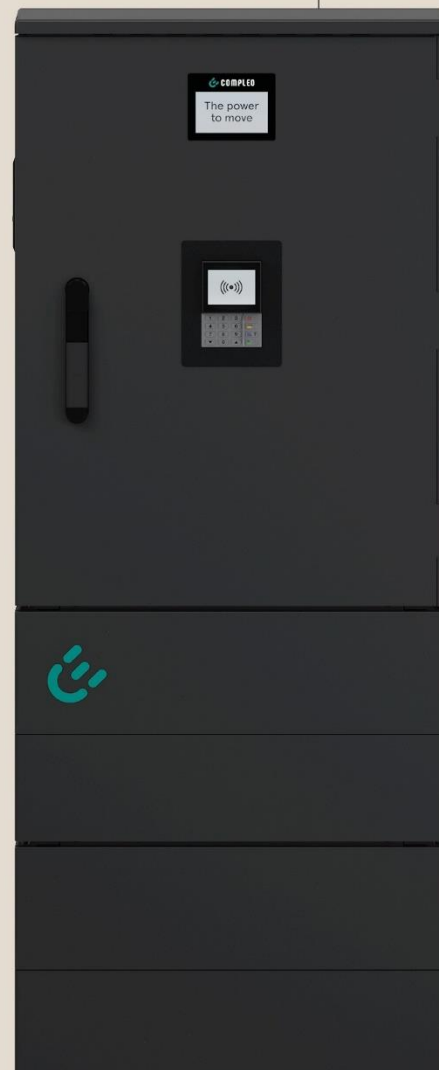


Operating instructions

Compleo **ADVANCED IMS bm SAM®**

Compleo DUO IMS SAM®/
DUO fleet IMS SAM®

Article number: A11XCXXXXX



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1 About this manual

This manual contains descriptions and important information for the safe and trouble-free use of the charging system. The manual is part of the charging system and must be accessible at all times to all persons working on and with the charging system. The manual must be kept in a clearly legible condition.

The personnel must have carefully read and understood this manual before starting any work. The basic prerequisite for safe working is the observance of all specified safety and warning instructions as well as handling instructions in this manual.

In addition to the instructions in this manual, the local accident prevention regulations and the national industrial safety regulations apply.

Illustrations are for basic understanding and may differ from the actual design of the charging system.

1.1 Further requirements

A warranty with regard to function and safety is only given if this manual is observed. Compleo Charging Solutions AG is not liable for personal injury or damage to property caused by failure to observe the operating instructions.

The manufacturer of the charging system is not liable for consequential damage. The operator must ensure that the charging system is properly installed and used as intended.

During installation and start-up, the national legal requirements and regulations for accident prevention must be observed. In Germany these include the requirements according to DIN VDE 0100 and the accident prevention regulations according to DGUV V3.

Before the system is released, an appropriate test must be carried out to safeguard all safety features and proper functionality of the charging system. Furthermore, the operator must ensure the operational safety of the charging system through regular maintenance.

Compleo Charging Solutions GmbH assumes no liability for errors within these operating instructions. This document reflects the state-of-the-art of the product at the time of publication. The contents of this document are for information purposes only and are not the subject of a contract.

ATTENTION

A list of the normative references and regulations according to which the charging system was designed and constructed can be found in the declaration of conformity. When installing and commissioning a charging system from Compleo Charging Solutions, nationally applicable standards and regulations must also be observed.

NOTE

All standards, regulations, test intervals and the like mentioned in this document are valid in Germany. If a charging system is set up in another country, equivalent documents with a national reference must be used.

1.2 Manufacturer and contact address

Compleo Charging Solutions AG
Oberste-Wilms-Straße 15a
44309 Dortmund, Germany

Tel.: +49 231 534 923 - 777

Fax: +49 231 534 923 - 790

e-mail address: info@compleo-cs.com

1.3 Conventions of presentation

For easy and quick understanding, different information in this manual is presented or highlighted as follows:

- List without fixed order
- List (next item)
 - Subitem
 - Subitem

- 1. Handling instruction (step) 1
- 2. Handling instruction (step) 2
 - Additional notes for the previous step

- 1 Position number in figures and legends
- 2 Consecutive position number
- 3 ...

- List/check point
- List/next check point

Reference (example): See "chapter 6.5, page 27"

NOTE

A note contains application tips and useful information, but no warnings of hazards.

1.4 Abbreviations

Abbreviation	Explanation
AC	Alternating Current
DC	Direct Current
EMC	Electromagnetic Compatibility
EVSEID	Electric Vehicle Supply Equipment ID
HMI	Human-Machine Interface
ID	Identification Number
IR	Infrared
kWh	Kilowatt hour
LCD	Liquid Crystal Display
LS	Charging system/charging station
MCB	Miniature Circuit Breaker
MessEG	Measuring and calibration law
MessEV	Measuring and calibration regulations
N/A	Not Available/Applicable
OCPP	Open Charge Point Protocol
PSU	Power Supply Unit
RCD	Residual Current Device
RDC-DD	Residual Direct Current-Detecting Device
RTC	Real-Time Clock
S/N	Serial number
SAM	Memory and display module
SPD	Surge Protective Devices
SW	Software
UV	Sub-distribution
VNB	Distribution system operator

2 Safety

In order to ensure operational safety of the charging equipment and to avoid serious injuries caused by flashovers or short circuits, the following information and safety instructions for operating the unit must be observed. Repair work on the unit must only be carried out by authorised specialist personnel. The housing of the unit may only be opened by persons who have been properly instructed. The following points therefore apply:

- Read and observe safety and warning instructions
- Read and follow instructions

2.1 Warnings

In this manual, warnings and notes are presented as follows.

⚠ DANGER

Indicates an imminent danger that will result in death or serious injury if not avoided. There is great danger to life.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

ATTENTION

Indicates a potentially hazardous situation which, if not avoided, may result in property damage.

2.1.1 Sectional warnings

Sectional warnings refer to entire chapters, a section or several paragraphs within this manual.

Sectional warnings are presented as follows (example warning):

⚠ WARNING**Type and source of the danger.**

Possible consequences if the danger is not observed.

- Measures to avoid the danger.
-

2.2 Intended use

The charging system is intended exclusively for charging electric vehicles.

The charging system is suitable for public and semi-public areas and can be used indoors and outdoors.

The charging system is intended exclusively for stationary installation.

Any use beyond this is considered improper use. The manufacturer is not liable for damages resulting from this.

2.3 Foreseeable misuse

The use of the charging system as a power source for other power consumers is not in accordance with its intended use and is considered misuse.

Only charging cables of type 2/ 20 A or only charging cables of type 2/ 32 A may be used on charging systems equipped with a charging socket type 2. Charging cables that deviate from this are not accepted by the systems.

Charging systems may only be connected to the power supply via a fixed and non-separable supply line.

2.4 Safety instructions for the user

This charging system may only be used in the manner described in this manual. If the charging system is used for other purposes, the operator may be endangered and the charging equipment may be damaged. This manual must always be accessible. Note the following points:

- If no charging process is active, anchor any existing charging cables on the charging system in the brackets provided or wrap them around the housing of the charging system.
- The distance between a charging system and a vehicle must not exceed 3 metres.
- The charging system may only be operated when completely closed. Do not remove covers inside the charging system.

2.5 Personnel qualification

Qualified and trained electricians meet the following requirements:

- Knowledge of general and special safety and accident prevention regulations.
- Knowledge of the relevant electrical engineering regulations.
- Product-specific knowledge through appropriate training.
- Ability to identify hazards associated with electricity.

 DANGER

Danger due to electric current

Touching live parts will result in electric shock with serious injury or death.

- Work on electrical components may only be carried out by a qualified electrician and in accordance with electrical engineering rules.
 - Ensure they are de-energised and take suitable protective measures.
-

2.6 Dangers and residual risks

NOTE

Compleo charging systems as a whole do not contain SVHCs (Substances of Very High Concern) in a concentration of more than 0.1 % (w/w), related to the individual charging station. However, individual components may contain SVHCs in concentrations > 0.1 % (w/w).

- When the charging stations are used as intended, no SVHCs are released and there are no risks to humans or the environment.
-

2.6.1 Electrical voltage

Dangerous electrical voltages may be present inside the housing of the charging system after the housing has been opened. There is a danger to life if contact is made with live components. Serious injury or death is the result.

- Work on electrical equipment may only be carried out by a qualified electrician and in accordance with electrical engineering rules.
- Disconnect the charging system from the power supply.
- - The system has life-threatening DC voltages, which only disappear after five minutes after switching off due to capacitor charges. A corresponding period of five minutes must elapse before working on exposed parts.

2.6.2 Incorrect handling

- Pulling on the charging cable can lead to cable breakage and damage. Only pull the charging cable out of the socket directly at the plug.
- The use of extension cables is not permitted. To avoid the risk of electric shock or cable fire, only one charging cable may be used at a time to connect the electric vehicle and charging system.
- A charging system whose charging cables are in contact with the ground involves a risk of tripping or mechanical damage if run over. The operator of the charging system must implement appropriate measures for cable routing and affix appropriate warnings.

3 Product description

The charging system described below is suitable for charging electric vehicles indoors and outdoors with installation on solid ground.

The operation of the charging system is designed to give clear and easily understandable instructions, statuses and messages, which can be indicated to the user by means of status LEDs and displays.

3.1 Design

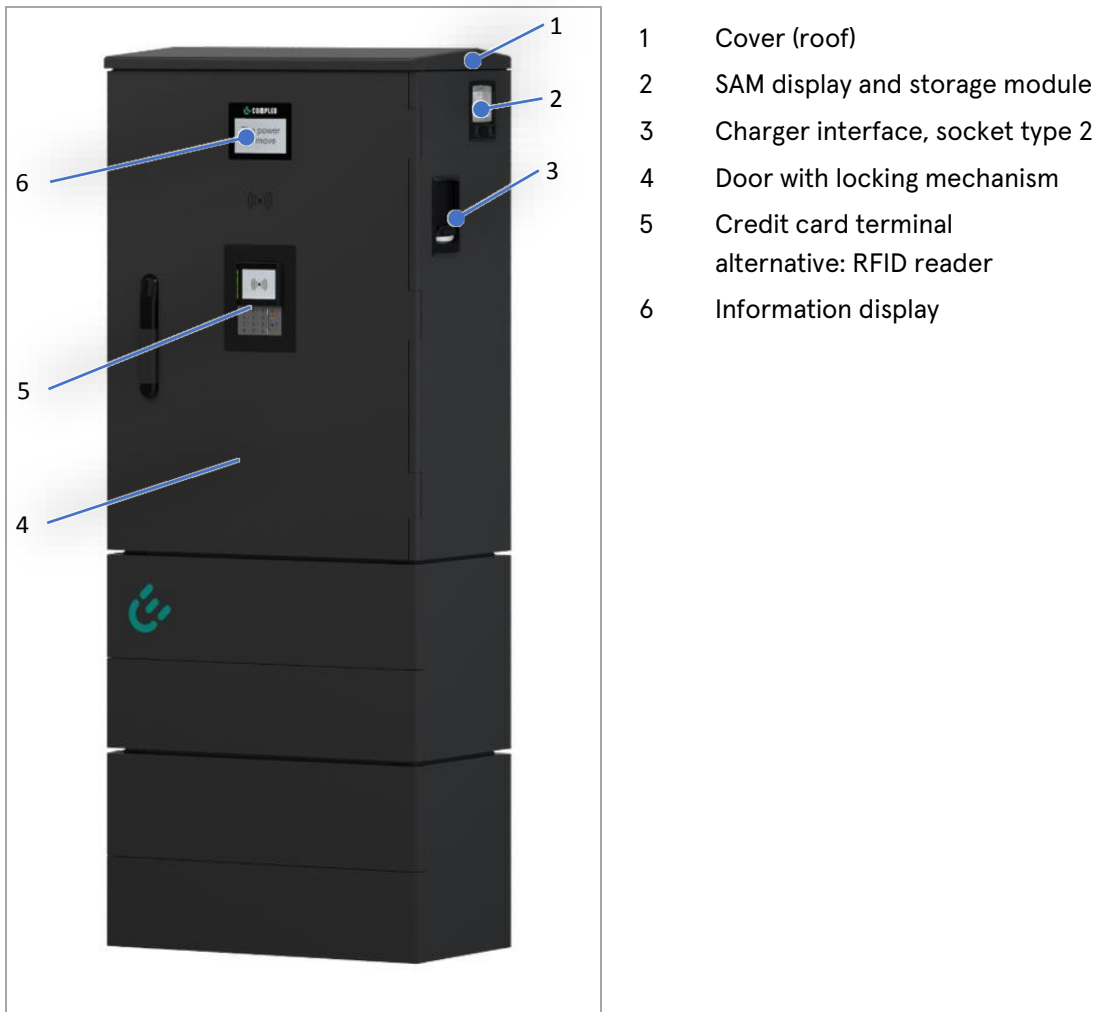




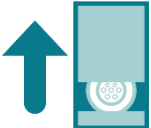











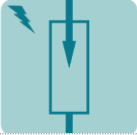


Fig. 1: Charging system (illustration similar)

3.2 Scope of delivery

The scope of delivery of the Compleo DUO IMS SAM®/ Compleo DUO fleet IMS SAM® (Compleo ADVANCED IMS SAM®) includes, in addition to the charging column, the following features and components:

	 (optional)	Authentication <ul style="list-style-type: none"> • Credit card terminal (payment with credit card, charging current or website) • RFID reader (optional)
	 (optional)	Authentication: <ul style="list-style-type: none"> • RFID tag & RFID card (optional)
	 (alternative)	Charging interfaces: <ul style="list-style-type: none"> • AO2 (socket with sliding cover type 2) alt. • HC2 (spiral cable type 2) alt.
 RGB 3-colour		Status displays and/or display: <ul style="list-style-type: none"> • Status LED
	 (alternative)	SAM or counter with viewing window: <ul style="list-style-type: none"> • Memory and display module alt. • Counter with digital display
	 (alternative)	Foundation: <ul style="list-style-type: none"> • Asphalt & concrete (BM) alt. • Concrete base (BM)
		Housing closure: <ul style="list-style-type: none"> • Pivoted lever

		<p>Documentation:</p> <ul style="list-style-type: none"> • Circuit diagram • Operating instructions including design drawings
		<p>Installation accessories (optional):</p> <ul style="list-style-type: none"> • Base filler • Installation material
<p>(optional)</p>	<p>(optional)</p>	
		<p>Surge protection (optional):</p> <ul style="list-style-type: none"> • Surge arrester
<p>(optional)</p>		

3.3 Series label

The charging systems from Compleo Charging Solutions AG can be identified by an individual serial number. A series label is attached inside the charging system. The following illustration shows an example of a series label:

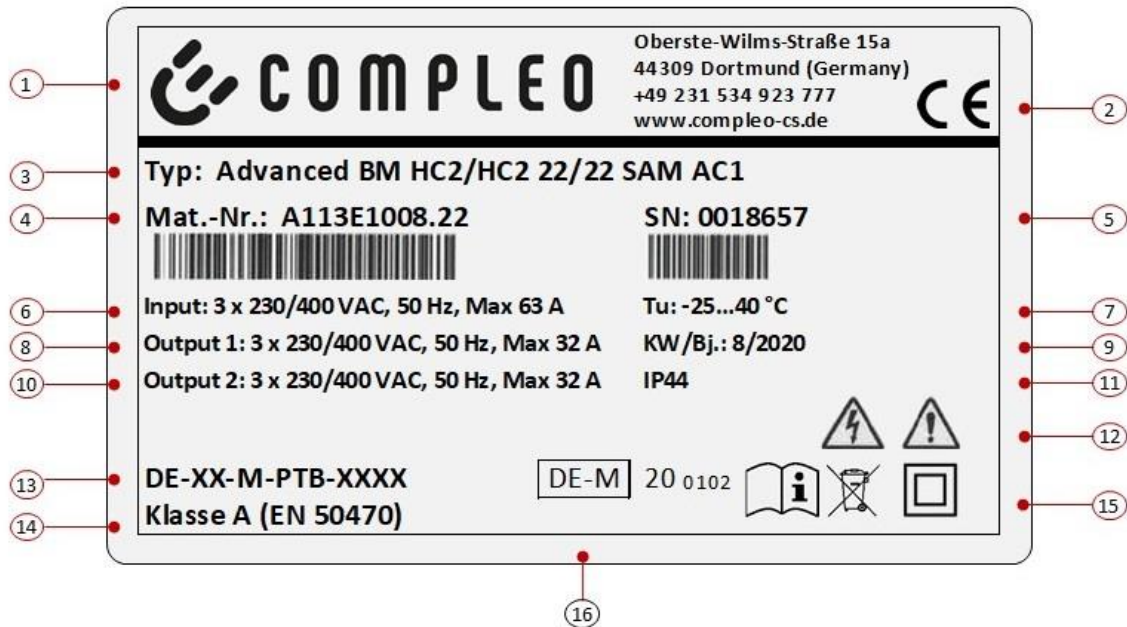


Illustration similar

The following information can be identified by means of the serial label:

- (1) Name of the manufacturer
- (2) Address/ Service number/ Website of the manufacturer
- (3) Type/ Installation type/ Charging interfaces/ Charging capacities of charging system
- (4) Material number or article number of the charging system
- (5) Serial number of the charging system
- (6) Input: Number of phases x voltage frequency input current
- (7) Ambient temperature
- (8) Output AC: Voltage, max. current
- (9) Calendar week and year of manufacture
- (10) Output DC: Voltage range, max. current
- (11) Protection type and protection class of the charging system Pictogram (safety information)
- (12) Number of the type examination certificate
- (13) Accuracy class of the measuring instrument according to EN 50470
- (14) Pictogram (protection class, disposal, operating and maintenance instructions)
- (15) Metrology marking

3.4 Technical specifications

The following table is an excerpt from the standard portfolio of Compleo Charging Solutions AG charging systems. A purchased charging system may deviate from this list according to customer-specific wishes and requirements. If changes have been made to a standard product, the modified charging system is identified with a separate table of technical specifications in the Annex.

Charging system	DUO bm IMS/ DUO fleet bm IMS (ADVANCED bm IMS)
Charging mode	Mode 3/ IEC 61851
Charging interfaces	2 x type 2 socket with sliding cover

Mains connection

Mains connection	HAK for NH fuses
Data line	Cable connection
Min. connection cross-section	26 AWG
Max. length	30 m

Electrical characteristics

Charging interface(s)	Type 2 socket with sliding cover	Type 2 socket with sliding cover
Max. rated current	32 A/ 3~	63 A/ 3~
Nominal voltage	400 V/ 3~	400 V/ 3~
Mains frequency	50 Hz	50 Hz
Network form	TT/ TN	TT/ TN
Protection class	II	II
Overvoltage category	III	III
Charging voltage	400 V/ 3~	400 V/ 3~
Max. charging capacity per loading point	11 kW	22 kW
Charging current	16 A/ 3~	32 A/ 3~

Protective devices

RCD	RCCB: 40 A/0.03 A, type A; RDC-DD: 6 mA	RCCB: 40 A/0.03 A, type B
MCB	2 x C20A, 1 x B10A	2 x C40A, 1 x B10A

Ambient conditions

Ambient temperature	-25 °C to +40 °C
Operating temperature (ø 24 h)	≤ 35 °C
Storage temperature	-25 °C to +50 °C
Relative humidity	≤ 95 % (non-condensing)
Altitude	≤ 2000 m above sea level

Mechanical data

Dimensions (H x W x D)	BM: 1483 x 590 x 330 (H x W x D)
Max. weight	BM: 72 – 80 kg (approximate depending on capacity and condition of the equipment)
Housing	Sheet Moulding Compound (SMC)/ glass fibre reinforced polyester
Housing closure	Pivoted lever mechanism for locking cylinder (single lock)
Protection type	IP44
Degree of contamination	3
Type/mounting	Base mounting

Communication interfaces

Data communication	TCP/IP
Data connection	LTE modem
(frequency/ transmission power)	(800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2600 MHz/ 23.0 ±1 dBm)
Backend communication	OCPP: 1.6J
RFID standard	Mifare Desfire, Mifare Classic;
(frequency/ transmission power)	(13.56 MHz/ 13.9 mW, 11.4 dBm) (125 kHz; 134.2 kHz/ 26 mW, 14.1 dBm)

Legal regulations

2014/53/EU (Radio Equipment Directive)

2011/65/EU (RoHS Directive)

2001/95/EG (Directive on General Product Safety)

2012/19/EU (WEEE Directive)

(EU) 2019/1021 (EU-POP Ordinance)

(EU) 1907/2006 (REACH Regulation)

SVHC	EU no.	CAS no.
Lead (Pb)	231-100-4	7439-92-1
4,4'-isopropylidenediphenol (bisphenol A; BPA)	201-245-8	80-05-7

3.5 General Functions and Scope of Application

The compleo® Advanced IMS charging system from Compleo Charging Solutions AG has the functionality for mode 3 charging. It is produced in different versions and has a practical housing that makes it possible to mount it on solid ground using a simple installation method. The charging system has two charging points where parallel charging is possible. The type of charging interface is safely constructed and easy to handle by means of a sliding cover.

For “BM” type installation, the charging system is fixed by means of a practical and stable SMC base in the ground surrounding the charging system. The base, which is precisely adapted to the housing, enables quick installation. The charging system is produced in different performance classes and is therefore able to carry out reliable and fast charging processes on vehicles. Depending on the product class and scope, the charging systems are suitable for use in public and semi-public areas. In general, all charging systems from Compleo Charging Solutions AG can be used indoors and outdoors.

The charging system has different displays which are embedded in the housing. The display options include a reliable and easy to understand status LED. Different states, such as an ongoing charging process or state change, and the transition from successful authorisation to the charging process, are easily recognisable by means of this RGB LED. The meter reading of a charging point can be quickly captured and read from an appropriately recessed window on the housing. Depending on the product class and scope, the charging systems are suitable for use in public and semi-public areas. In general, all charging systems from Compleo Charging Solutions AG can be used indoors and outdoors.

The compleo® Advanced IMS charging system incorporates state-of-the-art protection technology that ensures maximum safety for the charging system and persons operating it.

4 Transport, packaging and storage

4.1 Transport Inspection

Depending on the type and product scope of the charging system, it is delivered either upright or horizontally in appropriate transport and protective packaging. Depending on the type of charging system, air-cushioned protective films and/or cardboard boxes are used. The materials can also be used as underlay during subsequent assembly.

1. After unpacking, thoroughly inspect the charging system for transport damage.
2. Compare the serial number of the charging system with that of the delivery documents to exclude faulty deliveries.
3. Check delivery according to purchase and scope of delivery for completeness.
4. Proceed as follows in case of deviations or recognisable damages:
 - Do not accept delivery or only accept it conditionally.
 - Complaints must be reported immediately to the manufacturer in writing.

NOTE

We recommend to keep and reuse the original packaging for further transportation. Otherwise, the packaging material must be disposed of in accordance with the applicable local regulations.

4.2 Storage conditions

The system should be stored in the same position that it was transported in. If this is not possible for undetermined reasons, it should be stored in the installation position of the charging system.

- Ambient temperature for storage: -25 °C to +50 °C
- Permissible relative humidity: maximum 95 % (non-condensing)
- For intermediate storage, store the charging system in the original packaging

4.3 Safety Measures Before Use

After unpacking and before installation, the charging systems must be thoroughly inspected for transport damage. Any damage caused by transport must be reported immediately. The serial number of the charging system should also be compared with the serial number on the delivery documents in order to exclude faulty deliveries.

Before using any of the charging systems from the product portfolio of Compleo Charging Solutions AG, please read the relevant documents enclosed with the charging system or those necessary for operation. In particular, the following chapters should be read and observed:

- Safety Instructions
- Product description
- Commissioning
- Operation of the charging system

5 Installation

Incorrect installation can lead to personal injury and damage to property. It must be ensured that the assembly and electrical installation are carried out professionally and that the local protective measures and the specifications of the energy supplier are observed.

The unit may only be installed by a qualified electrician and persons who are demonstrably qualified.

5.1 Location

For professional installation, safe operation and barrier-free access to the charging system, the following points must be observed when selecting the location.

- National or local regulations.
- Do **not** install the charging system in the hazard areas of:
 - Flammable, combustible and explosive materials
 - Running or jet water
- Do **not** install the charging system in the following areas:
 - Areas that are potentially explosive (e.g. gas filling stations)
 - Areas where backwater or storm water is to be expected
 - Areas where flooding is to be expected
 - Areas where heat domes or heat accumulation can occur
- The substrate must have sufficient strength and load-bearing capacity to withstand the mechanical loads.

- Provide sufficient space to maintain the minimum distances:
 - Approx. 120 cm between two charging systems
 - 3 cm from the back of the charging system to other objects; on a concrete base in the case of a mechanical installation
- Ensure a sufficient fresh air supply for cooling the charging system and heat dissipation.
- Comply with ambient conditions, see .

5.2 Installation work

The assembly and installation work requires specific technical qualifications and expertise. There is a danger to life for persons who carry out work for which they have neither been qualified nor instructed. The work may only be carried out by persons who are familiar with it, have been informed about dangers and have the necessary qualifications.

Observe the national legal requirements and regulations during assembly and installation.

5.3 Mechanical installation

⚠ WARNING

Incorrect installation and start-up

Improper performance of work can lead to serious injuries and damage to property.

- Work may only be carried out by trained specialist personnel.
 - Meet all safety requirements before installation.
 - Only carry out mechanical installation in a de-energized state.
-
- Provide sufficient free space for the installation. The installation site must be sufficiently accessible so that the charging system can be installed and serviced without interference.
 - The installation site must be chosen so that the cables of the cable management system do not protrude onto the road and do not come to rest between the kerb and the road.
 - Use a suitable lifting tool with sufficient load capacity during installation.

NOTE

The use of specific installation materials for the charging system may be necessary depending on the condition of the ground or special local conditions. The necessity must be considered individually at each location.

The following description of installation with specific installation material is exemplary. Local conditions are not dealt with in detail. Deviating procedures may only be initiated by competent persons.

NOTE

To protect the charging system, we recommend to install an approach limiter (e.g. bollard).

5.3.1 Installation version BM with SMC base

Installation sequence

1. Select a suitable location.
2. Check parts and installation material for completeness.
3. Dig the excavation pit.
4. Check the substrate.
5. Route the power supply cable.
6. Compact and level the ground.
7. Place and align the charging system.
8. Insert the power supply cable into the base. (centrally in the base)
9. Fill the excavation pit with excavated material and compact the excavated material.
10. Insert base filling material (mandatory).
11. Place and align the charging system.
12. Fasten the charging system with installation material.
13. Prepare electrical installation.

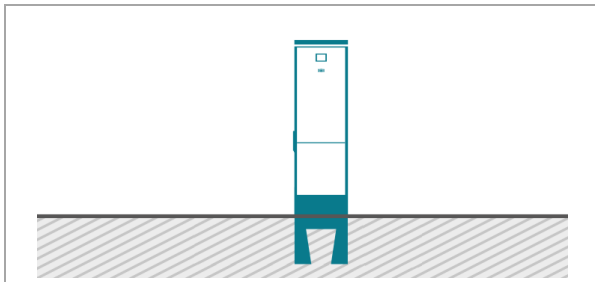


Fig. 2: Schematic diagram of installation

The SMC base is embedded in the ground.

The charging system is then mounted on the SMC base and finally installed.

Refer to the design drawings in the Annex for the dimensions of the charging system.

The installation material for fixing is included in the scope of delivery.

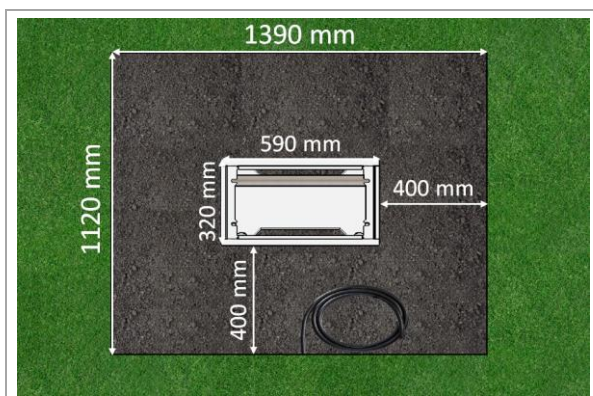


Fig. 3: Excavation pit (dimensions)

Installation requirements

- Excavation pit
 - Width: 1390 mm
 - Length: 1120 mm
 - Distance to all sides of the concrete base: 400 mm
 - Depth: 810 mm
- Flat support surface of the substrate

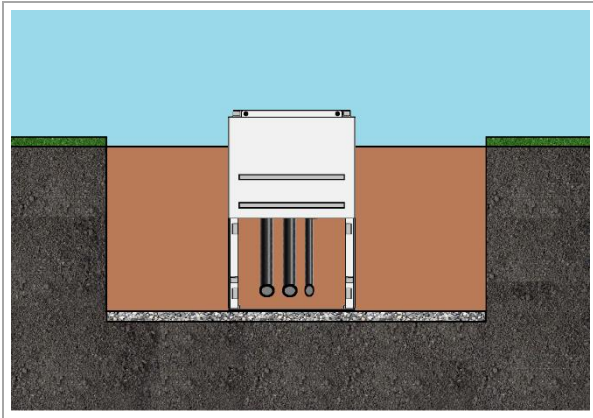


Fig. 4: Excavation pit

Carrying out installation

1. Dig an excavation pit and prepare it for the stable installation of the charging system.
2. Lower the SMC base into the excavation pit using a suitable lifting tool.
 - The upper edge of the ground level and the operating side of the charging system are marked on the base for orientation and alignment
 - Base protrudes 117 mm from the ground
3. Insert the power supply cable into or through the base.
4. Feed a maximum of 2 lines and one data cable through.

NOTE

Depending on the condition of the ground or special local conditions, it may be necessary to build a special foundation for the base from lean concrete or even to embed the base in lean concrete. The need for such measures should be considered individually at each installation site.

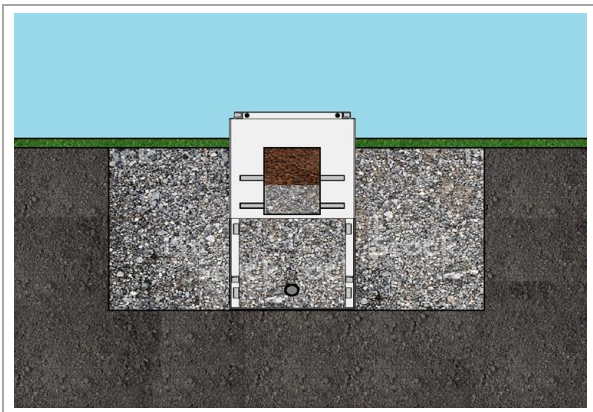


Fig. 5: Excavation pit filled with excavated material

4. Fill the excavation pit with excavated material.
 - Make sure that the filling of the pit reaches the surrounding ground level.
5. Fill the last 200 mm inside the base with base filling material.
 - ½ sack of filling material (Compleo)
 - The use of the filling material is mandatory as it reduces the penetration of moisture into the charging system from the ground.
6. Compress the excavation material around the charging system.

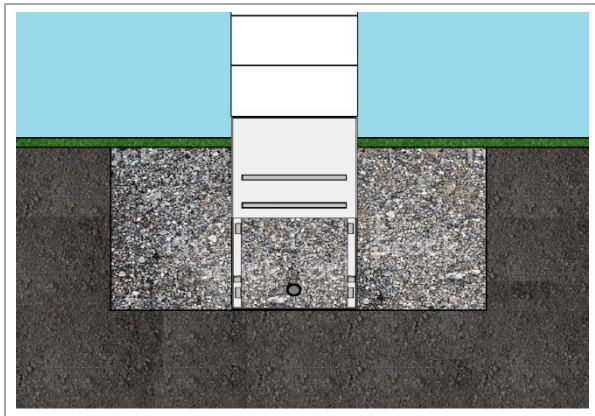
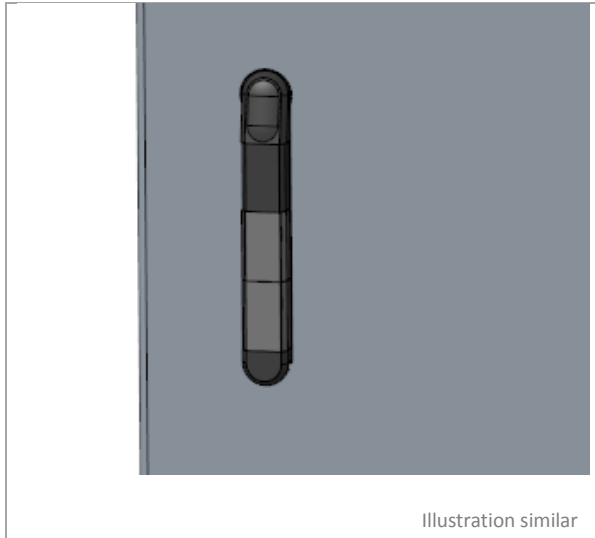


Fig. 6: Fastening the charging system

7. **⚠ WARNING** – Crushing of body parts due to unintentional lowering. Body parts must not be under lifted load.
Position and align the charging system over the boreholes so that the mounting holes of the charging system match the mounting holes in the base.
8. Insert the power supply cable into the base.
9. Fasten the charging system with four screws. Threads for mounting are inserted in the fixing holes of the SMC base.
 - The installation material is included in the scope of delivery.

5.4 Housing closure: Double locking



The housing is closed by a swivel lever mechanism on the side of the door.

Installation of the profile half cylinder

Two profile half cylinders must be installed inside this swivel lever to prevent unauthorised persons from accessing the interior of the charging system.

- Fix each profile half cylinder inside the swivel lever with a screw.

Changing the profile half cylinder

- When changing a profile half cylinder, loosen the respective screw and then unscrew it.
- Remove the profile half cylinder from the swivel lever and insert a new profile half cylinder.
- Fix the profile half cylinder inside the swivel lever with a screw.

The profile half cylinders for housing closure can be included in the scope of delivery.

Unlocking the door

- Unlock the profile half-cylinder locks with the corresponding keys
- Swivel out the swivel lever
- Turn the swivel lever to the left or right

Following this procedure, the door of the charging system can be swivelled open to the right.

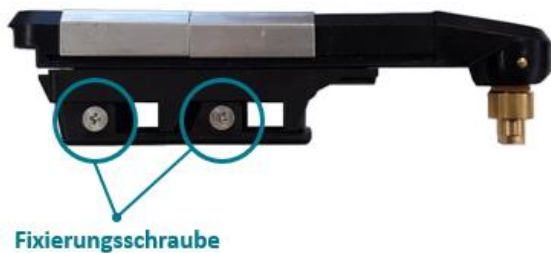


Illustration similar

NOTE

If no locking cylinder is installed inside the pivoted lever, the lever can only be opened using a suitable tool. A construction key is required to reopen a closed lock.

NOTE

If one or even two locking cylinders are installed within a swivel lever, the tumbler position must be 3, 6 or 9 o'clock. Otherwise, opening with only one key is not possible.

5.5 Electrical installation

⚠ DANGER

Danger due to electric current

Touching live parts will result in electric shock with serious injury or death.

- Work on electrical components may only be carried out by a qualified electrician and in accordance with electrical engineering rules.
- Ensure they are de-energised and take suitable protective measures.

- For safe disconnection during installation work, disconnect the charging system from the power supply.
 - Switch off the circuit breaker or main switch.

Observe the national legal requirements and regulations during electrical installation. In Germany, these include the following safety requirements:

- DIN VDE 0100-100
- DGUV Regulation 1
- DGUV Regulation 3+4
- TRBS 1201

5.6 Connecting the supply line



Installation is carried out at a domestic junction box

1. Strip 30 mm of insulation from the individual wires or according to the cable lugs to be used.
10. Connect all conductors of the power supply cable to the external wiring side as shown in the adjacent figure.
The cross-section of the conductors must be between 10 and 70 mm² (RM & SM) or between 10 and 95 mm² (RE & SE).
The conductor cross-section must be selected taking into account the maximum charging capacity and the length and installation method of the power supply cable.
11. Make sure that the individual wires are connected correctly and the clamping screws are tightened firmly (M = 15 Nm) or the push-in terminal is closed correctly (click).
12. Install surge and lightning protection according to the installation conditions and the resulting planning.
13. Replace all covers that may have been removed previously.

NOTE

The NH fuses to be used for the charging system can be subject to operating temperatures above 25 °C. It may be necessary to use a NH fuse of the next higher level, in relation to the nominal current of the charging system, to ensure high availability of the charging system.

NOTE

When electrically installing a charging system, the applicable surge protection standards must be observed. Compleo Charging Solutions AG recommends the use of a type 1+2 surge arrester for charging stations with public mains connection in the pre-meter area. Charging stations which are supplied from distribution boards that are already protected must be equipped with at least one type 2 surge arrester.

NOTE

When connecting a type 1+2 surge arrester, it must be ensured that the equipotential bonding connection is connected to a possibly installed equipotential bonding rail or to a local earth electrode. The manufacturer's instructions must be read and observed. The back-up fuse of the charging system must not exceed 160 A. (This upper limit refers exclusively to the surge arrester)

NOTE

When connecting a type 2 surge arrester, the equipotential bonding connection does not necessarily have to be connected. The manufacturer's instructions must be read and observed. The back-up fuse of the charging system must not exceed 125 A. (This upper limit refers exclusively to the surge arrester)

NOTE

If the material of the supply line used differs from copper, the specifications of the manufacturer of the domestic junction box must be taken into account.

NOTE

Any change to an adjustable current value of the charging point or charging points may only be made by a qualified electrician.

5.7 Data connection cable

If it is necessary to connect an individual charging station to a network by means of a cable, this must be done using a pre-installed cable connector. The cable connector is prepared on the system side and must be connected on the mains side during electrical installation. Open the cable connector on the mains side and prepare the cable according to the following figures.

ATTENTION

The minimum cross-section of the individual strands of the network cable must be below AWG 26. When using a smaller cross-section than AWG 26, it cannot be guaranteed that a connection can be established.

NOTE

As a network cable to be used on the network side, we recommend using a cable with the following designation and article number:

- Designation: HELUKAT 600E S/FTP PVC
- Article number: 802167, S/FTP 4x2xAWG23/1 PVC (S-STP)

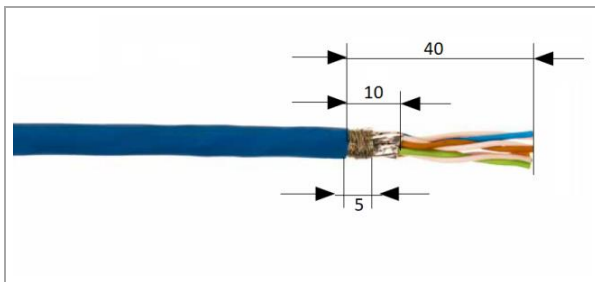


Fig. 7: Stripping the cable

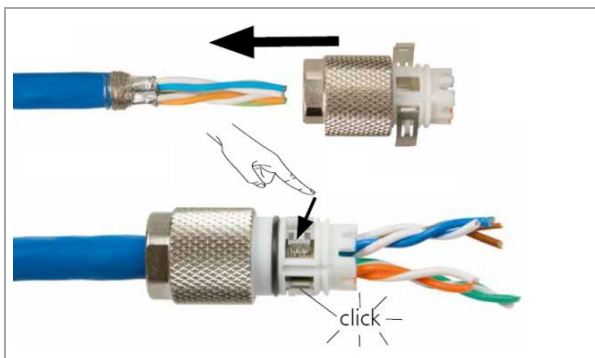


Fig. 8: Sliding on the connecting piece

1. Strip 40 mm of insulation from the cable as shown in the adjacent figure.
2. Wrap the braided shield evenly around the foil shield at the end of the jacket over a width of 5 mm.
3. Remove the foil shield so that it only protrudes 10 mm from the jacket.
4. Push the connecting piece onto the prepared cable.
5. Secure the connecting piece by locking the two shield clamps.
 - Make sure that the cables are correctly assigned to the corresponding gap (colour on colour).
 - If crossing of wire pairs is necessary, this procedure must be carried out before the connecting piece is inserted.

White plastic cap

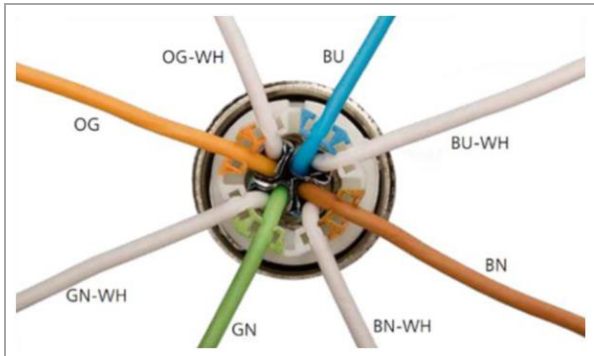


Fig. 9: Screwing on the connecting piece

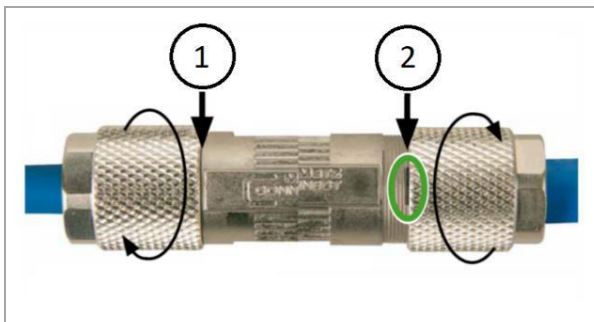


Fig. 10: Closing the screw connection

6. Connect the individual wires of the cable as shown in the adjacent figure.
7. Cut the wires with an electric cutter flush with the housing.
8. Screw the connecting piece to the cable connector.
 - How far the connecting piece has to be screwed onto the cable connector depends on the diameter of the network cable used on the network side.
 - For diameters up to 9 mm, the cable connector must be completely closed (1).
 - For diameters between 9.1 mm and 9.7 mm, close the screw connection up to the vertical marking of the cable connector (2).

5.7.1 RJ45 connector

If a connection to a network by means of an internally installed switch is required (depending on the equipment), this is to be realised using an RJ45 connector. The connector is enclosed and must be connected during electrical installation. The connector must be prepared according to the following illustrations.

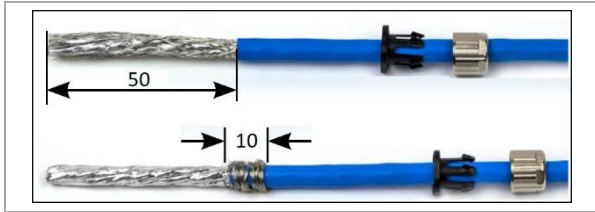


Fig. 11: Stripping the cable

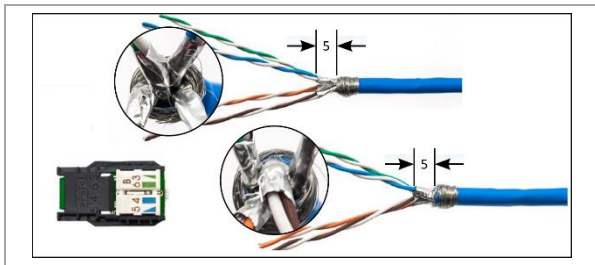
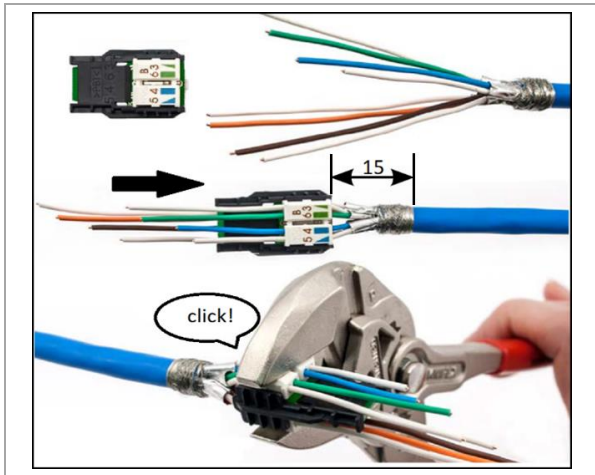
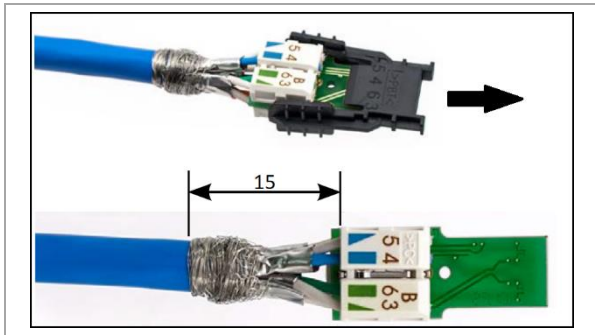


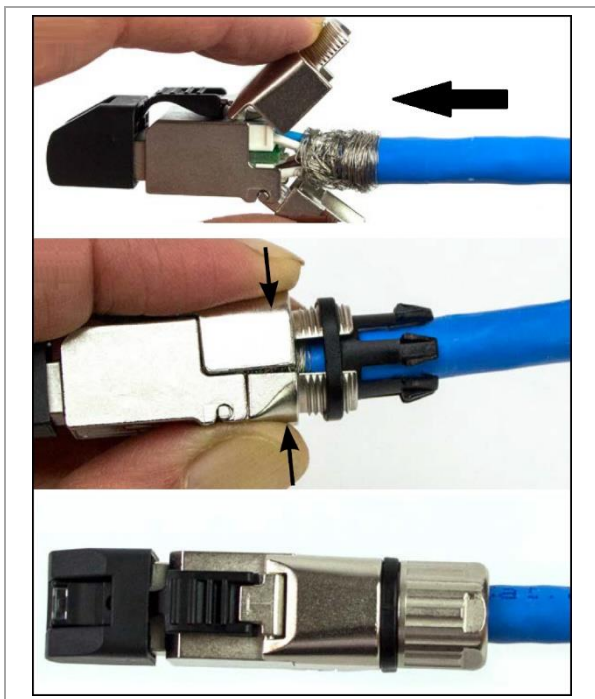
Fig. 12: Sliding on the connecting piece



1. Strip 50 mm of insulation from the cable as shown in the adjacent figure.
2. Push the cable gland over the stripped part onto the cable.
3. Wrap the braided shield evenly around the foil shield at the end of the jacket over a width of 10 mm.
4. Remove the foil shield so that it only protrudes 5 mm from the jacket.
5. Pre-sort wire pairs so that the colours of the manager and the wires match. This can result in the two versions shown, depending on which end of the network cable is present.
6. Untwist the wires and insert them into the wire manager according to the colour assignment.
7. Secure all wires in the wire manager with a pliers wrench. A click must be heard to indicate successful fastening.



- The distance between the beginning of the wound braided shield and the wire manager must not exceed 15 mm.
8. Cut off the wires protruding from the wire manager with an electric cutter so that the ends are flush.
The protrusion must not exceed 0.5 mm.
 9. Remove the black cap from the cable manager.



10. Push the wire manager into the RJ45 connector housing.
11. Close the fastener around the wound braided shield.
Make sure that no strands of the braided shield protrude from the connector.
12. Push the strain relief onto the fastening of the connector.
12. Attach the gland to the connector. The torque to be applied is approx. 1 Nm and can be achieved with an open-end spanner size SW13.

The electrical connection is completed and the charging system can be put into operation.

6 Commissioning

⚠ DANGER**Danger due to electric current**

Damage to the charging systems or components may expose live parts. Touching live parts will result in electric shock with serious injury or death.

- Only operate the charging system when it is undamaged.
 - In the event of damage, immediately disconnect the charging system from the power supply at the circuit breaker and take suitable safety measures to prevent it from being switched on again.
 - Work on electrical components may only be carried out by a qualified electrician.
 - Repair work may only be carried out by the customer service.
-

NOTE

Any change to an adjustable current value of the charging point or charging points may only be made by a qualified electrician.

Commissioning must be carried out by a qualified electrician or by a person trained and instructed in electrical matters. The effectiveness of the protective measures and the correct mechanical and electrical installation must be checked by a qualified electrician.

Commissioning may only be carried out when all necessary internal covers are fitted and the housing is completely closed.

Observe the national legal requirements and regulations during commissioning.

The correct mechanical installation is checked according to the following criteria:

- The degree of protection of the housing is not reduced or removed
- The charging system has a good optical condition
- The specifications for the buried depth of the housing or the specifications for the mounting height were complied with
- The housing has a safe installation condition according to its installation version

The correct electrical installation is checked according to the following criteria:

- All electrical components are functional and not damaged
- All display elements of the charging system are functional, visible and can be read
- The function of any installed residual current circuit breakers can be verified by pressing a button
- The function of any installed counters is available and readable
- The function of the charging system can be verified by means of a charging process
- The electrical installation was carried out in compliance with all safety and warning instructions and the listed safety requirements

NOTE

The Annex of this manual contains a test protocol with which the necessary steps can be recorded, written down and archived.

6.1 Testing the charging system



Fig. 13: Function simulator

The functionality of the installed charging system can be tested either with a vehicle or with a function simulator.

With the function simulator it is possible to simulate the functions of an electric vehicle and check the functionality of a charging system or charging point.

The figure shows an example of a function simulator for testing an AC charging system or AC charging point.

Another suitable test device must be used for all metrological tests.

6.2 System start-up

After the charging system has been correctly installed, the system can be started.

1. Switch on the main switch of the charging system.
2. Switch on the line and residual current circuit breaker.

The system starts up.

The duration of the system start-up may vary depending on the type of charging system, configuration and product characteristics. The successful completion of the system start-up is indicated by the status LEDs and the display according to the configuration and product scope of the charging system. The average start-up time is approx. 60 seconds.

A successful system start-up is indicated by the LED of the respective charging point temporarily lighting up green. In the case of a charging system with display, the message "Ready for operation" also appears for the respective charging point.

In addition to the displays mentioned above, the current counter reading and the message "Ready for operation" are shown on the display of any memory and display module (SAM) installed.

NOTE

After start-up, the charging system can be connected to the DUCTO configuration software in order to make settings.

If explicitly requested by the customer, the backend connections can be configured and tested at the factory. In this case, the backend connects directly to the associated charging system after applying the operating voltage. This process may take a few minutes.

6.3 Configuration of the charging system with Compleo DUCTO

Compleo DUCTO refers to the software used to manage Compleo charging systems using an end device.

Various parameters of the charging system can be set via the configuration interface.

The charging system management information is stored on the charging system itself. By specifying the IP of the charging system in the browser of a suitable end device, such as a notebook, a start page is called up and the connection to the charging system is established. After logging in, an overview of the parameters that can be called up or changed is listed.

To connect to the charging system, the end device used must have an IP address in the same IP address range.

NOTE

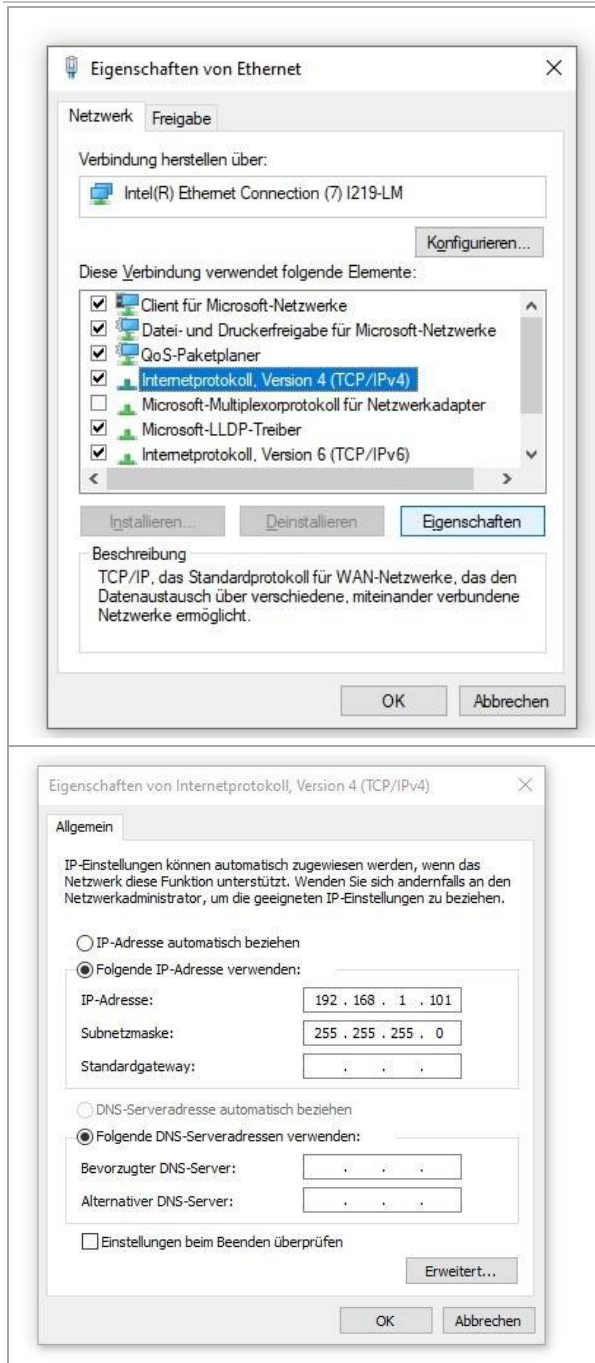
The following steps are illustrated using the example of a network configuration with Microsoft Windows 10 and a simulated charging system.

The user must have administrator rights for network configuration.

6.3.1 Creating a network connection



1. Connect a network-compatible end device or computer to the data line of the charging system.
2. Follow the command path: Control Panel -> Network and Internet -> Network Settings.
3. Show and open the properties of the corresponding Ethernet connection by right-clicking.



4. Open Properties of <...(TCP/IPv4)>.

5. Enter the IP address from the range 192.168.1.xxx.

Note: The IP 192.168.1.100 is assigned for the charging station and must not be used for the configuration of the end device or the computer.

The charging system is displayed as a network connection.

6.3.2 Calling up the configuration interface

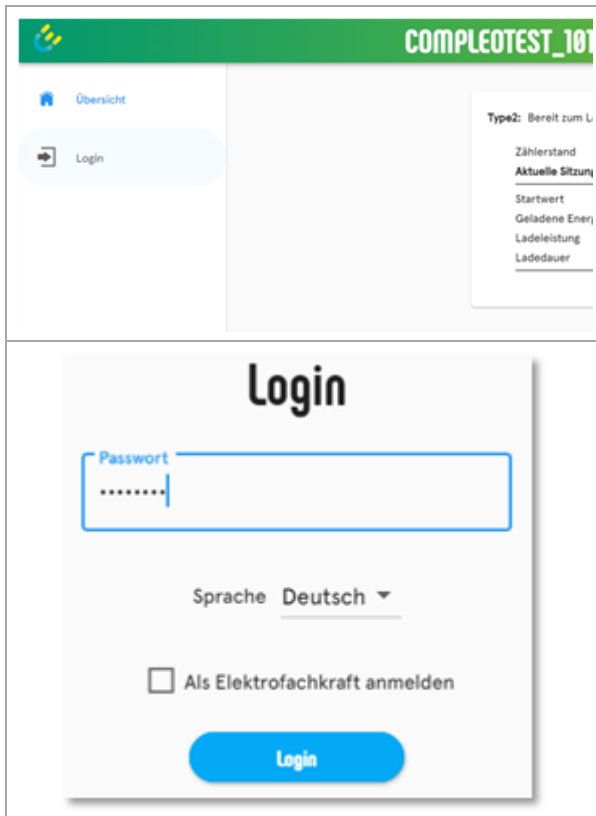


1. Identify password on DUCTO sticker.
 2. Open the local browser and enter the following IP address:
https://192.168.1.100.
- The DUCTO start page is displayed.

6.3.3 Operator login

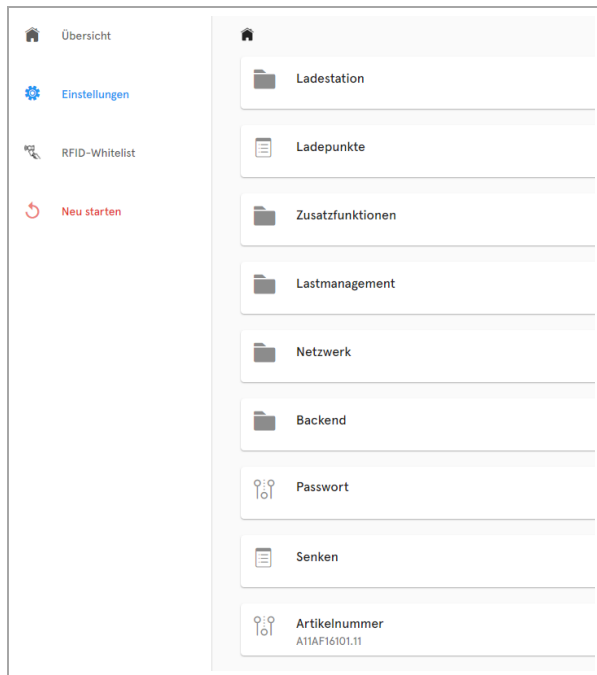
The start page shows information about the charging status of the charging interfaces.

After logging in as an operator, the user can set various parameters such as acoustic and visual signals.



1. Click <Login>.
- The Login window is displayed.
2. Select language.
 3. Enter password.
 4. Click <Login>.
- The configuration interface is displayed.

6.3.4 Changing parameters



1. Click the desired button.
- The settings for changeable parameters or other buttons are displayed.

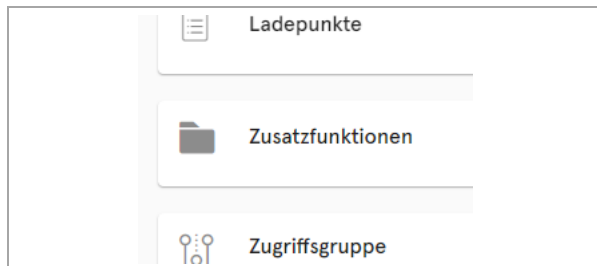
Optional: Changing the password

2. Click the <Password> button and follow the instructions.

ATTENTION

The password cannot be reset to the initial password after the password has been changed. The current password must therefore be kept carefully.

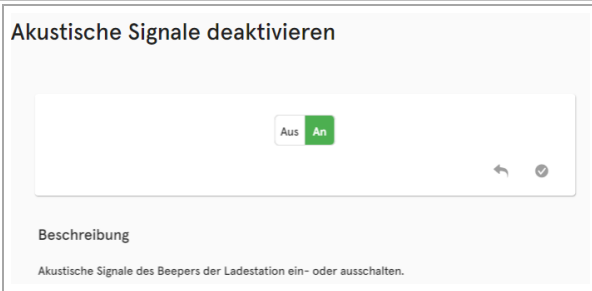
Example: Changing the acoustic signals



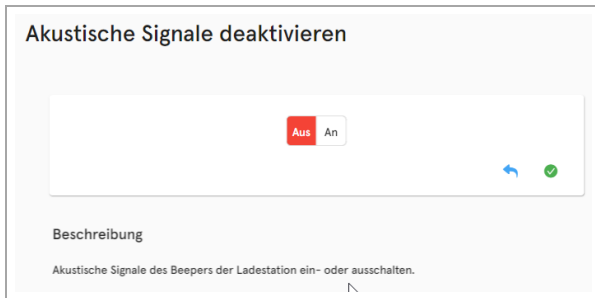
1. Click the <Additional functions> button.



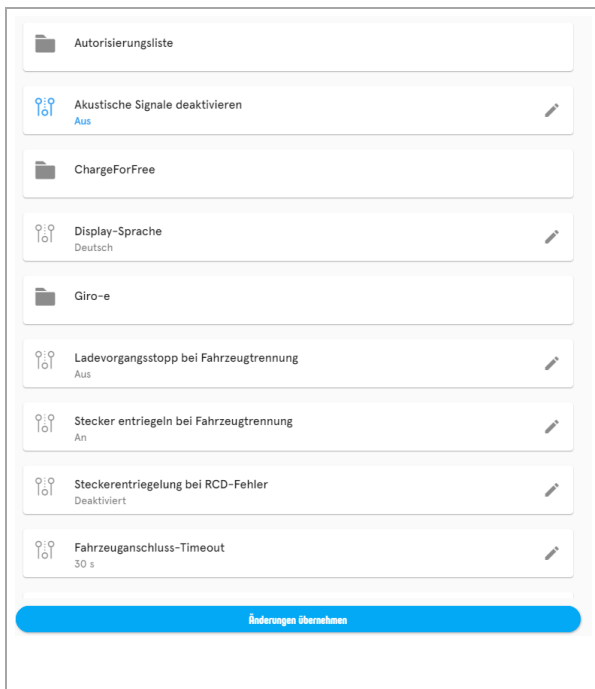
- The buttons for these functions are displayed.
2. Click the <Deactivate acoustic signals> button.



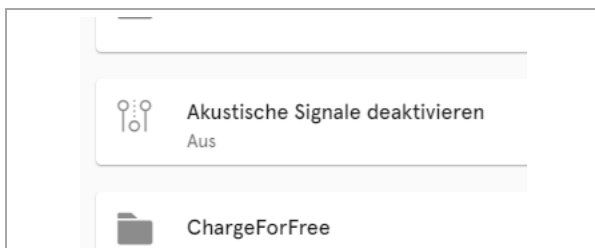
- ✓ The settings for the acoustic signals are displayed.
- 3. Click the <Off> button.



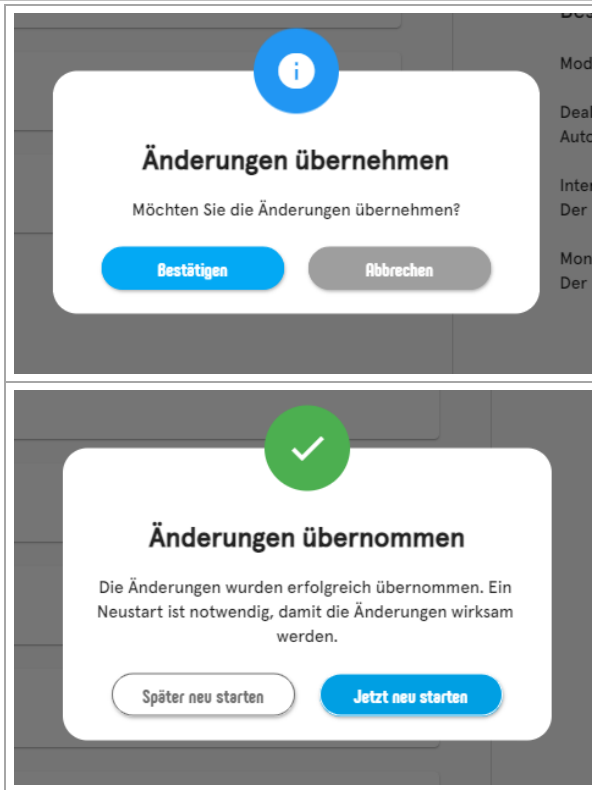
- ✓ The button is highlighted in red.
- 4. Confirm selection by clicking on the green button.



- ✓ The blue <Apply changes> button is displayed in the left column of the configuration.
- 5. Click the <Apply changes> button.



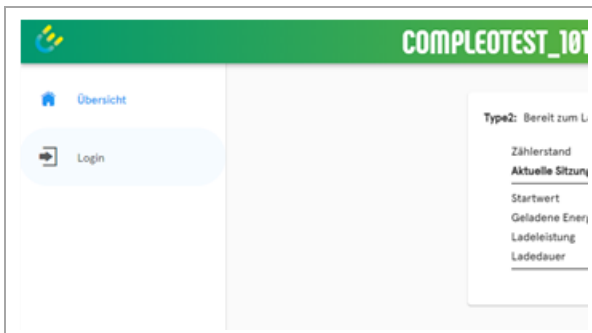
- ✓ The selected status is displayed on the button.



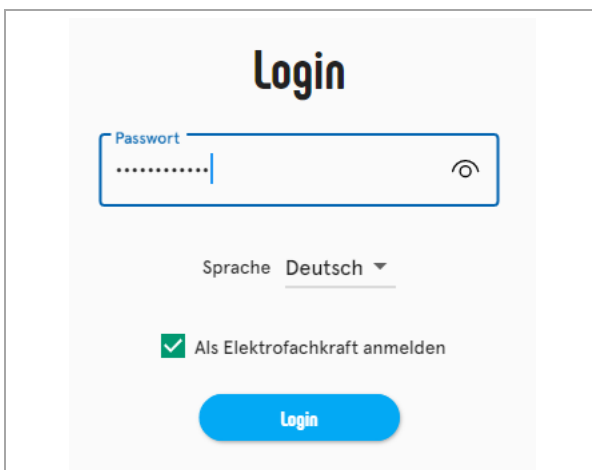
- The <Apply changes> button is displayed in the left column of the configuration.
- 6. Click the <Apply changes> button and follow the instructions.
- 7. Perform a restart.
- The changes are adopted.

6.3.5 Log in as electrician

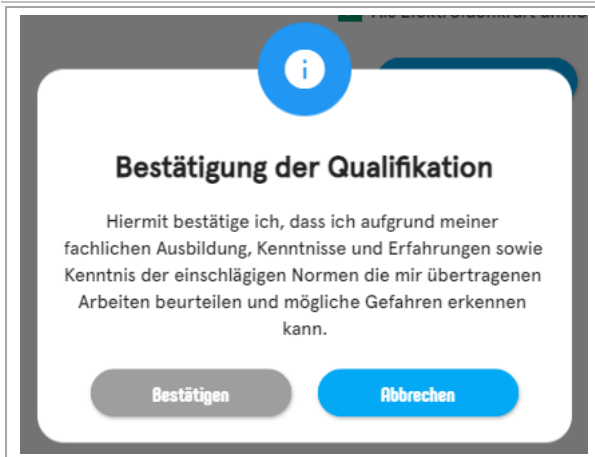
If the "Log in as electrician" checkbox is ticked when entering the password, the instructed electrician can make advanced settings for configuring the charging system:



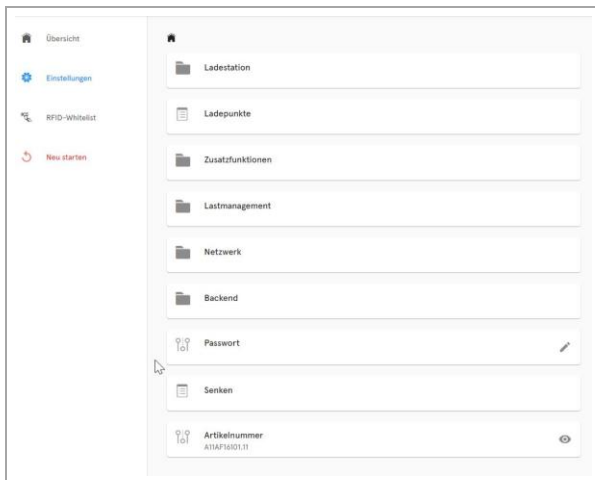
1. Click <Login>.



- The Login window is displayed.
- 2. Select language.
- 3. Select the <Log in as electrician> checkbox by clicking on it.
- 4. Enter password.
- 5. Click <Login>.



6. Confirm qualification.
 - The configuration interface is displayed.



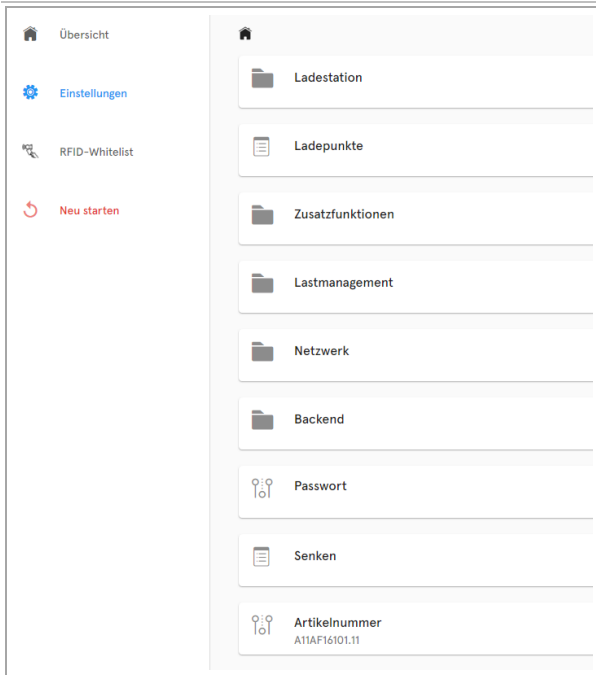
7. Click the topic and follow the instructions. See also "Example: Changing the RCD test cycle"

Optional: Changing the password
8. Click the <Password> button and follow the instructions.

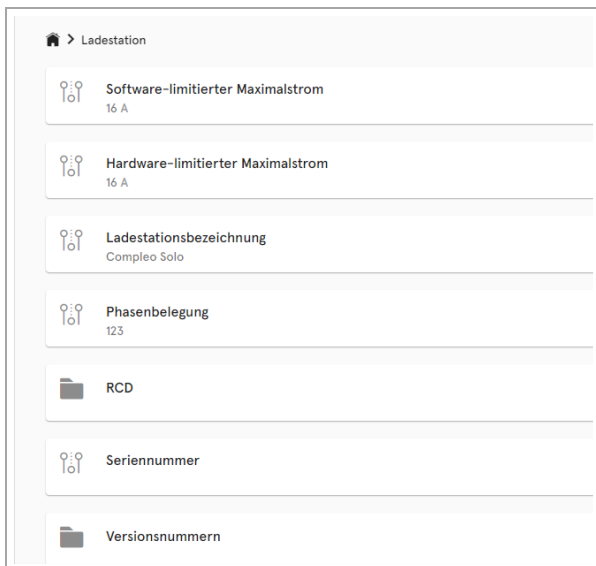
ATTENTION

The password cannot be reset to the initial password after the password has been changed. The current password must therefore be kept carefully.

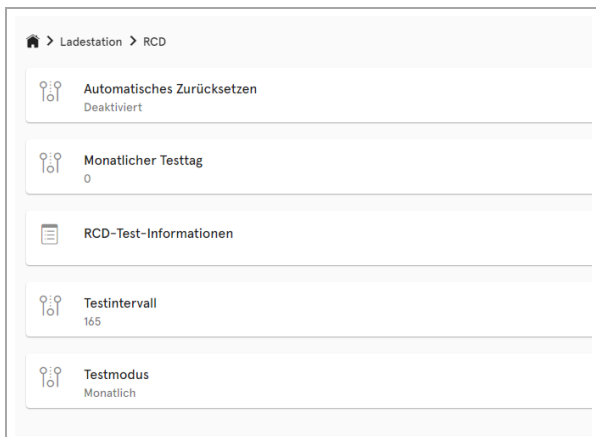
Example: Changing the RCD test cycle



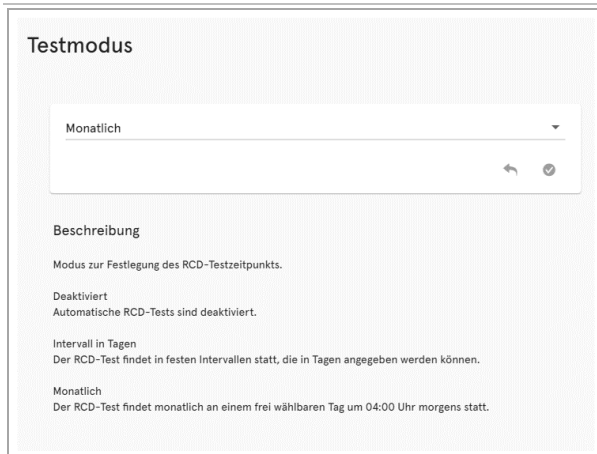
1. Click the <Charging station> button.



- The settings for the parameters of the charging station are displayed.
2. Click the <RCD> button.



- The settings for the RCD residual current device are displayed.
3. Click the <Test mode> button.



☑ The settings for the test mode are displayed in the right column of the configuration.

4. Click to open the selection field.



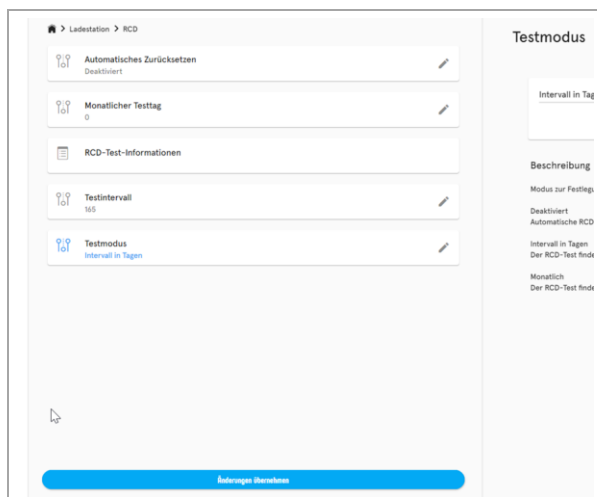
☑ The selection options are displayed.

5. Select a new cycle for the test mode.



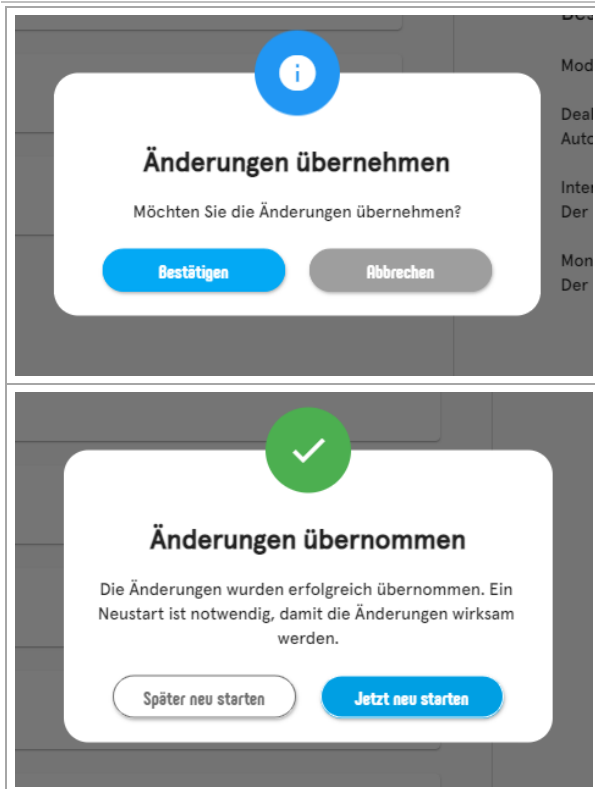
☑ The selected cycle is displayed.

6. Confirm selection by clicking on the green button.



☑ The blue <Apply changes> button is displayed in the left column of the configuration.

7. Click the <Apply changes> button and follow the instructions.



- The <Apply changes> button is displayed in the left column of the configuration.
- 8. Click the <Apply changes> button and follow the instructions.
- 9. Perform a restart.
- The changes are adopted.

7 Operation

Before using the charging system, read the respective documents that are provided with the charging system or that are necessary for operation.

⚠ DANGER**Danger due to electric current**

Damage to the charging systems or components may expose live parts.

Touching live parts will result in electric shock with serious injury or death.

- Only operate the charging system when it is undamaged.
 - In the event of damage, immediately disconnect the charging system from the power supply at the circuit breaker and take suitable safety measures to prevent it from being switched on again.
 - Work on electrical components may only be carried out by a qualified electrician.
 - Repair work may only be carried out by the customer service.
-

Depending on the charging system and product scope, the following operating and authorisation forms for starting and ending a charging process are possible:

- RFID
- Giro-e
- Plug & Charge
- Remote authorisation

RFID:

With the "RFID" method, a charging process is started or stopped at a charging system using a card or chip. The charging process is started as soon as authorisation has been successfully completed and a charging cable has been connected to the charging system and/or the vehicle.

Giro-e:

With the "Giro-e" method, a charging process is started on a charging system by means of a Giro card and then confirmed or terminated. The charging process is started as soon as authorisation has been successfully completed and a charging cable has been connected to the vehicle.

Plug & Charge:

With the "Plug & Charge" method, a charging process is started or stopped at a charging system without special authorisation. The charging process is started as soon as a charging cable has been connected to the charging system and/or the vehicle.

Remote authorisation:

With the "remote authorisation" method, a charging process is started or stopped at a charging system using an app or a web interface. Depending on the authorisation type and provider, registration may be necessary. The charging process is started as soon as the charging system, charging point and tariff have been selected. The display complying with weights and measures regulations shows an ID number assigned to the charging process. Depending on the provider, billing may be via PayPal or invoice (different payment methods are possible). The charging process is started as soon as a charging cable has been connected to the charging system and/or the vehicle.

Information on which app is necessary and how to operate the app should be obtained from the operator of the charging system.

If no charging process has been started at the charging system, any one of the two charging points can be selected for a charging process.







- 1 Display (information display)
- 2 RFID field (also for authorisation via Giro card)
- 3 Status LEDs
- 4 Charging interface, socket type 2 (or attached cable with type 2 plug)



- 1 Upper display (information display)
- 2 Card payment terminal
- 3 Status LEDs
- 4 Charging interface, socket type 2 (or attached cable with type 2 plug)

7.1.1 Meaning of the status LED colours

During the charging process, both the information display, if available, and the status LEDs show the progress of the charging process.

Charging state display: LED colour state			
1.	LED: "grey"	The charging system indicates the standby state. <ul style="list-style-type: none"> • Authorisation can be carried out. 	
2.	LED: "green"	The charging system indicates readiness for operation. <ul style="list-style-type: none"> • A charging process can be started. 	
3.	LED: "blue"	The charging system indicates a charging process. <ul style="list-style-type: none"> • The charging process can be maintained or terminated. 	
4.	LED: "red"	The charging system indicates an error state. (not for RGB 2-colour) <ul style="list-style-type: none"> • A charging process cannot be started. 	

7.1.2 Authorisation at the RFID field

The following means of authorisation/payment are available:

RFID card or RFID chip



1. Hold the RFID card or RFID chip in front of the RFID field.
 - The display and the status LED indicate readiness for operation.



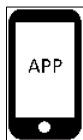
Giro-e



1. Hold the Giro card in front of the RFID field.
 - Tariff conditions are shown on the display.
2. Hold the Giro card again in front of the RFID field to agree to the conditions and the direct debit procedure.
 - The display and the status LED indicate readiness for operation.



App on smartphone/tablet or web interface

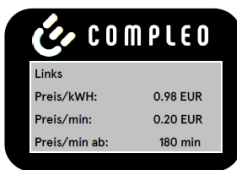


1. Download and install app for smartphone or tablet or start web interface.
2. Follow the instructions of the app or web interface for the authorisation process.
 - The display and the status LED indicate readiness for operation.



7.1.3 Authorisation at the credit card terminal

The following means of authorisation/payment are available:



Debit card, credit card, Google Pay, ApplePay

1. Hold the means of payment in front of the display of the credit card terminal.
 - The display of the credit card terminal and the upper display (information display) show the successful authorisation.
 - The upper display shows tariff conditions and the charging point.
 - The status LED indicates readiness for operation.



NOTE

The tariff conditions displayed do not apply to charging contracts.



RFID card

1. Hold the RFID card in front of the display of the credit card terminal.
 - The upper display (information display) shows the successful authorisation.



- The status LED indicates readiness for operation.

7.1.4 Connecting the charging cable

Before plugging in the charging cables, check that the status LED of the charging point is green.



Type 2 socket

1. Plug in the charging cable in the socket of the charging system.
2. Only then plug in the charging cable in the socket of the vehicle.



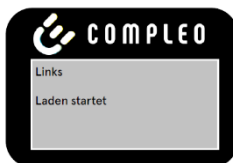
Type 2 plug with attached plug

1. Plug in the charging cable in the socket of the vehicle.

7.1.5 Starting the charging process

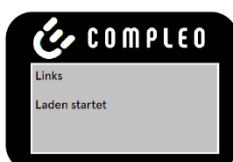
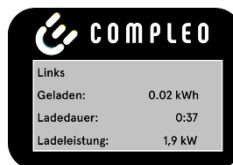
The charging process starts automatically after the existing authorisation method has been successfully carried out and the charging system and vehicle have been connected to the charging cable.

During charging, the plug is locked in the charging system and in the vehicle.



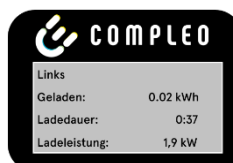
RFID card

- The display and the status LED indicate the start of the charging process.
- Information on the charging process (charging volume, charging data, charging power) is displayed on a scrolling display.
- Tariff information can be found in the charging contract.



Debit card, credit card, Google Pay, ApplePay

- The display and the status LED indicate the start of the charging process.
- Information on the charging process (charging volume, charging data, charging power) and tariff information is displayed on a scrolling display.





NOTE

The binding charging data (in compliance with calibration law) is shown on the display of the storage and display module (SAM) on the respective side of the charging system.

7.1.6 End charging process with RFID field

The charging process stops automatically after the existing authorisation method has been successfully executed again.



RFID card or RFID chip

1. Hold the RFID card or RFID chip in front of the RFID field.
 - The display and the status LED indicate the end of the charging process.



Giro-e

1. Hold the Giro card in front of the RFID field.
 - The display and the status LED indicate the end of the charging process.



App on smartphone/tablet or web interface

1. Follow the instructions of the app or web interface for finishing the charging process.
 - The display and the status LED indicate the end of the charging process.



7.1.7 End charging process with credit card terminal



Debit card, credit card, Google Pay, ApplePay

1. Hold the means of payment in front of the display of the credit card terminal.
 - The upper display and the status LED indicate the end of the charging process.



RFID card

1. Hold the RFID card in front of the credit card terminal.
 - The upper display and the status LED indicate the end of the charging process.



7.1.8 Disconnecting the charging cable

Type 2 socket



1. Pull out the charging cable from the socket of the vehicle.
2. Pull out the charging cable from the socket of the charging system.
 - The status LED no longer lights up.



Type 2 plug with attached plug



1. Pull out the charging cable from the socket of the vehicle.
 - The status LED no longer lights up.



7.1.9 Retrieve billing data



Giro-e

Within a period of 10 minutes after completion of a charging process, it is possible to display the SEPA ID by holding the Giro card in front of the RFID field again.



App on smartphone/tablet or web interface

All charging process data can be called up permanently via an individual link in the reason for payment note of the bank account statement.

The essential information of the charging process is visible in the account statement.

8 Malfunctions

8.1 Residual current circuit breaker (RCCB)

In the event of a residual current, the residual current circuit breaker trips and the charging system is switched off.

To switch on again, proceed as follows:

1. Eliminate the cause of the error.
2. Activate the residual current circuit breaker by pushing up the locking slide on the side of the housing.

The system starts up.

8.2 Residual current circuit breaker (RCCB)

In the event of a residual current, the residual current circuit breaker trips and the charging system is switched off.

To switch on again, proceed as follows:

1. Eliminate the cause of the error.
2. Activate the residual current circuit breaker by pushing up the toggle switch.

The system starts up.

NOTE

Only applies to charging systems with built-in residual current circuit breaker (RCCB).

9 Error display and measures

The charging system displays an error code on the display in case of errors.

If several errors occur at the same time or in combination, the respective error codes are shown one after the other on the display.

Basically, a distinction is made between ErrorStatus and ErrorEvents.

- An ErrorStatus is an error that occurs and persists until it is corrected.
- An ErrorEvent is an error event that occurs once and then again.

9.1 About this advices

Column name	Explanation
Title	String sent to the backend when the charging station is in online mode.
Code	Symbol that is shown individually or in combination with other symbols on the charging station display depending on the status.
Troubleshooting advice	Description of the fault and troubleshooting advice.

9.1.1 Field of application

Firmware 5.X and 6.X (SOLO, DUO, CITO)

9.2 OCPP 1.6

Title	Code	Troubleshooting advice
GroundFailure	B	The RCD, the circuit breaker or the 6mA sensor of the charging point has tripped. Inspection by qualified electrician required.
InternalError	D	Error in internal hardware or software component. Inspection by qualified electrician required.
OverVoltage	E	The voltage has risen above an acceptable level. Inspection by qualified electrician required.
PowerMeterFailure	F	Error when reading the meter. Check SAM or meter for function and report fault.
PowerSwitchFailure	G	Contactors fault. Inspection by qualified electrician required.
UnderVoltage	I	The voltage has dropped below an acceptable level. Inspection by qualified electrician required.

ConnectorLockFailure	-	Error when locking or unlocking the plug. It must be checked whether the plug is connected correctly.
OverCurrentFailure	-	The vehicle has drawn more current than specified for an extended period of time.

Not used: EVCommunicationError, HighTemperature, ReaderFailure, WeakSignal

9.3 Compleo-specific

Title	Code	Troubleshooting advice
IsolationWarning	K	Insulation problems occurred before or during a charging process. Inspection by qualified electrician required.
IsolationError	L	Insulation problems occurred before or during a charging process. Inspection by qualified electrician required.
DoorOpen	M	The door contact signals that the door has been opened. Close door. If this condition is permanent, a test by a qualified electrician is required.
DoorClosed	N	The door contact signals that the door has been closed. No action required.
Inoperative	O	The charging point is not available because a resource, such as the power module, is occupied by another charging point. Inspection by qualified electrician required.
FuseError	P	A circuit breaker has tripped. Inspection by qualified electrician required.
TemperatureSensorMissing	Q	The temperature sensor does not provide any values. Inspection by qualified electrician required.
AutomaticRcdTestRunning	T	Automatic test of the RCD is running. No action required.
RCSensorTestRunning	W	Test of the 6mA sensor test in progress. No action required.

samTransactionMemoryFull	4	SAM has no more free memory for new charging processes. SAM must be replaced by an authorized electrician.
samEVSEIDMemoryFull	5	SAM has no more free memory for new configuration parameters. SAM must be replaced by an authorized electrician.
samFirmwareCorrupted	6	The SAM firmware checksum check has failed. If this condition is permanent, SAM must be replaced by an authorized electrician.
samNoTouchControllerComm	7	The connection to the SAM keys is disturbed. Check by qualified electrician required. If this condition is permanent, SAM must be replaced by an authorized electrician.
samNotInitialized	8	SAM could not be initialized. If this condition is permanent, SAM must be replaced by an authorized electrician.
samInternalError	9	SAM reports an internal error. SAM must be replaced by an authorized electrician.
UnlockPlugFailure	a	The plug could not be unlocked. The locking unit of the charging point must be checked by trained personnel and replaced if necessary.
OutletCloseError	b	The sliding lid could not be closed. The locking unit of the sliding lid must be checked by trained personnel and replaced if necessary.
LPCCommunicationError	c	The communication between the charging point controller and the charging station controller is disturbed. The corresponding connection must be checked by trained personnel and replaced if necessary.
CableError	d	A non-approved charging cable has been detected. A different charging cable must be used.
RCSensorTestError	e	The test of the 6mA sensor has failed. Inspection by qualified electrician required.
PowerMonitoringError	f	The charge point controller has detected a power failure. Inspection by a qualified electrician is required.
ADCErrror	g	The charge point controller has detected an ADC error. Inspection by qualified electrician required.

ShortCircuitError	h	The charge point controller has detected a short circuit between CP and PE. Inspection by qualified electrician required.
LPCOverVoltageError	i	The charge point controller has detected an overvoltage. Inspection by qualified electrician required.
LPCHighTemperatureError	j	The charging point controller has detected a temperature that is too high. Inspection by qualified electrician required.
LPCSelftestError	k	The self-test of the charging point controller has failed. Inspection by qualified electrician required.
AutomaticRcdTestFailed	m	The automatic test of the RCD has failed. Inspection by qualified electrician required.
LPCTemperatureSensorError	n	The charging point controller reports a temperature sensor error. Replacement by qualified electrician required.
CurrentSensorFailure	o	The charging point controller reports a current sensor error. Inspection by qualified electrician required.
PolarityProtectionError	p	The charging point controller reports that the phases are connected with reversed polarity. Inspection by qualified electrician required.
samCompensationsParameters Mismatch	q	Compensation parameters in SAM and in meter do not match. Inspection by authorized electrician required.
samCompensationTariff Mismatch	r	Selected tariff in the meter does not correspond to that which the meter reports as active. Inspection by authorized electrician required.
samMeterIdMismatch	s	The SML ID of the connected meter does not correspond to that of the meter connected to the SAM. Inspection by authorized electrician required.
AutomaticRcdTestSuccess	-	Automatic test of the RCD successful. No action required.
AutomaticRcdTestTripFailure	-	Automatic test of the residual current circuit breaker failed. Inspection by qualified electrician required.
AutomaticRcdReset ContactorTestFailed	-	The cause of the failed RCD test has not been eliminated. Inspection by qualified electrician required.

AutomaticRcdResetSuccess	-	The cause of the failed test of the RCD has been eliminated. No action required.
OutletOpenError	-	The socket could not be opened. Inspection by qualified electrician required.
RCSensorErrorDuringCharge	-	The 6mA sensor has tripped during a charging process. Inspection by qualified electrician required if the error occurs frequently.

10 Maintenance

Careful and regular maintenance ensures that the functional condition of the charging system is maintained. Only a regularly checked and maintained charging system is able to guarantee maximum availability and reliable charging processes.

The maintenance intervals depend on the prevailing operating conditions, such as the frequency of use and environmental influences such as the degree of contamination.

We recommend a cyclically recurring inspection according to the maintenance plan. In special cases, the cycles can be shorter.

⚠ DANGER**Danger due to electric current**

Touching live parts will result in electric shock with serious injury or death.

- Work on electrical components may only be carried out by a qualified electrician and in accordance with electrical engineering rules.
 - Ensure they are de-energised and take suitable protective measures.
-

⚠ WARNING**Danger due to improper maintenance**

Improper performance of work can lead to serious injuries and damage to property.

- Work may only be carried out by trained specialist personnel.
 - Meet all safety requirements before maintenance.
-

10.1 Maintenance plan

Interval	Component/location	Maintenance work
Every 6 months	Residual current circuit breaker	Check with test button.
	Surge arrester	Visual inspection or check with test button.
Yearly	Location	Visual inspection, e.g. for distances to objects (bushes, electrical installations ,etc.), attachment.
	Electrical components	Visual inspection, e.g. cables, lines, screw connections, plugs, RCD, MCB, display, LED, display, surge protection.
		Metrological verification according to test report, see Annex.
		Check for function, e.g. RCD (test button), MCB, IMD.
	Mechanical components	Visual inspection, e.g. housing, paint, foils, covers.
		Check for function, e.g. door and closing mechanism; check parking position.
Charging system	Check for function, e.g. start and stop of a charging process at all charger interfaces.	
Wear parts	Replace, e.g. filter mats (only for active cooling).	
As required	Charging system	Clean the inside and outside of the housing.

NOTE

A test report is included in the Annex of this manual. See chapter 14.2 Commissioning and test report for AC charging systems, page 71.

10.2 Maintenance and repair

DANGER

Danger due to electric current

Damage to the charging systems or components may expose live parts.

Touching live parts will result in electric shock with serious injury or death.

- Only operate the charging system when it is undamaged.
- In the event of damage, immediately disconnect the charging system from the power supply at the circuit breaker and take suitable safety measures to prevent it from being switched on again.
- Work on electrical components may only be carried out by a qualified electrician.
- Repair work may only be carried out by the customer service.

Maintenance and repair work may only be carried out by the manufacturer.

- Replace the charging station if necessary.

10.3 Cleaning

The components inside the charging system need to be cleaned according to the assessment of an expert but this is not always necessary. Any necessary cleaning of the interior must only be carried out after consultation with the operator of the charging system. Cleaning may only be carried out by a properly and professionally instructed person and must never be carried out by a user.

Only materials and dry cleaning agents which are antistatic and do not damage the electrical or mechanical components may be used as cleaning agents for the interior. Only materials and agents that do not attack or damage the surface of the housing or any applied foiling or paintwork should be used as cleaning agents for the external housing. If chemical agents are used during cleaning, the work must be carried out outdoors or, if this is not possible, only in well-ventilated rooms.

⚠ DANGER

Danger due to electric current

Touching live parts will result in electric shock with serious injury or death.

- Only clean the charging system when it is switched off.
 - Do not clean the outer housing with water jets, e.g. with a hose or a high-pressure cleaner.
 - Do not clean the interior of the charging system with liquid cleaning agents.
 - Do not clean any plugs in the charging system.
-

ATTENTION

Damage to the unit

Environmental influences due to rain, splash water or heavy dust exposure on exposed installation components without an installation cover cause damage to the unit.

- Do not leave the charging station unattended with the installation cover open.
-

11 Decommissioning, dismantling and disposal

The decommissioning and dismantling of the charging system may only be carried out by a qualified electrician. The national legal requirements and regulations must be observed.

⚠ DANGER**Danger due to electric current**

Touching live parts will result in electric shock with serious injury or death.

- Work on electrical components may only be carried out by a qualified electrician and in accordance with electrical engineering rules.
 - Ensure they are de-energised and take suitable protective measures.
-

1. Finish charging processes properly.
2. Disconnect the charging system from the power supply.
 - Activate using the internally installed safety elements such as MCB, RCD and any installed main switch.
 - Release the upstream fuse element of the charging system.

Dismantling may only be carried out after it has been established that no voltage is present and suitable protective measures have been taken.

A loading system contains materials that can be recycled. In order to protect the environment and human health, disposal must be carried out in accordance with local laws and ecological considerations.

- Observe the requirements of the WEEE Directive 2012/19/EU.
- Dispose of the charging system in accordance with the applicable local environmental regulations.
- Send dismantled components for recycling.

NOTE

Incorrect or negligent disposal causes environmental pollution.

- If you have any questions about environmentally friendly disposal, ask your specialist dealer or the manufacturer for information.
-

12 Memory and display module SAM

The charging system is equipped with a permanently installed memory and display module (SAM).

Charging systems with a built-in memory and display module (SAM) are subject to the weights and measures law. This means that the documentation in the Annex associated with the SAM is relevant under the weights and measures law, and must be observed.

See chapter

NOTE

If a charging system with a built-in memory and display module (SAM) is taken out of service, the module must be stored by the operator of the charging system until the end of the storage period. This ensures that the stored data about previous loading processes complying with weights and measures regulations can be accessed. Each SAM must be stored in such a way that it can be assigned to the charging system and the charging interfaces.

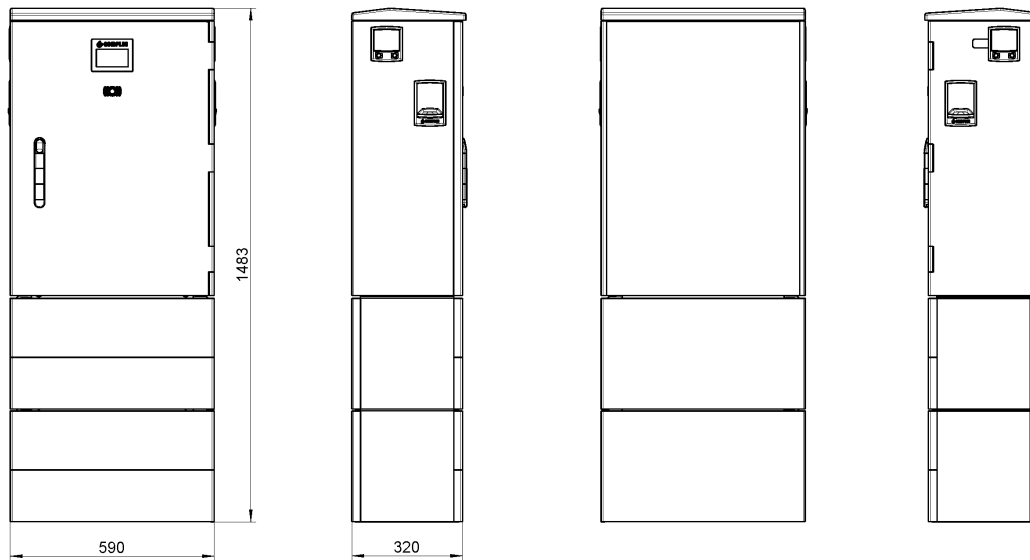
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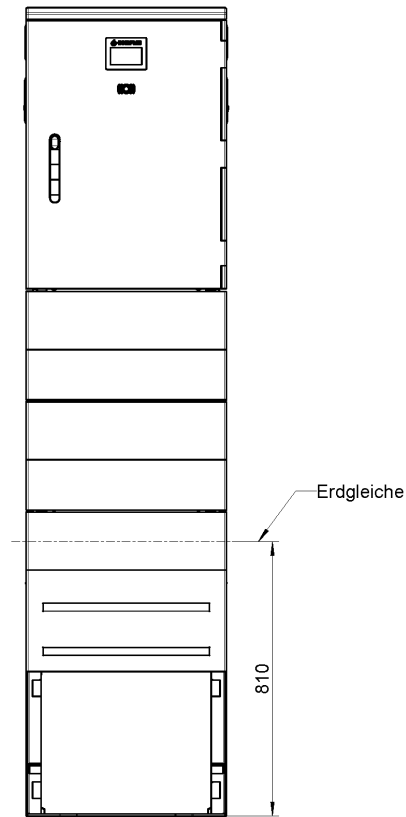
14 Annexes

14.1 Housing dimensions

Charging system design:

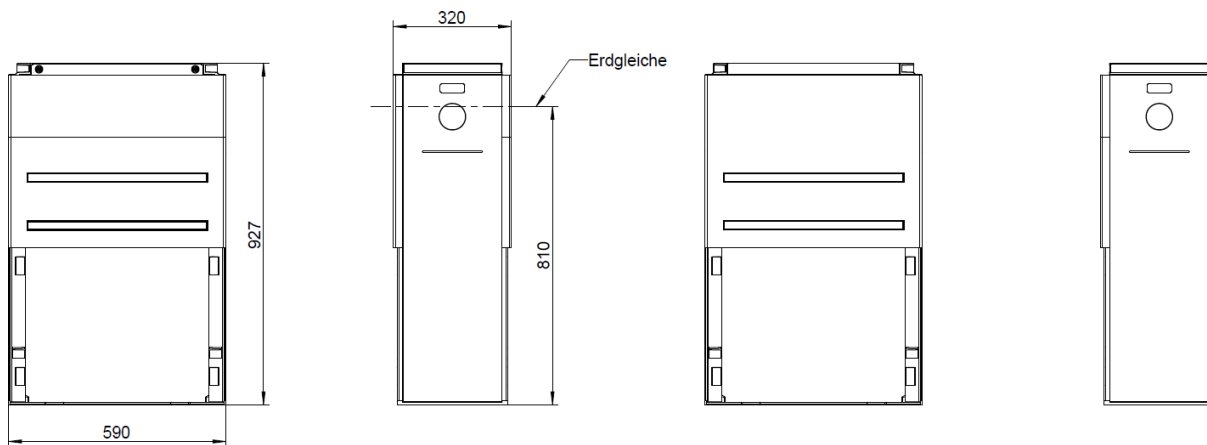


Design drawing of the compleo® Advanced IMS BM HUB charging system



Design drawing of the SMC base and the mounted compleo® Advanced IMS BM HUB charging system

Base design:



Design drawing of the SMC base of the charging system

14.2 Commissioning and test report for AC charging systems



Inbetriebnahme- und Prüfprotokoll für AC-Ladesysteme

Anwendbar für AC Ladesysteme

Betreiber der Anlage:

Firma/Name:

Straße:

PLZ/Stadt:

Telefonnummer:

Standort der Anlage:
Prüfendes Unternehmen:

Firma/Name:

Straße:

PLZ/Stadt:

Telefonnummer:

Datum:
 Erstinbetriebnahme: in Anlehnung an DIN VDE 0100-600 (2017:06)

 Wiederkehrende Prüfung: in Anlehnung an DIN VDE 0105-100 (2015:10)

1 Allgemeine Angaben

Vorinstallation durchgeführt durch Kunde	<input type="checkbox"/> ja	<input type="checkbox"/> nein
Dokumentation zur Vorinstallation vorhanden (Protokoll Vorinstallation)	<input type="checkbox"/> ja	<input type="checkbox"/> nein

Bezeichnung des Prüflings:			
Seriennummer:			
Netzform:	<input type="checkbox"/> TT	<input type="checkbox"/> TN-S	<input type="checkbox"/> TN-C
	<input type="checkbox"/> TN-C-S		
Lokale Erdung vorhanden	<input type="checkbox"/> ja	<input type="checkbox"/> nein	
Blitzschutzkonzept am Standort erkennbar/vorhanden	<input type="checkbox"/> ja	<input type="checkbox"/> nein	Betreiber auf Notwendigkeit hinweisen!

1.1 Ausstattungsabhängige Angaben

Bauteil	Nicht verbaut	Seriennummer	Zählerstand in kWh
Ladepunktzähler 1	<input type="checkbox"/>		
Ladepunktzähler 2	<input type="checkbox"/>		
Bauteil	Nicht verbaut	Typbezeichnung	Bemerkungen
Überspannungsschutz	<input type="checkbox"/>		
Überspannungsschutz	<input type="checkbox"/>		



2 Arbeiten vor Erstinbetriebnahme

INFO: Ablängen der Kabelisolierungen nach Installationsanweisung (bei Nichtbeachtung droht **BRANDGEFAHR**)

Überprüfung der Kabelverschraubungen (Drehmoment) und Zugprüfung an Leitungen im spannungsfreien Zustand erfolgt? Ja Nein

2.1 Verwendete Mess- und Prüfmittel

Hersteller	Bezeichnung	Seriennummer	Nächste Kalibrierung

3 Optische Prüfungen

Sichtprüfung außen	i.O.	n.i.O	Bemerkungen
Gehäusezustand	<input type="checkbox"/>	<input type="checkbox"/>	
Verschmutzung	<input type="checkbox"/>	<input type="checkbox"/>	
Displayscheibe Zähler/SAM	<input type="checkbox"/>	<input type="checkbox"/>	
Displayscheibe Steuerung	<input type="checkbox"/>	<input type="checkbox"/>	
Ladekabel AC (falls vorhanden)	<input type="checkbox"/>	<input type="checkbox"/>	Austausch bei Defekt zwingend erforderlich!

Sichtprüfung innen	i.O.	n.i.O	Bemerkungen
Bauteile (RCD, Schütz, MCB,...)	<input type="checkbox"/>	<input type="checkbox"/>	
Verkabelung	<input type="checkbox"/>	<input type="checkbox"/>	z.B. Kabelverschraubung
Verschmutzungsgrad allgemein	<input type="checkbox"/>	<input type="checkbox"/>	
Feuchtigkeit	<input type="checkbox"/>	<input type="checkbox"/>	
Korrosion	<input type="checkbox"/>	<input type="checkbox"/>	
Überspannungsschutz (falls vorh.)	<input type="checkbox"/>	<input type="checkbox"/>	Optische Anzeige = grün
Sockelfüller eingebracht	<input type="checkbox"/>	<input type="checkbox"/>	
Abdeckungen zu aktiven Teilen	<input type="checkbox"/>	<input type="checkbox"/>	

4 Messtechnische Überprüfung (1-mal jährlich durchzuführen)

Prüfung	Einzelmessungen	Grenzwert	Lade- punkt 1	Lade- punkt 2	Bemerkungen
Durchgängigkeit Schutzleiter	Schutzleiter	Niederohmig Empfehlung: <1Ω	MΩ	MΩ	Messung von Ladekabel/Ladesteckdose bis Einspeisung Ladesäule
Hauptpotentialausgleichschiene (falls vorhanden)	Erderanschluss	Niederohmig		Ω	Empfehlung: <1Ω:
Isolationswiderstand ohne Verbraucher (von Speisepunkt Ladesystem bis Ladestecker, bei fest angeschlagenem Kabel, bzw. Fahrzeugkupplung)	L1-PE	≥1,0MΩ	MΩ	MΩ	Bei Ladesystemen mit zwei Ladepunkten vor Messbeginn ein Ladepunkt durch Abschalten eines MCB freischalten und andere Seite messen, danach diese Prozedur auf anderer Seite wiederholen. (verbaute Zähler und RCD beeinflussen das Messergebnis)
	L2-PE		MΩ	MΩ	
	L3-PE		MΩ	MΩ	
	N-PE	MΩ	MΩ		
	L1-L2	≥1,0MΩ	MΩ	MΩ	
	L2-L3		MΩ	MΩ	
	L1-L3		MΩ	MΩ	
	L1-N		MΩ	MΩ	
	L2-N		MΩ	MΩ	
L3-N	MΩ		MΩ		
LP1 Verdrahtung auf Rechtsdrehfeld	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.				
LP2 Verdrahtung auf Linksdrehfeld	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.				Linksdrehfeld an LP2 erlaubt!!!
Netzspannung	L1-N	230V +/-10%		V	
	L2-N			V	
	L3-N			V	
	L1-L2	400V +/-10%		V	
	L2-L3			V	
	L1-L3			V	
Rel. Spannungsfall (Ber. Mess.)	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	max. 5% bis Speisepunkt			
Fehler- schleifen- impedanz Z_S	TN-Netz	L1-PE	$Z_S \leq \frac{U_0}{I_a}$ U_0 =Nennwechselspannung I_a =Auslösestrom (MCB/RCD)	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
		L2-PE		<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
		L3-PE		<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
	TT-Netz	L1-PE	$Z_S \leq \frac{50V}{I_{\Delta N}}$ $I_{\Delta N}$ = Bemessungsdifferenzstrom in A des RCD	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
		L2-PE		<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
		L3-PE		<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
		N-PE		<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.	<input type="checkbox"/> i.O. <input type="checkbox"/> n.i.O.
Fehlerstrom schutz- ein- richtung RCD	AC Fehlerstrom sinusförmig	Auslösestrom $I_{\Delta N}=30mA$	>15 mA ≤30mA	mA	mA
		Auslösezeit 1x I_N	<300ms	ms	ms
		Auslösezeit 5x I_N	<40ms	ms	ms
	DC (6mA Sensor = pos. und neg. Flanke)	Auslösestrom $I_{\Delta N}=30mA$	≤6mA bei 6mA Sensor ≤60mA bei RCD Typ B	Positive Flanke	mA
			Negative Flanke	mA	mA



	RCD Typ B = ansteigender DC Fehlerstrom)	Auslösezeit	<10s bei 6mA < 0,3s bei Typ B	Positive Flanke Negative Flanke	s	s	
					s	s	

5 Funktionelle Prüfungen



Prüfung	Ladepunkt 1		Ladepunkt 2		Bemerkungen
	i.O.	n.i.O	i.O.	n.i.O	
Ladevorgang AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Schließmechanismus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Funktion Prüftaste RCD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Auslösung HRA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ladesäule in StandBy → Schütz AC- Ladepunkt betätigen → RCD muss auslösen

6 Ergebnis:

Prüfergebnisse	Ja	Nein
Alle Prüfungen wurden durchgeführt	<input type="checkbox"/>	<input type="checkbox"/>
Mängel vorhanden	<input type="checkbox"/>	<input type="checkbox"/>
Mängel beseitigt	<input type="checkbox"/>	<input type="checkbox"/>
Prüfplakette angebracht	<input type="checkbox"/>	<input type="checkbox"/>

Bemerkungen:
Nächster Prüftermin am:
Ort, Datum:
Prüfer: Vor- und Nachname in Druckbuchstaben
Unterschrift:

14.3 EU Declaration of Conformity

EU-Konformitätserklärung
EU Declaration of Conformity

Hersteller, Anbieter: **Compleo Charging Solutions GmbH**
Producer, Supplier: **An der Werthmarheide 17**
D-44536 Lünen

Produkt: **Konduktives Ladesysteme für Elektrofahrzeuge, (Wechselspannung)**
Product: **Electric vehicle conductive charging system (Alternating Voltage)**

Typbezeichnung /	Advanced IMS	A01XY***** *
Produktnummer:	Highline IMS	A02XY***** *
<i>Type reference /</i>	Highline Classic IMS	A03XY***** *
<i>Product number:</i>	Advanced IMS SAM AC1	A11XY***** * od. A21XY***** *
	Highline IMS SAM AC1	A12XY***** * od. A22XY***** *
	Highline Classic IMS SAM AC1	A13XY***** * od. A23XY***** *

X= 1, 2, 7 oder / or 8; je nach Zählerplatzaufbau / character depending on setup of electric meter space
 Y= E oder / or F; E = Mini RFID Reader + LTE; F = Multi RFID Reader + LTE
 * = ohne Einfluss auf Konformitätserklärung,
 * = character with no impact on declaration of conformity

Das Produkt, auf das sich diese Erklärung bezieht, entspricht den Bestimmungen der jeweiligen Richtlinien.
The product to which this declaration relates is in accordance with the provisions of the relevant specific regulations.

Niederspannungsrichtlinie	2014/35/EU	(Low-voltage-directive 2014/35/EU)
EMV-Richtlinie	2014/30/EU	(EMC-directive 2014/30/EU)
RED-Richtlinie	2014/53/EU	(RED-directive 2014/53/EU)
RoHS-Richtlinie	2011/65/EU	(RoHS-directive 2011/65/EU)


Das Produkt stimmt mit folgenden Normen oder normativen Dokumenten überein:
The product is in conformity with the following standards or normative documents:

DIN EN 61851-1:2019-12 (VDE 0122-1)
 DIN IEC/TS 61439-7:2014-10 (VDE V 0660-600-7)

Diese Konformitätserklärung wird für die Ladesysteme nach internen Prüfungen bzw. nach Prüfungen in externen Prüflaboratorien ausgestellt. Diese Erklärung gilt weltweit als Erklärung des Herstellers zur Übereinstimmung mit den oben genannten internationalen und nationalen Normen.
This declaration of conformity was issued for the charging systems after internal tests and tests in external test laboratories. The declaration is world-wide valid as the manufacturer's declaration of compliance with the requirements of the a.m. national and international standards.

Ort / Datum der Ausstellung: Dortmund, 23.06.2020
Place / date of issue:

Name, Funktion und rechtsverbindliche Unterschrift:
Name, function and authorized signature:


 Checrallah Kachouh
 Geschäftsführer
 Managing Director



EU-Konformitätserklärung

EU Declaration of Conformity

Hersteller, Anbieter:

Producer, Supplier:

**Compleo Charging Solutions GmbH
An der Wethmarheide 17
D-44536 Lünen**

Produkt:

Product:

Konduktives Ladesysteme für Elektrofahrzeuge (Wechselspannung)
Electric vehicle conductive charging system (Alternating Voltage)

Typbezeichnung /

Produktnummer:

Type reference /

Product number:

Advanced IMS KWM	A015XXXXXX.Y
Highline IMS KWM	A025XXXXXX.Y
Highline Classic IMS KWM	A035XXXXXX.Y
Advanced IMS KWM SAM AC1	A115XXXXXX.Y od. A215XXXXXX.Y
Highline IMS KWM SAM AC1	A125XXXXXX.Y od. A225XXXXXX.Y
Highline Classic IMS KWM SAM AC1	A135XXXXXX.Y od. A235XXXXXX.Y

X= E oder / or F; E = Mini RFID Reader + LTE; F = Multi RFID Reader + LTE

Y = ohne Einfluss auf Konformitätserklärung,

Y = character with no impact on declaration of conformity

Das Produkt, auf das sich diese Erklärung bezieht, entspricht den Bestimmungen der jeweiligen Richtlinien.
The product to which this declaration relates is in accordance with the provisions of the relevant specific regulations.

Niederspannungsrichtlinie	2014/35/EU	<i>(Low-voltage-directive 2014/35/EU)</i>
EMV-Richtlinie	2014/30/EU	<i>(EMC-directive 2014/30/EU)</i>
RED-Richtlinie	2014/53/EU	<i>(RED-directive 2014/53/EU)</i>
RoHS-Richtlinie	2011/65/EU	<i>(RoHS-directive 2011/65/EU)</i>

Das Produkt stimmt mit folgenden Normen oder normativen Dokumenten überein:

The product is in conformity with the following standards or normative documents:

DIN EN 61851-1:2019-12 (VDE 0122-1)
DIN IEC/TS 61439-7:2014-10 (VDE V 0660-600-7)
DIN VDE 0603-2-2:2017-12 (VDE 0603-2-2)

Diese Konformitätserklärung wird für die Ladesysteme nach internen Prüfungen bzw. nach Prüfungen in externen Prüflaboratorien ausgestellt. Diese Erklärung gilt weltweit als Erklärung des Herstellers zur Übereinstimmung mit den oben genannten internationalen und nationalen Normen.

This declaration of conformity was issued for the charging systems after internal tests and tests in external test laboratories. The declaration is world-wide valid as the manufacturer's declaration of compliance with the requirements of the a.m. national and international standards.

Ort / Datum der Ausstellung:

Place / date of issue:

Dortmund, 23.06.2020

Name, Funktion und rechtsverbindliche Unterschrift:

Name, function and signature of the authorised person:



Checrallah Kachouh
Geschäftsführer
Managing Director



Hersteller- und Konformitätserklärung

Hersteller: **Compleo Charging Solutions GmbH**
An der Wethmarheide 17
D-44536 Lünen

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der oben aufgeführte Hersteller.

Produkt: **Konduktives Ladesystem für Elektrofahrzeuge (Wechselspannung)**
IMS-Produktfamilie

Typbezeichnung: **Advanced IMS SAM AC1** *A11XY*Z***,* od. A21XY*Z***,**
Produktnummer: **Highline IMS SAM AC1** *A12XY*Z***,* od. A22XY*Z***,**
Highline Classic IMS SAM AC1 *A13XY*Z***,* od. A23XY*Z***,**
X = 1, 2, 7 oder 8; je nach Zählerplatzaufbau
Y = C,D,E oder F; E = Mini RFID Reader + LTE; F = Multi RFID Reader + LTE;
C = Mini RFID Reader + UMTS; D = Multi RFID Reader + UMTS;
Z = 1, 4 oder 7; 1 = AO2 = Steckdose Typ2; 4 = PO2 = Steckdose Typ2 verfahrbar;
7 = Steckdose Typ2 verriegelbar
** = Platzhalter für nicht eichrechtsrelevante Optionen*

Seriennumbereich: **0011000 - 0055000**

Der Hersteller bestätigt, dass der oben beschriebene Gegenstand das Mess- und Eichgesetz und die darauf gestützten Rechtsverordnungen einhält:

- Mess- und Eichgesetz vom 25.07.2013 (BGBl. I S. 2722), zuletzt geändert durch Artikel 1 des Gesetzes vom 11.04.2016 (BGBl. I S. 718)
- Mess- und Eichverordnung vom 11.12.2014 (BGBl. I S. 2010), zuletzt geändert durch Artikel 10 der Verordnung vom 30.04.2019 (BGBl. I S. 579)
- Regeln und Erkenntnisse für Messgeräte im Anwendungsbereich der Elektromobilität entsprechend der Kategorie 6.8 des REA-Dokumentes „Ermittelte Regeln und Erkenntnisse des Regelermittlungsausschusses nach § 46 des Mess- und Eichgesetzes“ Stand: 15.11.2017.
- PTB-Anforderung an elektronische und software-gesteuerte Messgeräte und Zusatzeinrichtungen für Elektrizität, Gas, Wasser und Wärme [PTB-A 50.7] vom April 2002

Konformitätsbewertungsstelle nach Modul B:
Physikalisch-Technische Bundesanstalt, Nationales Metrologieinstitut (Kenn-Nr.: 0102)
Baumusterprüfbescheinigung: DE-19-M-PTB-0030

Konformitätsbewertungsstelle nach Modul D:
Physikalisch-Technische Bundesanstalt, Nationales Metrologieinstitut (Kenn-Nr.: 0102)
Zertifikat: DE-M-AQ-PTB155

Das Produkt, auf das sich diese Erklärung bezieht, entspricht den Bestimmungen der folgenden Richtlinien:

Niederspannungsrichtlinie	2014/35/EU	(<i>Low-voltage-directive 2014/35/EU</i>)
EMV-Richtlinie	2014/30/EU	(<i>EMC-directive 2014/30/EU</i>)
RED-Richtlinie	2014/53/EU	(<i>RED-directive 2014/53/EU</i>)
RoHS-Richtlinie	2011/65/EU	(<i>RoHS-directive 2011/65/EU</i>)

Das Produkt stimmt mit folgenden Normen oder normativen Dokumenten überein:

DIN EN 61851-1:2019-12 (VDE 0122-1)
DIN IEC/TS 61439-7:2014-10 (VDE V 0660-600-7)

Ort / Datum der Ausstellung:

Dortmund, 30.06.2020

Name, Funktion und
rechtsverbindliche Unterschrift:


Checrallah Kachouh
Geschäftsführer

15 Ducto Quick Guide

