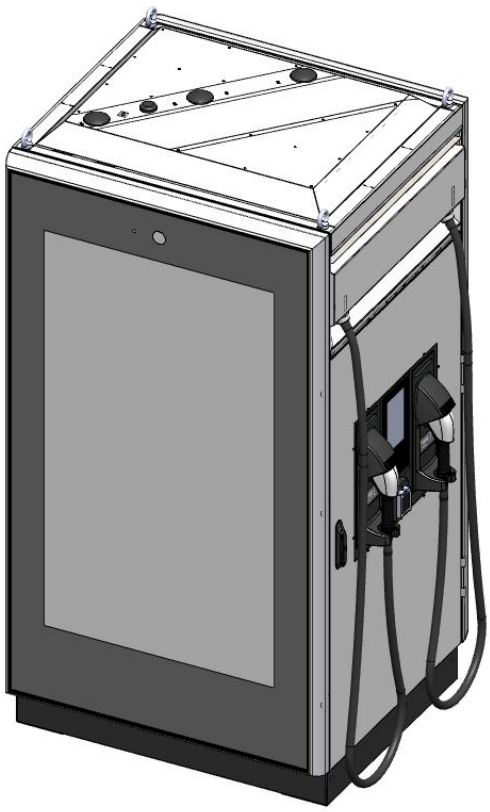


FIGURE 45: FINAL ACTIVITIES

Check that the external voltage supply is switched off before continuing.

10 Attach the cover plate to the main switch (➲ 9.3.6*).*

11 Attach the cover plates of the batteries (➲ *9.5.2).*

12 Set the SRC4 key switches to the ON position.

13 Check that the door seals are undamaged and seated correctly.

14 Close the door on the battery side (➲ *9.3.2 Closing the display door*).

NOTE:

Closing the doors activates the door contact switches. The system can now be commissioned.

15 Document installation in a separate protocol and send it signed to the manufacturer. (*Attachment: CPT_installation_commissioning_checklist*)

10 Commissioning

NOTE

Observe qualifications.

- Commissioning may be performed only by qualified electricians who have received the relevant product training.
- Commissioning may be performed only by the ADS-TEC service team or optionally via the service HMI.

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.

- Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- 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.
- After opening the display door on the inverter side, set the main switch to the **OFF** position.
- After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- Before making any changes to the interior, check that the fan has stopped.
- Lock the system to prevent access by unauthorized persons.

10.1 Inserting the SIM cards

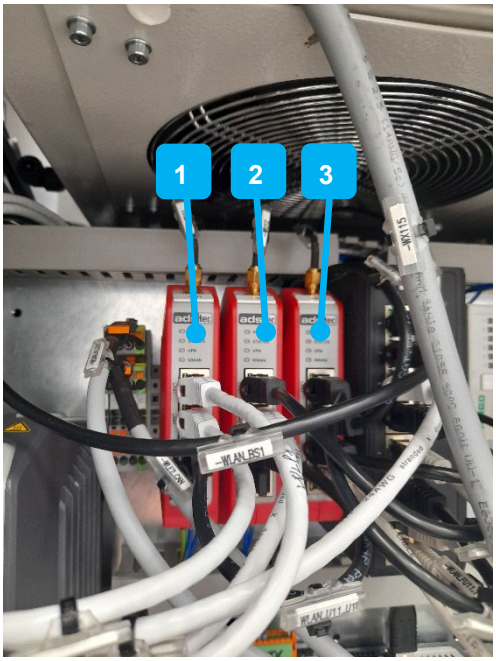


FIGURE 46: ASSIGNING SIM CARDS

1 For a network connection via mobile communications, provide three enabled SIM cards for the three Industrial Router Firewalls (IRFs).

SIM card properties:

Format:

- ID-000 format according to ISO 7816 (25x15 mm).

Properties:

- SIM card 1 (OCPP): Via backend provider
- SIM card 2 (Big-LinX): M2M card, VPN enabled, recommended data volume 3 GB or higher.
- SIM card 3 (advertising): Recommended data volume 3 GB or higher with frequent advertising updates.

1 Left: IRF-U11 for OCPP backend.

2 Centre: IRF-U12 for Big-LinX Energy.

3 Right: IRF-U13 for advertising and remote access to the IPC.

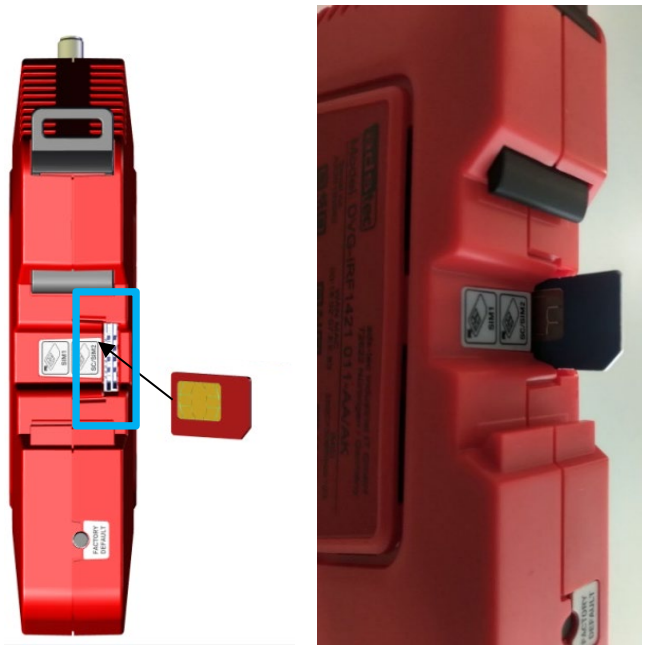


FIGURE 47: INSERTING SIM CARDS INTO THE REAR SIDE OF THE ROUTER

2 On the rear side of each of the three routers, insert the appropriate SIM card into the slot in the direction of the device centre of the double slot. The slanted edge should be positioned at the bottom.

Note:

The respective SIM card data is configured after the system start (➲ *10.3 Configuring the SIM cards)*.

10.2 System start

FIGURE 48: MAIN SWITCH "OFF"

1 Make sure that the main switch is set to "OFF".

2 Connect the external power supply.

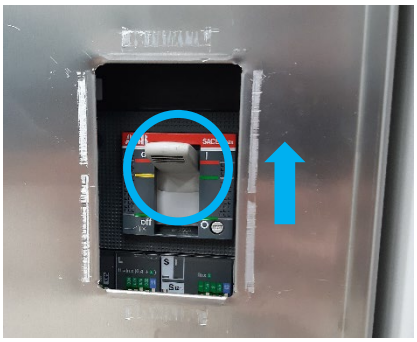


FIGURE 49: MAIN SWITCH "ON"

3 Switch on the main switch by pulling the lever firmly upwards.

NOTE: The indicator lamps on the power adapter and on the IT unit light up.

-Air conditioner switches on

-Displays switch on

-Video player starts

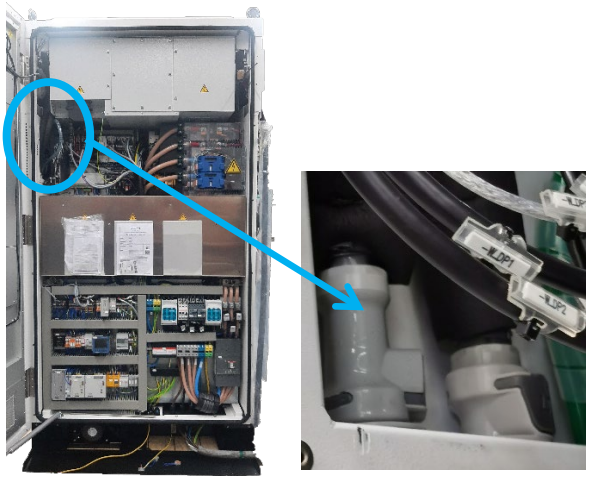


FIGURE 50: CHECKING COOLING HOSES (INVERTER SIDE)

4 After system start (= pump running), check the cooling hoses inside again for leaks. There must not be any coolant on the cooling hoses.

FIGURE 51: CHECKING BASE AREA FOR MOISTURE (INVERTER SIDE)

5 Check the base area/floor pan inside for fluid.

6 Check that all seals of the supply lines and cable glands are undamaged and are seated correctly.

7 Check that the door seals are undamaged and seated correctly.

8 Attach the base covering on the inverter side (➲ 9.3.4)

9 Close the display door slowly and make sure that the handle engages (➲ *9.3.2 Closing the display door*).

10.3 Configuring the SIM cards

The configuration of the three inserted SIM cards is carried out after the system start via the service HMI (➲ *CPT_service_HMI*), optionally by the ADS-TEC service team during commissioning.

10.4 Configuring Internet access of the Windows PC (IPC)

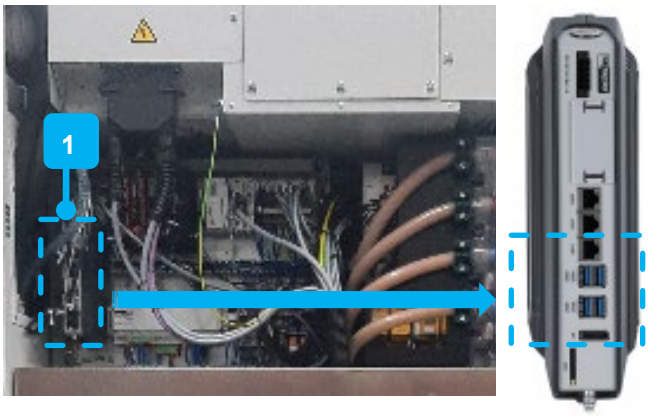


FIGURE 52: CONNECTING NOTEBOOK WITH COMMUNICATION LINE

1 IPC9000 (Industrial PC on Windows layer)

1 Connect a keyboard and mouse to the IPC via a USB hub.

The input data then appears on the 75" displays.

2 The IPC is preset with the IP address 172.17.103.90 for communicating with the Industrial Router Firewall (IRF).

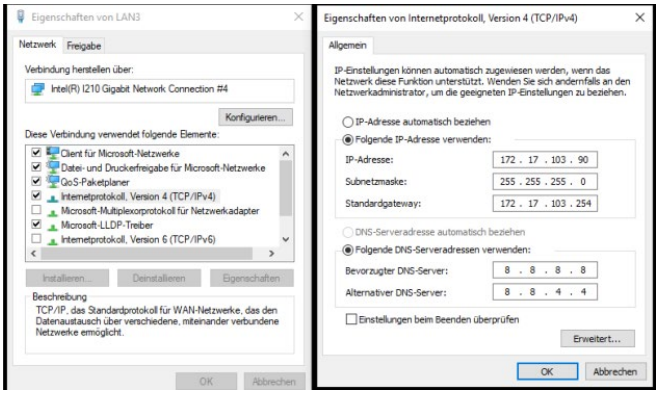


Figure 53: Filling in the network settings on the IPC

3 Fill in the network settings as follows:

Default gateway: 172.17.103.254

DNS: 8.8.8.8

Alternative DNS: 8.8.4.4

4 The system can now communicate with the Internet via the IPC.

Via the website, a CMS (Content Management System) can be installed.

10.5 Loading videos on advertising displays

FIGURE 54: PROVIDING VIDEOS FOR ADVERTISING DISPLAY

INFO:

Upon delivery, the system is preconfigured with a selection of continuous videos.

INFO:

Upon request, the ADS-TEC service team can load your own video selection during commissioning. Please have it ready on a USB stick.

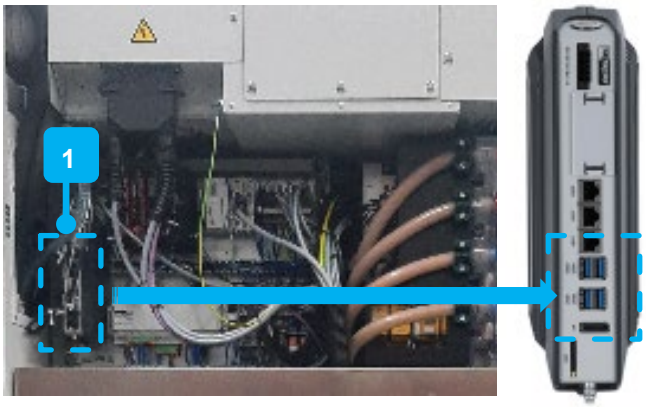


FIGURE 55: LOADING VIDEOS VIA USB

1 IPC9000 (Industrial PC on Windows layer)

Loading of your own video selection (all commonly used video formats) via the Internet or directly on the system via USB stick.

1 Establish the connection to your video selection via the Internet (➲ 10.4 *Configuring Internet access of the Windows PC (IPC)*) or insert a USB stick with your video selection on it directly into the IPC (Windows PC).

2 Open the "VIDEO" folder.

3 Stop the VLC player (in the "VIDEO" folder).

4 Copy the desired videos into the "VIDEO" folder.

5 If necessary, remove any undesired videos.

6 Restart the VLC player.

The new videos are available.

7 Close the doors

Additional information for playing videos

- Avoid still images. Max. 5 min. A moving image must then be shown for at least 10 s.
- Avoid 24-hour operation. Regular OFF phases or at least screen saver.
- Colour selection and contrasts: Avoid hard contrasts, preferably soft, smooth transitions.
  Change the colour schemes at regular intervals.

The following points also apply:

- At temperatures above the specifications, the backlighting switches off automatically.
- The reaction time of the display is temperature dependent.

NOTE

Device damage caused by still images.

Static image content (logos, lettering) can burn into the display.

➡ Do not display still images and static content for longer than 5 minutes at a time.

NOTE

Display faults

Failure to observe the operating temperature can result in display faults.

➡ Operation only permitted with air-conditioning system.
➡ If the display shows faults following a lengthy storage period at high or low temperatures, the display faults disappear as soon as the display reaches its normal operating temperature range again.

10.6 Login and software commissioning

NOTE

Observe qualifications.

➡ Login and software configuration are carried out only by the ADS-TEC service team or via the service HMI.

Once software configuration is complete, the system is ready for operation.

11 Operation

11.1 Charging process for electric vehicles

FIGURE 56: CHARGING PROCESS FOR ELECTRIC VEHICLES

Observe the user information on the charging process
(➲ *12 Charging electric vehicles (user information)*

11.2 Additional operating information

11.2.1 Conditions for system shutdown over a short period

The system is intended for continuous operation. The system including the installed components requires climate-controlled conditions and must not be shut down in an uncontrolled manner, otherwise components can be damaged and the warranty invalidated. Shutdown may only be performed following a specified procedure and sequence. Refer to the following chapters:

- Temporary storage of the system in switched-off state (➲ *6.3.3 Temporary storage of the fully equipped system outdoors (brief period only).*
- System shutdown and decommissioning (➲ *15 System shutdown and decommissioning*).
- Recommissioning in preparation for switching on again (➲ *10 Commissioning*)

CAUTION

Do not shut down the system in an uncontrolled manner!

Uncontrolled system shutdown can damage components.

➡ Follow the procedure and sequence defined for system shutdown.

12 Charging electric vehicles (user information)

CAUTION

Hazard from thick smoke and fire!

Smoking is prohibited, as failure to comply may result in smoke or fire.

➡ Smoking is prohibited at the installation location.

CAUTION

Risk of injury due to defective charging cables!

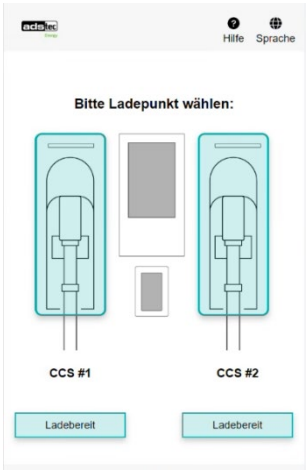
Do not use defective charging cables, otherwise heat generation and electric shock can occur.

➡ Before starting the charging process, check whether the charging cable exhibits any damage.
➡ If the charging cables are damaged, inform the operating company immediately.
➡ Never use defective charging cables.

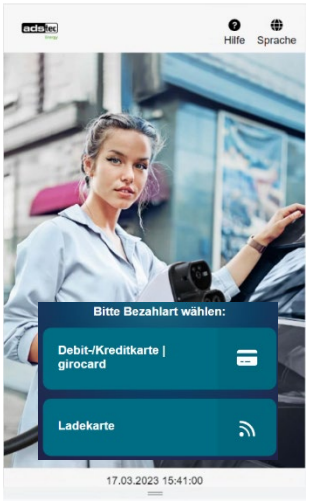
12.1 Charging process

12.1.1 Starting the charging process

1 Touch the display to activate it.

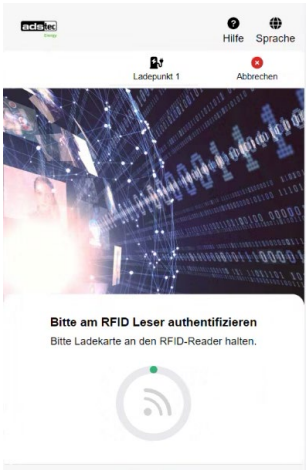


2 Select the desired charging point (left or right).



3 Select the desired payment method:
- Debit/credit card or girocard[3]
- Charging card

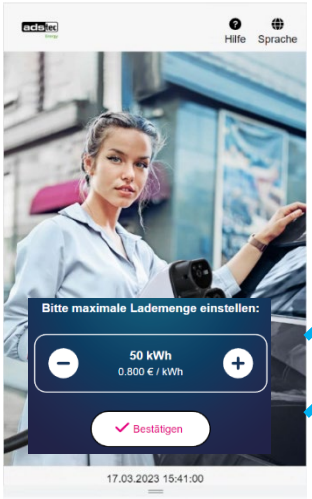
[3] Currently, ad-hoc charging is neither supported nor certified.



4 Authenticate yourself for the desired payment method:

4.1 Charging card:

Hold your charging card against the RFID reader below the HMI display. You then hear a "beep" and the status LED of the selected charging point flashes blue.

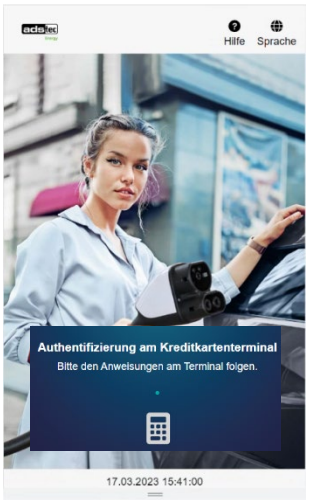


4.2 Credit card:

Set the maximum charge quantity in 10 kWh steps using the **–** and **+** buttons (at least 10 kWh, max. 150 kWh).[4]

Press the "Confirm" button.

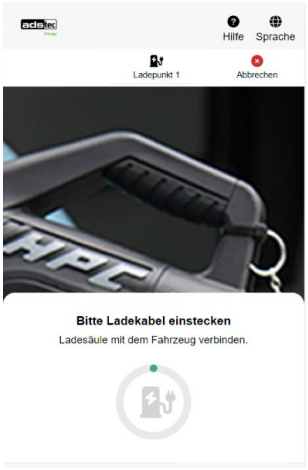
5 Follow the instructions on the credit card terminal.[5]



6 Take the charging connector out of the charging connector holder and plug it into the charging point on your vehicle.

[4] Currently, ad-hoc charging is neither supported nor certified.

[5] Currently, ad-hoc charging is neither supported nor certified.



7 Plug-in of the charging cable has been detected. Wait until communication setup has been completed. The status LED flashes blue during this procedure. Shortly before the end of communication setup, the status LED begins to flash faster.

8 Communication has been successfully set up and the status LED lights up blue. The charging process has been successfully started.

The screen shows information on the charging process.

NOTE

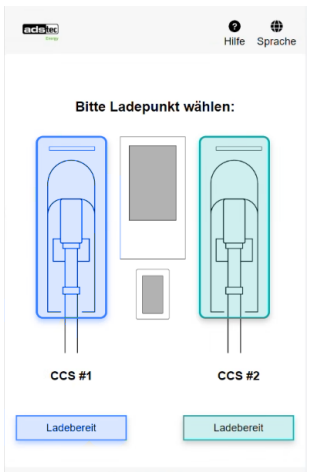
Re-authentication is required after two minutes.

➡ If the HMI display remains unused for two minutes, it returns to the start screen. Re-authentication is then necessary (➲ 12.1.2).

12.1.2 Re-authentication

If the HMI display remains unused for 2 minutes, it returns to the start screen. The view showing the charging process and associated information is locked.

1 Touch the display to activate it.



2 Select the charging point at which you are charging your vehicle.

3 Re-authenticate yourself for the previously selected payment method.

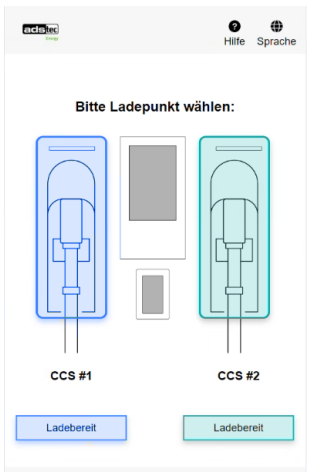
- Debit/credit card or girocard[6]
- Charging card

[6] Currently, ad-hoc charging is neither supported nor certified.

4 The screen shows information on the charging process.

12.1.3 Ending the charging process

1 Touch the display to activate it.



2 Select the charging point at which you are charging your vehicle.

–

3 Re-authenticate yourself for the previously selected payment method.

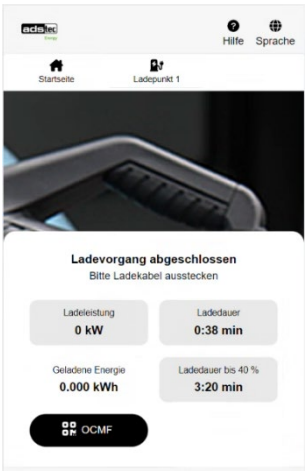
Debit/credit card or girocard

Charging card[7]

The screen shows information on the charging process.

Press the "End" button.

4 The "Stopping charging process" window is displayed and the status LED flashes green.



5 The charging process is complete and the status LED lights up green.

Pressing the "OCMF" button provides you with verification that the booked data has not been falsified.

Pressing the "Invoice" button displays a window containing a QR code.

6 Scan the QR code to access your invoice.

7 Unplug the charging connector from your vehicle and insert it into the charging connector holder on the charging terminal.

[7] Currently, ad-hoc charging is neither supported nor certified.

12.2 Displays during the charging process

12.2.1 Status LED

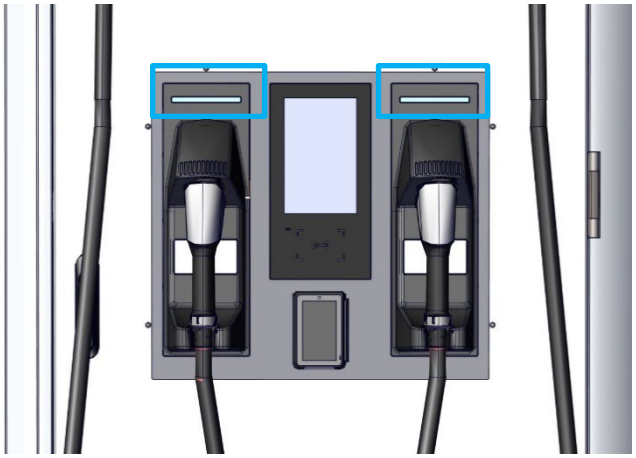


FIGURE 57: STATUS LED ON CHARGING TERMINAL

The status LED indicates the status separately for each charging point.

Symbol	Behaviour	Description
	Off	System is switched off
	Flashing	Charging process ending
	Static	Charging station ready for use
	Flashing	Communication setup between charging station and vehicle
	Static	Charging process
	Flashing	Charging process ended and fault
	Static	Charging point in fault state, charging process cannot be started

12.2.2 DC displays

FIGURE 58: DC DISPLAYS ON CHARGING TERMINAL

The DC displays are calibrated and indicate the correct consumption separately for each charging point.

13 Maintenance

Maintenance is described in the separate maintenance manual (attachment: *CPT_maintenance_manual*).

14 Service / repair

The service manual describes the repair of components and the exchange of replacement parts and is provided in a separate document (attachment: *CPT_service_manual*).

15 System shutdown and decommissioning

NOTE

Observe qualifications!

- All electrical work may only be performed by an electrician.
- Observe the decommissioning sequence given in the following chapters.
- Follow the electrical diagram documentation for all electrical connections.

NOTE

Observe personal protective equipment!

- Wear safety gloves.
- Wear safety shoes.
- Use your personal protective equipment.

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.

- Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- 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.
- After opening the display door on the inverter side, set the main switch to the **OFF** position.
- After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- Before making any changes to the interior, check that the fan has stopped.

CAUTION

Avoid tripping hazards!

- Ensure that no tripping hazards occur during installation, commissioning, operation, maintenance and decommissioning!
- Do not place objects in the immediate vicinity of the system.

15.1 Shutting down the system

1 Open the display door on the inverter side (➲ *9.3.1 Opening the display door).*

2 To shut down the Windows system (IPC), press the button indicated by the arrow once. The Windows operating system is shut down.

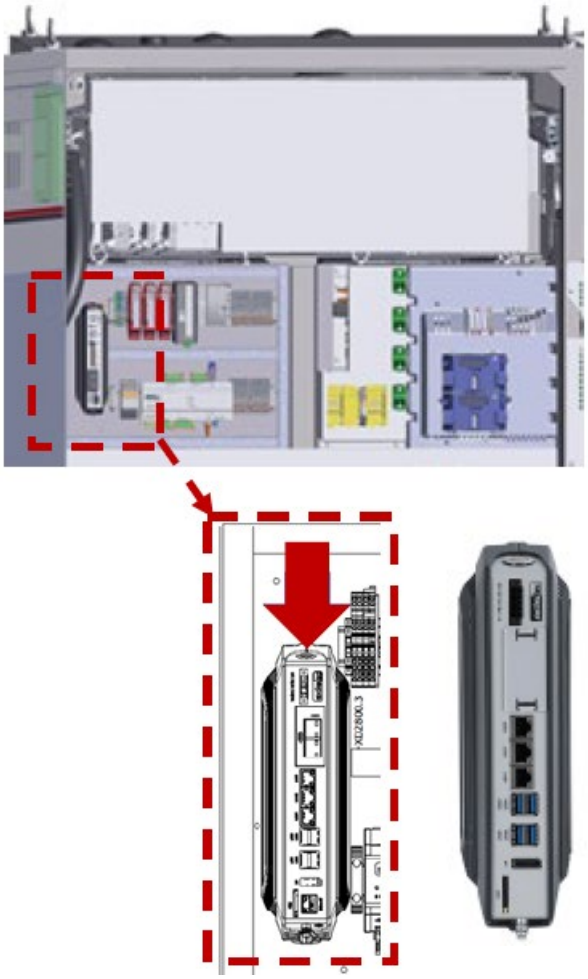


Figure 59: Shutting down IPC using button

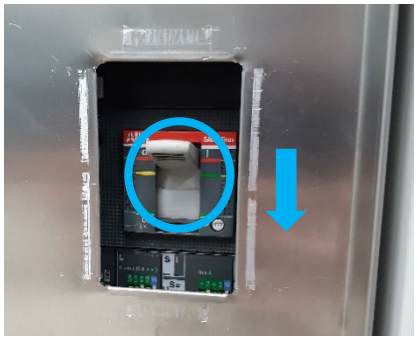


FIGURE 60: MAIN SWITCH "ON"

FIGURE 61: MAIN SWITCH "OFF"

2 Switch off the main switch by pulling the lever firmly downwards.

NOTE: The indicator lamps on the power adapter and on the IT unit switch off after the 24V supply buffer time has expired. Depending on the setting, the buffer time can be between 0.5 and approx. 20 minutes.

-Air conditioner switches off

-Displays switch off

3 Make sure that the main switch is set to "OFF".

4 Switch off the external AC power supply at the cabinet.

5 Remove the EMC plate (➲ 9.3.5 Removing the cover plate from the main switch)

6 Determine the absence of voltage at L1, L2, L3 against PE.

7 Open the display door on the battery side (➲ *9.3.1 Opening the display door)*.

8 Set both SRC4 key switches to the OFF position.

FIGURE 62: SRC4 KEY SWITCH IN "OFF" POSITION

When decommissioning/shutting down the system

Only if the system is to be recommissioned at a later time

9 Close both display doors (➲ *9.3.2 Closing the display door*).

Only if the system is to be recommissioned at a later time

10 Observe the information on temporary storage of the system (➲ *6.3.3 Temporary storage of the fully equipped system outdoors (brief period only)).*

During recommissioning

11 Start recommissioning (➲ *10 Commissioning).*

15.2 Decommissioning/shutting down the system

15.2.1 Preparing for disassembly

- Detach the front and rear base covering and the EMC plate.
- Remove all SIM cards (see also ➲ *10.1 Inserting the SIM cards*).
- Make sure that the system is de-energised
- Label all cable lines if they are to be reused.
- Remove the AC supply line (see also ➲ *9.4.3 AC power connection*)
- Remove the communication lines (see also ➲ *9.4.4 Communication port*)
- Remove the earthing cable to the foundation earth electrode (see also ➲ *9.4.2 Earth connection*)

15.2.2 Removing battery modules

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.

- ➡ Comply with national and international safety rules and regulations according to IEC 60364-6 (DIN VDE 0105-100) for working on electrical systems.
- ➡ 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.
- ➡ After opening the display door on the inverter side, set the main switch to the **OFF** position.
- ➡ After opening the display door on the battery side, move both SRC4 key switches to the **OFF** position to disconnect the DC circuit.
- ➡ Observe a waiting period of 10 minutes to reliably exclude residual voltages.
- ➡ Before making any changes to the interior, check that the fan has stopped.

WARNING

Risk of crushing

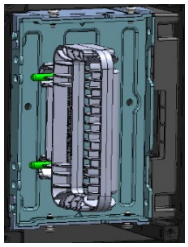
The heavy battery modules (approx. 25 kg per module) can cause serious injuries if dropped.

- ➡ Hazard due to falling loads.
- ➡ Risk of crushing the feet during installation.
- ➡ Wear safety footwear and rubberised gloves

NOTE

Observe the sequence for removing the battery modules!

➡ Remove the first and last battery modules first. It is recommended to use the battery extraction tool to pull out the first 20% of the battery length.



➡

Removing the battery covers

1. Make sure that the system is de-energised.
2. Detach the cover plate by undoing and removing 32x M5x10 Torx 25 screws (only right cover plate in figure).
3. Remove both covers.
4. Label all battery modules with string and installation number.

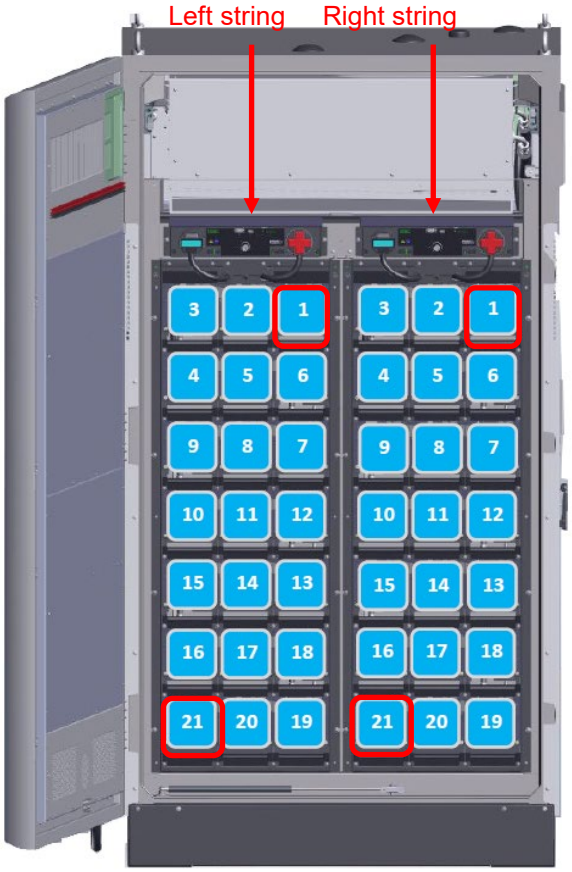


FIGURE 63: BATTERY MODULE INSTALLATION – 3 (EXEMPLARY FIGURE)

Removing battery modules

5 First remove battery modules **1** and **21** in the left and right string.

NOTE:

To do so, use the battery extraction tool

Remove all other battery modules.

6 Carefully set the battery modules down on a pallet. Protect the battery modules from rain and dust.

7

Packing and storing the battery modules

8 Pack each battery module in the original box. Follow the instructions on storage or disposal of batteries (➲ *2.6.3 Storage and supply of new and used lithium-ion batteries*).

CAUTION

Damage to property due to incorrect storage!

➡ Store the battery modules properly until further use according to the specifications (➲ 2.6.3 Storage and supply of new and used lithium-ion batteries).

15.2.3 Emptying the cooling tank and cooling lines

CAUTION

Risk of minor injuries!

Coming into contact with escaping coolant or touching hot pipework can cause minor injuries.

- ➡ Make sure that the coolant supply is disconnected before you perform work on the cooling system.
- ➡ Drain the coolant before decommissioning.
- ➡ For information on safe handling and disposal, refer to the specifications given in the safety data sheet for the coolant.

CAUTION

Risk of environmental pollution and minor injuries!

Leakage of substances hazardous to water can harm the environment. Contact with the skin can cause injury.

- ➡ A leakage of substances hazardous to water in a not only insignificant quantity must be reported immediately to the competent authority or a police station.
- ➡ Suspected leaks or leaks of substances hazardous to water must be reported immediately to the competent authority or a police station.
- ➡ Reporting is also required as to who has caused the leakage of substances hazardous to water or is carrying out measures to identify or eliminate substances hazardous to water that have leaked from the product.
- ➡ If third parties, in particular the operating companies of waste water facilities or water supply companies, may be affected, the system operator shall inform them immediately.
- ➡ Observe the safety data sheets.
- ➡ Wear safety goggles and safety gloves.

– Observe the information in the maintenance manual, chap. 8.1 Making the cooling unit accessible

(➲ *maintenance manual, chap. 8.1 Making the cooling unit accessible).*

– Empty the cooling circuit. Observe the information in the maintenance manual

(➲ *maintenance manual, chap. 9.7.5 Emptying the cooling circuit*).

– Remove the air-conditioning system (➲ *service manual*).

– Dispose of the air-conditioning system and coolant components in accordance with the information in the safety sheet.

– Dispose of all other components properly

(➲ *16 Disposal*).

15.2.4 Disassembling the complete system

- Undo and remove the 4 screws securing the system to the foundation.
- Lift the system by crane or forklift and take it away to be disposed of properly (➲ *16 Disposal*).

16 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 (➲*2.6.2 Transportation of defective or damaged lithium-ion batteries*).

The battery packaging should be stored in case the battery needs to be returned or reused.

When disposing of the system, observe the disposal directive WEEE 2012/19/EU as well as the German Electrical and Electronic Equipment Act (ElektroG).

- The crossed-out wheeled bin symbol identifies materials that are not allowed to be disposed of with domestic waste. Collect these materials separately to ensure specific and safe recycling of the components.
- Return used electronic devices to the point of sale or take them to a disposal facility.
- Observe the regulations and supplementary information on the disposal of lithium-ion batteries.
- Dispose of the coolant in accordance with the specifications given in the safety data sheet for the coolant.
- Dispose of the remaining components in accordance with the legal requirements and guidelines applicable at the installation location.

17 Service & support

As the operating company of the charging system, please contact your system provider if you have any questions regarding service or support.

17.1 ADS-TEC support

System providers can contact the ADS-TEC team using the following details:

Phone: +49 7022 2522-203

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

17.2 Replacement parts

If you need to order replacement and wear parts for the system, please contact your system provider. An overview of the replacement parts can be found in the service/repair manual (➲ *CPT_service_manual*).

17.3 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

18 Appendix

18.1 List of tables

18.2 List of figures

18.3 Changelog

Date	Revision	Change	Creation	Release
14.02.2022	V1.0	Initial document	Ruoss	
01.05.2022	V1.1	Chap. 5-6 expanded (transport, installation requirements), chap. 7 expanded (electrical connection), neutral version.	Ruoss	
05.05.2022	V1.2	Fundamental revision of chap. 3, 5, 6, 7 (environmental conditions, transport, installation requirements, installation).	Ruoss	
24.06.2022	V1.3	Chap. 8, 9, 10 expanded, comments from document "revDB_v1" edited.	Ruoss	
30.09.2022	V1.4	Additions to earthing specifications and to requirements regarding installation location (chap. 4), reference to transport document (chap. 6), revision of installation (chap. 8).	Ruoss/ Trautmann	
18.11.2022	V1.5	Amendments to installation, numbering of battery modules, weights, safety instructions, technical data.	Ruoss	
09.12.2022	V1.6	Amendments to development progress of series, amendment of technical data, additions according to GRA.	Ruoss	Template release V0.1
17.02.2023	V1.7	Charging process images updated (chap. 11). New CAD images added. Installation chapters 8 and 9 updated. Fire protection concept updated (chap. 2.4, 5.1) Chapter "Lithium-ion batteries" updated (chap. 2.6). Additions to chapter "Disposal". Environmental conditions, requirements regarding installation location adapted (chap. 4). Chapter "Obligations of the operating company" updated (chap. 5.1).	Ruoss/ Trautmann	
14.04.2023	V1.8	Amendments to the topics of decommissioning, obligations of the operating company, temporary storage, technical data, SIM cards, loading videos, attachments added. General revisions.	Ruoss	Dr Anselm Berg

18.4 Detail from transport drawing

18.4.1 Centre of gravity and dimensions of the system

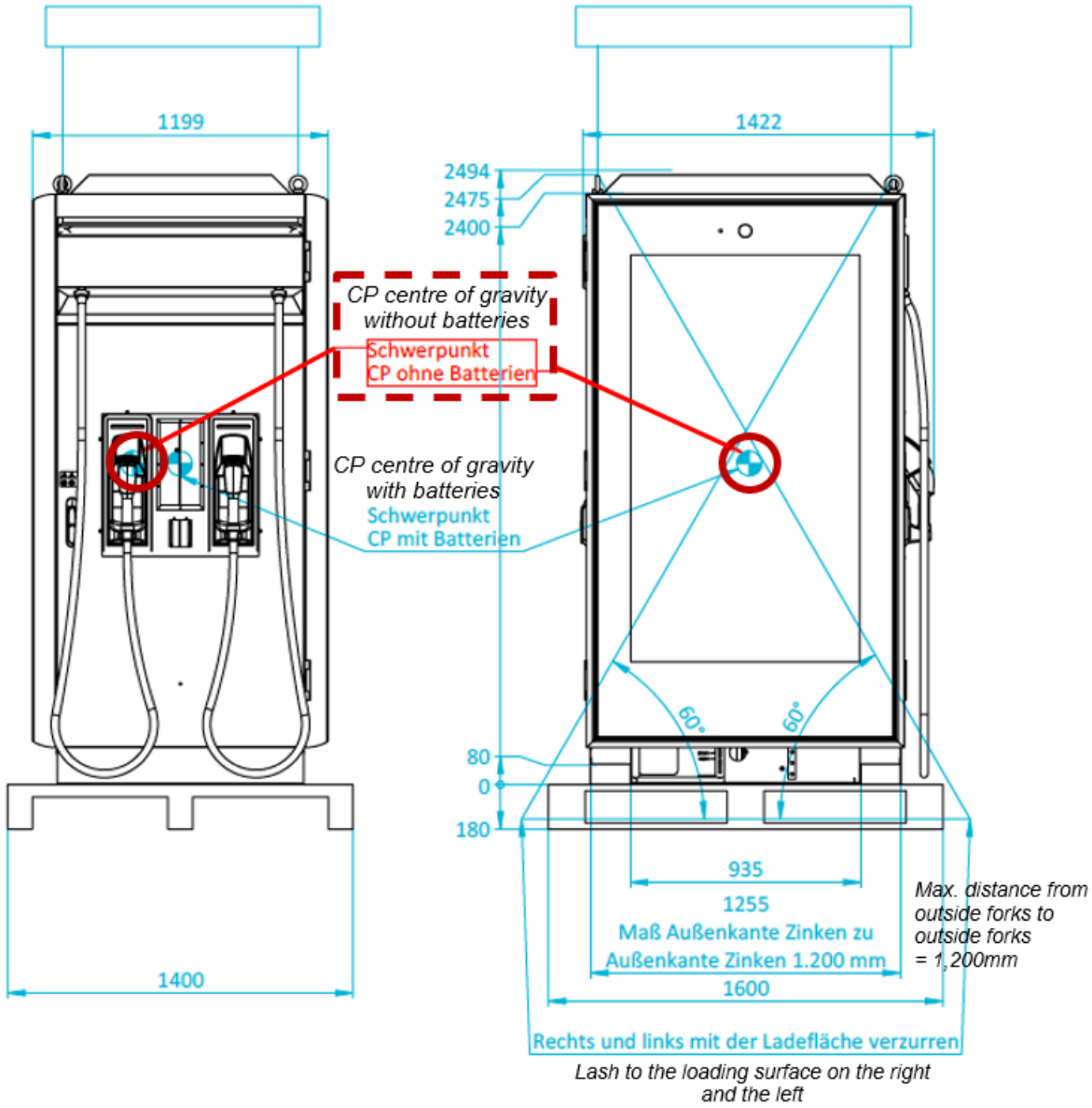


FIGURE 64: CENTRE OF GRAVITY AND DIMENSIONS (DETAIL FROM CONSTRUCTION DRAWING)

18.4.2 Lifting by crane

- Load capacity 5 t
- A separate belt or a lifting chain must be attached to each ring.
- Do not attach the sling of the belt in such a way that it is stretched tightly, otherwise the rings may become deformed.
- On every ring, only vertical loading is permitted.
- Use non-slip mats on any surfaces where the system will have to be set down temporarily without a pallet.

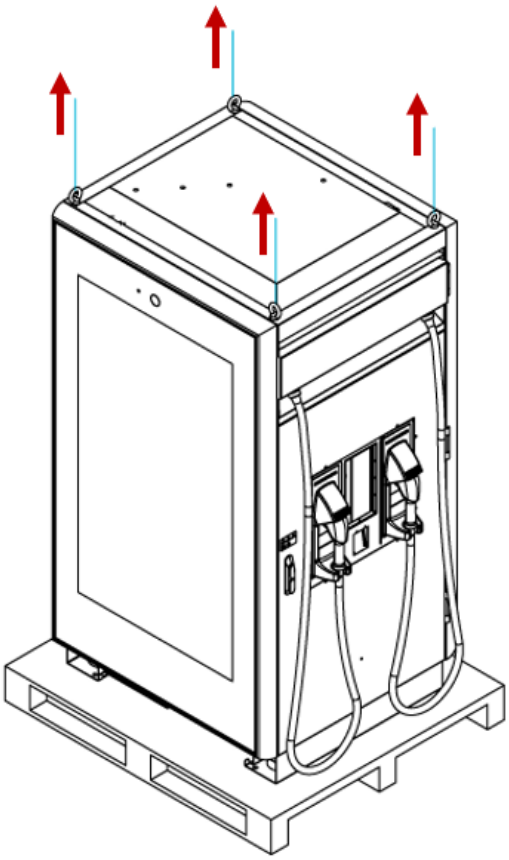


FIGURE 65: LIFTING BY CRANE (DETAIL FROM CONSTRUCTION DRAWING)

18.4.3 Lifting with forklift

- Load capacity 5 t
- Fork length >= 1,400 mm
- Fork outer edge to fork outer edge: 1,200 mm
- Fork inner edge to fork inner edge: 950 mm
- Fork height at shaft: < 75 mm
- Width of each fork: Max. 125 mm

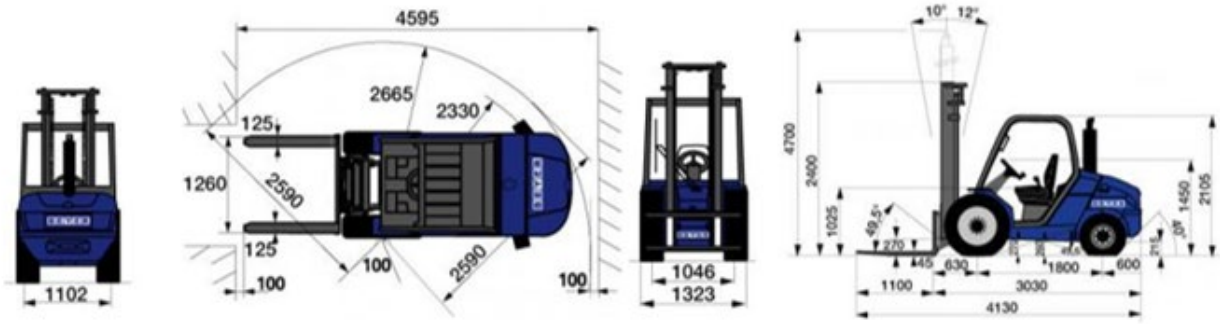
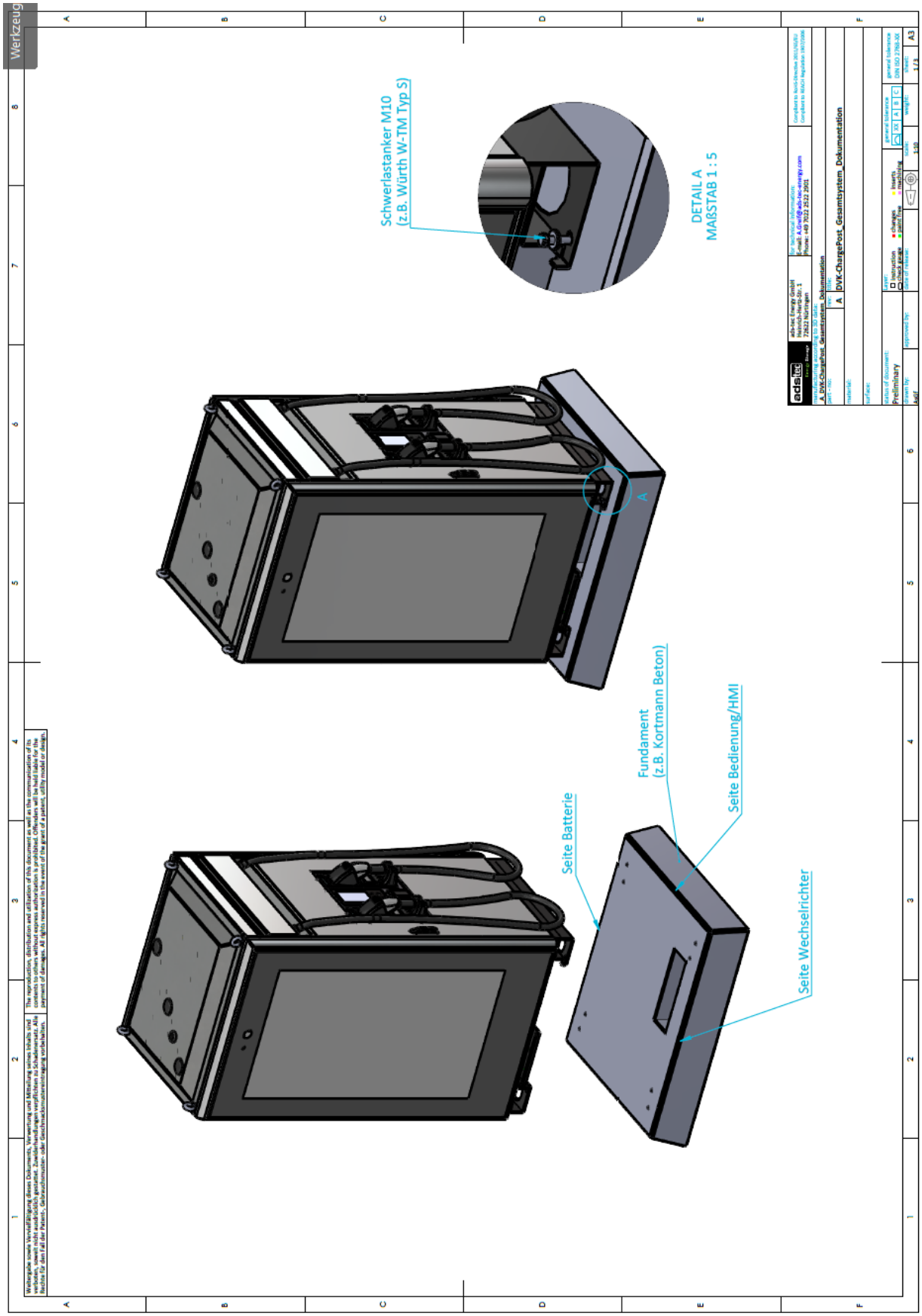


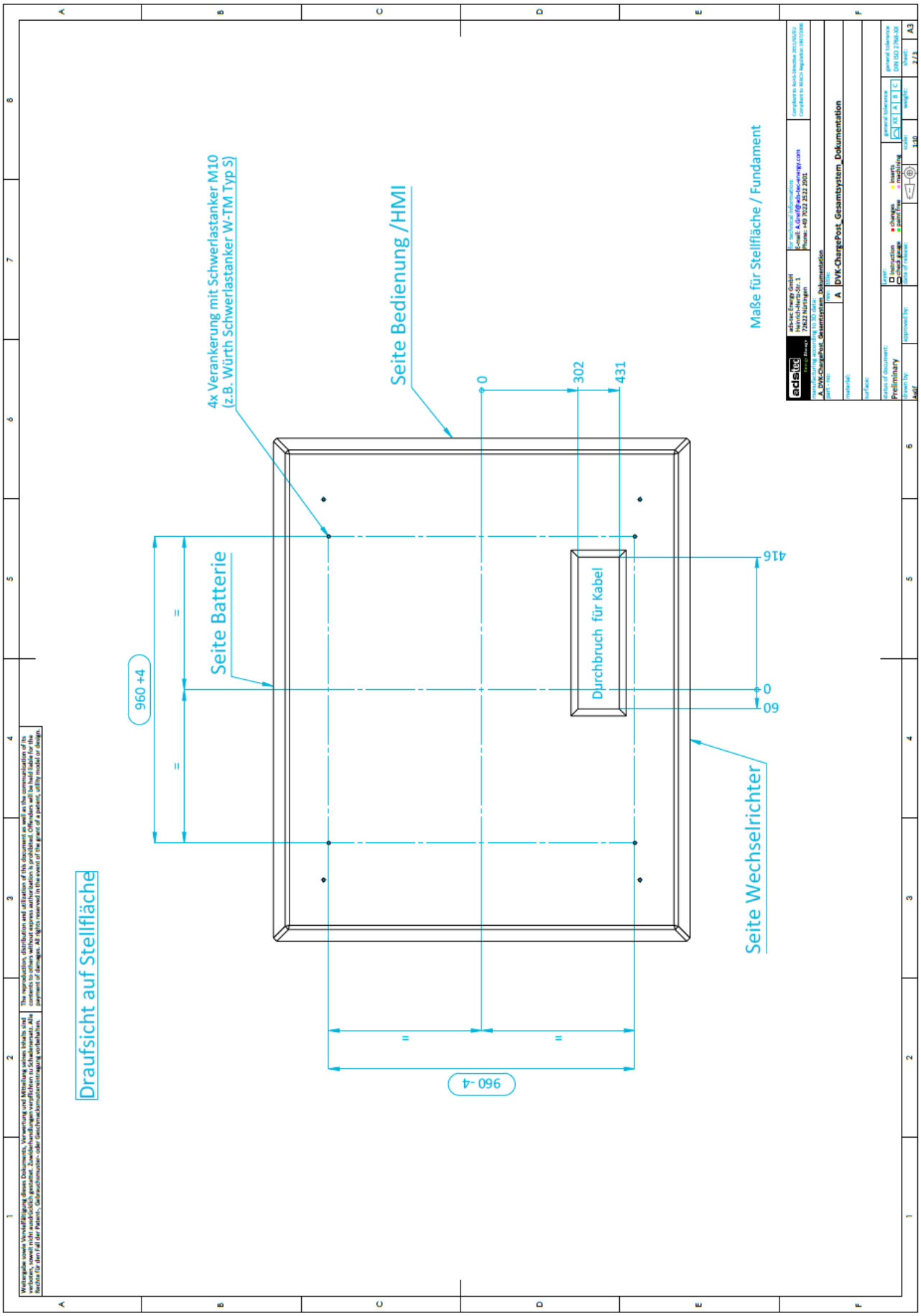
FIGURE 66: LIFTING BY FORKLIFT (DETAIL FROM CONSTRUCTION DRAWING)

18.5 Construction drawing of the overall system

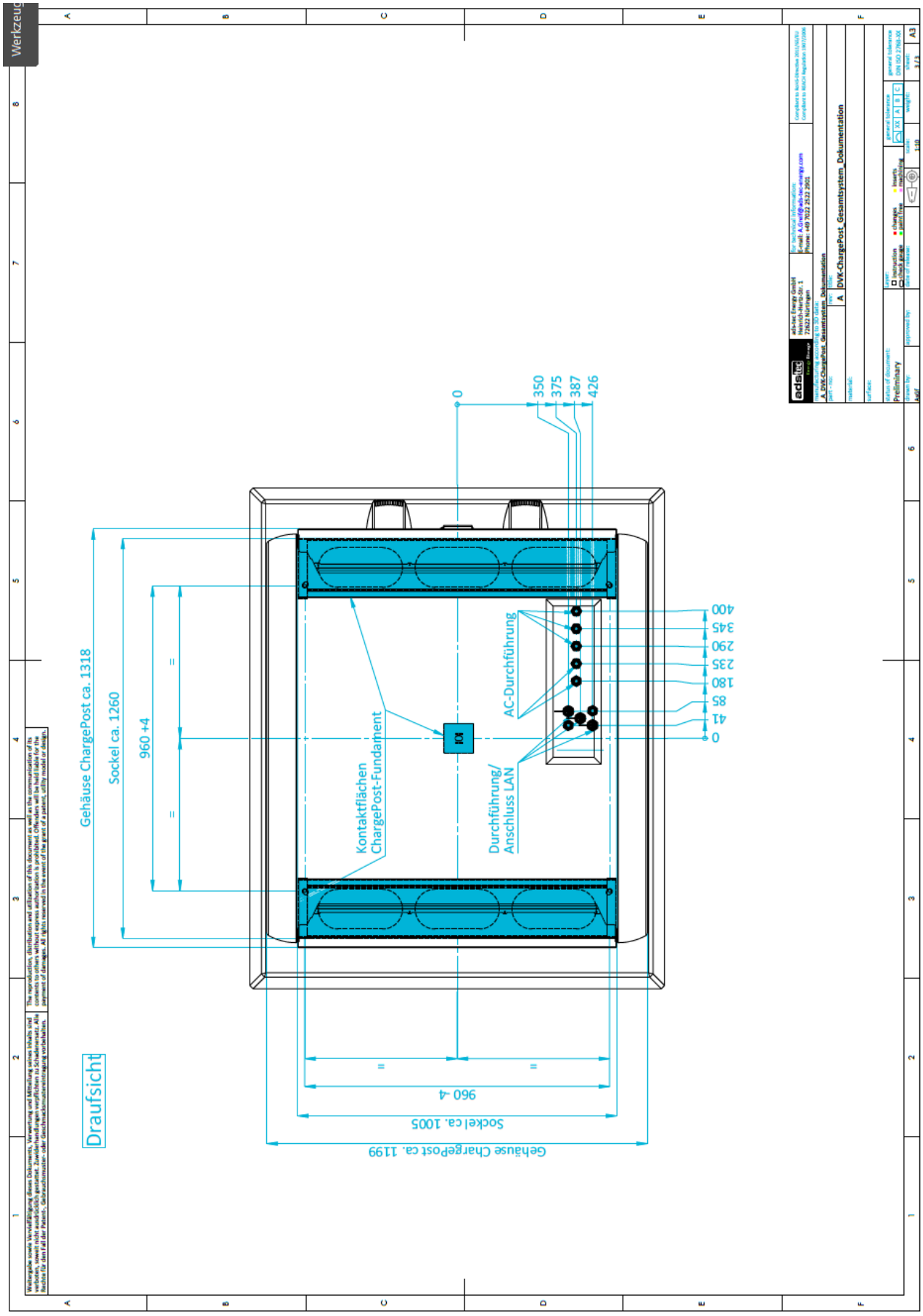
18.5.1 Planning and overall view



18.5.2 Top view of floor space / foundation



18.5.3 Top view of system



18.6 Detail from electrical diagram

18.6.1 Grid connection