

AMTRON® Wallbox

Start (E), Light, Standard E, Pro, Basic (E/R)



Ladestation für Elektrofahrzeuge

Installationsanleitung für die Elektrofachkraft

DE

Charging station for Electric Vehicles

Installation manual for qualified electricians

EN

Laadstation voor elektrische voertuigen

Installatiehandleiding voor elektromonteurs

NL

Station de charge pour véhicules électriques

Instructions d'installation à l'attention de l'électricien

FR

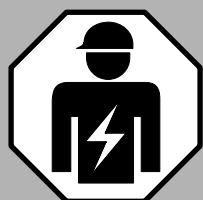
Stazione di ricarica per veicoli elettrici

Istruzioni per l'installazione per l'elettrotecnico specializzato

IT

Ladestasjon for el-biler

Installasjonsveiledning for elektriker

NO

Iris Hellas
Technology Innovations
www.irishellas.com

The new wallboxes.
Charged with ideas.

About this Document

© Copyright MENNEKES Elektrotechnik GmbH & Co. KG

Content subject to changes without notice.

This document is protected by copyright. It helps to ensure the device is used safely and efficiently by the user. The contents may not be duplicated or reproduced, in whole or in part, without the prior consent of the copyright holder.

Document symbols

- Listing
- ✓ Check / Result
- 💡 Tip
- ➔ Reference to another page in this document
- 📄 Reference to another document

Table of Contents

1	General.....	2
1.1	Structure of the installation instructions	2
2	Safety	2
2.1	General Safety Information	2
2.2	Safety Information	3
2.3	Intended Use.....	3
2.4	Qualification of Personnel	3
2.5	Warranty.....	3
2.6	Returning Devices	3
3	Product Description.....	4
3.1	General information.....	4
3.2	Optional equipment.....	4
3.3	Identification Plate	5
3.4	Delivery Contents.....	5
3.5	Assembly.....	6
3.5.1	Exterior view.....	6
3.5.2	Interior view.....	7
3.6	Components	8
3.6.1	Front panel	8
3.6.2	CPX communication box.....	8
4	Technical Data	9
4.1	General data	9
4.1.1	Maximum cable cross-sections at terminals.....	9
4.2	Ambient conditions.....	9
5	Installation.....	10
5.1	Choice of location.....	10
5.2	Unpacking	10
5.3	Opening the charging station.....	11

5.4	Assembly.....	11
5.4.1	Minimum distances.....	11
5.4.2	Installing the supply cable	11
5.4.3	Installing the charger station on the wall....	12
5.5	Electrical connection.....	13
5.5.1	Voltage supply / supply network connection.....	13
5.5.2	Safeguarding and personal protection	13
5.5.3	Terminals	14
6	Commissioning	15
6.1	Setting the configuration switches	15
6.1.1	Setting the charging current upper limit....	15
6.1.2	Setting the colour code of the LED info bar	16
6.2	Switching on the device	16
6.2.1	Checking the charging station	16
6.3	Closing the charging station.....	17
7	Operation.....	17
7.1	Charing cable storage	17
7.2	LED Info bar	18
7.3	Multi-function button.....	18
7.3.1	Terminating an on-going charging process	18
7.3.2	Re-activating the residual current circuit breaker and circuit breaker	19
7.3.3	Testing the integrated residual current circuit breaker (RCCB)	19
7.3.4	Acknowledging faults	19
7.4	Key switch.....	19
7.5	Charging the vehicle	19
7.5.1	Starting the charging process.....	19
7.5.2	Terminating the charging process	20
7.5.3	Power failure during charging process	20
8	Maintenance	21
8.1	Maintenance plan	21
9	Troubleshooting	22
9.1	Troubleshooting by a qualified electrician.....	22
9.2	Emergency release of charging plug	24
9.3	System monitoring	24
10	Disassembly, Storage and Disposal	25
10.1	Disassembly.....	25
10.2	Storage	25
10.3	Disposal	25
11	Appendix.....	26
11.1	Accessories	26
11.2	Glossary	26
11.3	Index.....	27

1 General

This manual is an essential aid for trouble-free and safe setting up and use of the device.

The specifications in this manual apply only to the device stated in the product description.

Read this manual before setting up the device.

Using this manual will help you to:

- avoid any risks for the user;
- become acquainted with the device;
- achieve optimum functioning;
- promptly detect and rectify faults;
- avoid any malfunctions due to improper installation;
- cut down on repair costs and reduce the number of downtimes;
- improve the reliability and increase the service life of the system;
- avoid causing harm to the environment.

This manual is an important part of the product and must be kept for later use. The complete manual must be kept available for all authorised people.

MENNEKES Elektrotechnik GmbH & Co. KG accepts no liability for any damage resulting from non-observance of the information in this manual.

1.1 Structure of the installation instructions

General Information

This chapter contains general information on the Installation manual.

Safety

This chapter contains details on the presentation of safety information, provisions for liability and warranty and information on intended use.

Product Description

This chapter contains basic information on the device and its construction.

Technical Data

This chapter contains details on the technical data for the device and the components used.

Installation

This chapter provides information for correctly installing and mounting of the device.

Operation

This chapter contains information on operating the device.

Maintenance

This chapter provides details on the required maintenance work and instructions on exchanging components when necessary.

Disassembly, Storage and Disposal

This chapter provides information on correctly disassembling storing and disposing of the device.

Appendix

This chapter contains a list of the available accessories, the glossary and the index of the this document.

2 Safety

2.1 General Safety Information

The device has been designed using state-of-the-art technology and is safe to operate.

Nevertheless, there may be residual risks associated with the device under the following circumstances:

- The device is not used as intended.
- The device is not maintained properly.
- Non-compliance with the safety information given in this manual.
- The device is modified or converted improperly.
- The maintenance work specified in this manual is not carried out in due time.

Danger

Risk of death resulting from non-compliance with documentation!

Any person authorised to work on the system must have read and understood this manual, in particular the "Safety" chapter.

The electrical installation, initial operation and servicing of the device may only be performed by qualified electricians who have been authorised by the operator.

In addition to the safety information in this manual, compliance with the following rules and regulations is also required:

- relevant accident prevention regulations;
- occupational health and safety regulations;
- generally recognised technical safety regulations;
- country-specific regulations;
- requirements regarding intended use.

Furthermore, these rules and regulations may be supplemented by internal factory or company requirements.

2.2 Safety Information

To recognise safety instructions in this manual at a glance, the following signal words and symbols are used:

Danger

This symbol in conjunction with the signal word "Danger" indicates an imminent danger.

Failure to follow the safety instructions will result in death or serious injury.

Warning

This symbol in conjunction with the signal word "Warning" indicates a potentially hazardous situation.

Failure to follow the safety instructions may result in death or serious injury.

Caution

This symbol in conjunction with the signal word "Caution" indicates a potentially hazardous situation.

Failure to follow the safety instruction may result in light or minor injuries.

Caution

This note indicates a potentially harmful situation.

Failure to follow the safety instructions may result in damage to, or destruction of the product and / or other components.

2.3 Intended Use

The device may be used for the purpose described in 3 "Product Description" on page 4 and in conjunction with the supplied and approved components.

Any use exceeding the aforementioned shall be deemed unintended. MENNEKES assumes no liability for damage resulting from non-intended use. The risk is borne solely by the user / operator.

Intended use also includes:

- compliance with all the information in this manual;
- carrying out of servicing tasks according to schedule.

The device may present hazards, if it is not used as intended.

2.4 Qualification of Personnel

The electrical installation, setup and maintenance of the device may only be performed by qualified electricians, who have received authorisation from the system operator to perform such tasks. Such persons must have read and understood the operating manual and must comply with the information therein.

Requirements of qualified electricians:

- Knowledge of general and special safety and accident prevention guidelines.
- Knowledge of relevant electrical guidelines (e.g. DIN VDE 0100 section 600 DIN VDE 0100722), as well as valid national regulations.
- The ability to recognize risks and avoid possible dangers.

2.5 Warranty

In the event of complaints regarding the product, please contact your responsible service partner immediately and provide the following information:

- type designation / serial number;
- date of manufacture;
- reason for complaint;
- duration of use;
- ambient conditions (temperature, humidity).

2.6 Returning Devices

In case you return the device to MENNEKES for repair, please use the original packaging or a suitable, safe transport container.

3 Product Description

3.1 General information

The MENNEKES AMTRON® Wallbox is a charging station for use in private and semi-public areas, such as company car parks, depots or private land.

The charging station is used exclusively for charging electrically powered vehicles.

- Mode 3 charging according to IEC 61851-1:2010.
- Plugs and sockets according to IEC 62196.

The charging station is operated as a stand-alone solution without connection to a master control system.

The charging station is intended solely for fixed installation.

Features:

- Status information through LED info bar.
- MENNEKES CPX communication and control unit.
- Multi-function button (termination of charging process, RCCB test, re-activation of RCCBs and CBs).
- Unlocking function in the event of a power failure when charging with a type 2 charging plug (mode 3).
- Enclosure made of AMELAN.
- Integrated cable storage.
- Wired ready for connection.

3.2 Optional equipment

Depending on the version of the charging station, the following optional features are available:

Connector systems



Fig. 1

Depending on the version, the charging station is equipped one of the following connector systems:

- Ⓐ Charging socket type 2 for use with separate charging cable.
- Ⓑ Permanently connected charging cable with charging connector type 2.
- Ⓒ Permanently connected charging cable with charging connector type 1.

EN

	Start ¹⁾	Start E ²⁾	Light ¹⁾	Standard E ²⁾	Pro ¹⁾	Basic ¹⁾	Basic E ²⁾	Basic R ²⁾
LED info bar	✓	✓	✓	✓	✓	✓	✓	✓
Key switch for authorising charging processes	—	—	—	✓	✓	✓	✓	✓
Multi-function button								
■ Stop function	✓	✓	✓	—	✓	—	—	—
■ Reset function	✓	✓	✓	✓	✓	✓	✓	✓
■ Testing the residual current circuit breaker	—	—	✓	—	✓	✓	—	✓
■ Re-activating the residual current circuit breaker	—	—	✓	—	✓	✓	—	✓
Residual current circuit breaker (RCCB)	—	—	✓	—	✓	✓	—	✓
Circuit breaker (CB)	—	—	✓	—	✓	✓	—	—
Calibrated digital energy meter, readable from outside	—	—	—	—	✓	✓	✓	✓

1) Version for Germany

2) EU version

3.3 Identification Plate

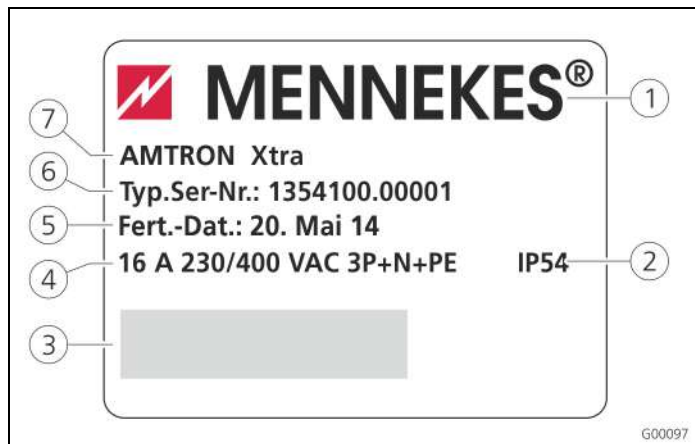


Fig. 2: Name plate (example)

- | | |
|-----------------------------|-------------------------------|
| ① Manufacturer | ⑤ Date of manufacture |
| ② Protection class | ⑥ Part number / serial number |
| ③ Barcode | ⑦ Type |
| ④ Supply network connection | |

3.4 Delivery Contents

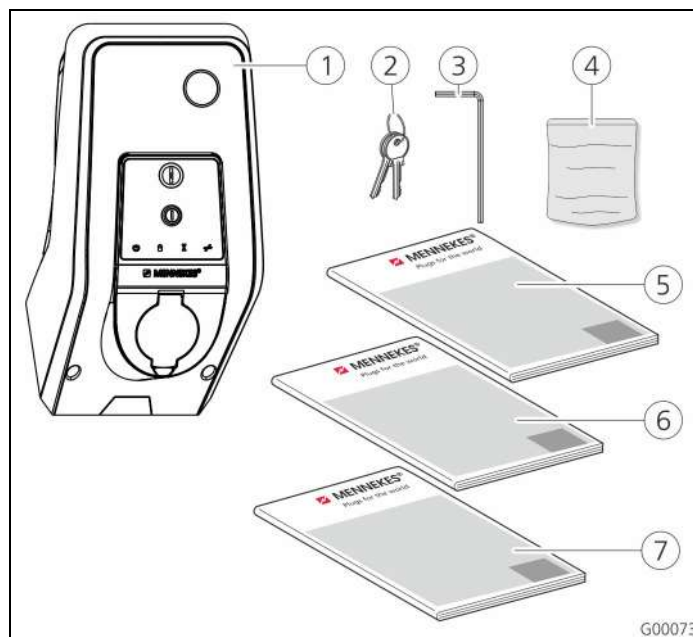


Fig. 3: Delivery contents

- | | |
|--|-----------------------|
| ① charging station | ⑤ Operation manual |
| ② Key set for authorisation ¹⁾ | ⑥ Installation manual |
| ③ Allen key | ⑦ Quick guide |
| ④ Bag with installation hardware (screws, dowels, plugs) | |

1) Only for versions Basic (E/R) and Standard E.

💡 The keys can be reordered from the following address quoting the code number on the key / lock:

Günter Ernsthäuser Sicherheitstechnik GmbH
 Walsroder Straße, 2630851 Langenhagen, Germany
 Phone: +49 (0)5 11 / 74 30 30 30
 Fax: +49 (0)5 11 / 74 41 05
 E-mail: info@ernsthaeuser.de

3.5 Assembly

3.5.1 Exterior view



Fig. 4: Front view (example)

- | | |
|---|--|
| ① Rear enclosure part | ⑥ Predetermined breaking point for supply line / cable duct from below |
| ② Front enclosure part | |
| ③ Window for counter ¹⁾ | |
| ④ Front panel | |
| ⑤ Fastening screws for front enclosure part | |
| 1) Only for versions Pro and Basic. | |

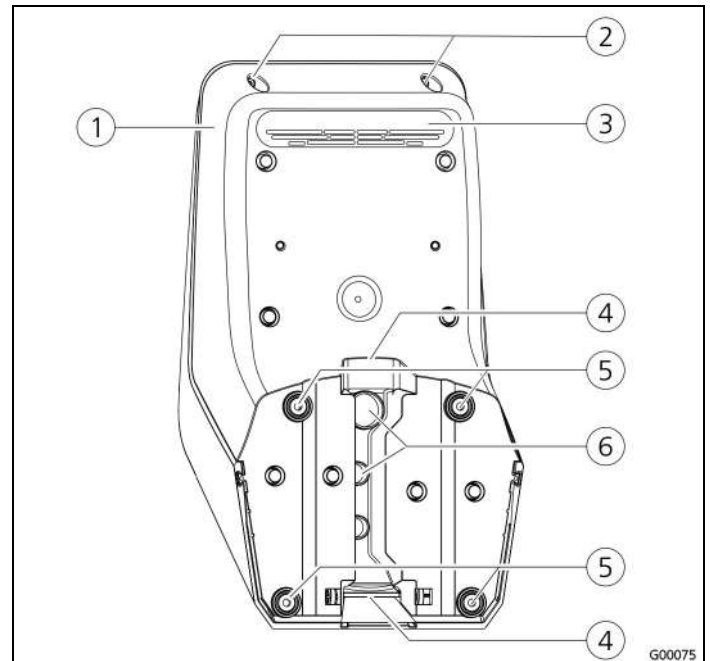


Fig. 5: Rear view (example)

- | | |
|---|--------------------------|
| ① Rear enclosure part | ④ Opening for cable duct |
| ② Fastening screws for front enclosure part | ⑤ Fastening holes |
| ③ Air outlet | ⑥ Cable glands |

The enclosure of the charging station has three parts and consists of rear enclosure part, front enclosure part and the front panel. The front panel has to be folded down to access the internal components. The design of the front panel depends on the version of the charging station.

➔ See Chapter 3.6.1 "Front panel" on page 8.

3.5.2 Interior view

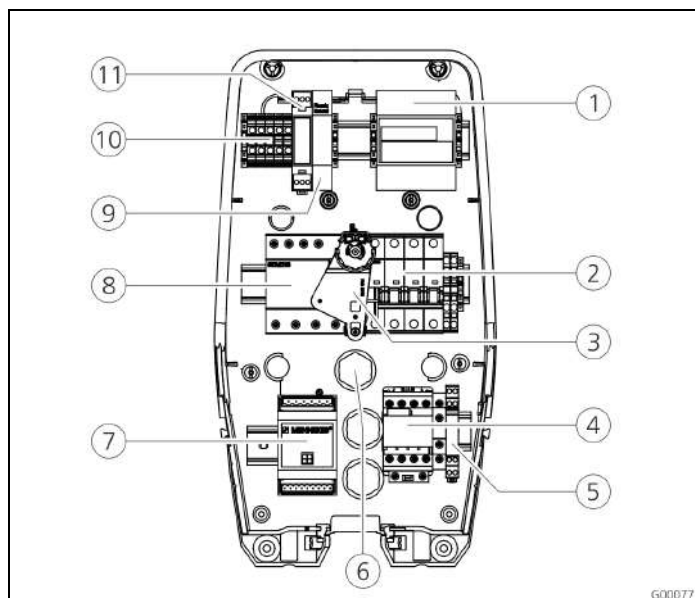


Fig. 6: Interior view of rear enclosure part (example)

- | | |
|---------------------------|---|
| ① Counter | ⑦ Controller (CPX communication box) |
| ② Circuit breaker (CB) | ⑧ Residual current circuit breaker (RCCB) |
| ③ Multi-function actuator | ⑨ Mains adapter |
| ④ Charging contactor | ⑩ Terminals for mains connection |
| ⑤ System monitoring | ⑪ Actuator control |
| ⑥ Cable glands | |

The charging station contains all required components for controlling the charging process and communicating with the vehicle.

The design of the components depends on the version of the charging station.

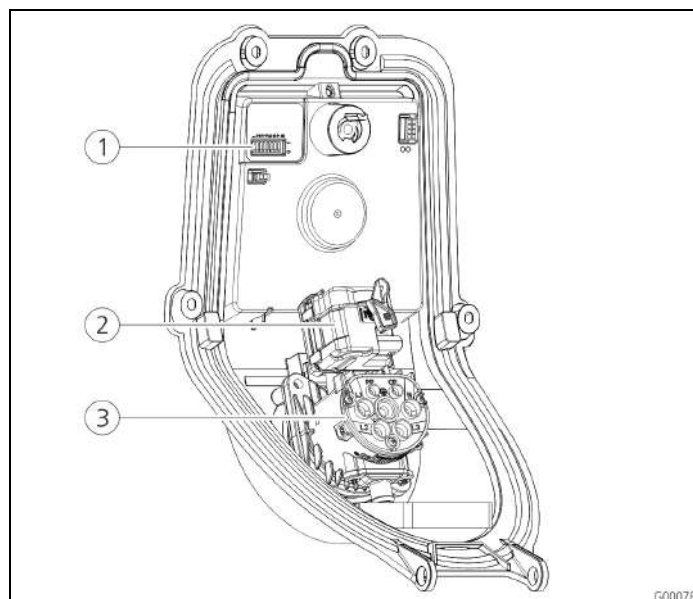


Fig. 7: Interior view of front panel (example)

- | | |
|-----------------------------|-----------------|
| ① Configuration switches | ③ Socket insert |
| ② Actuator (plug interlock) | |

The configuration switches are used to set the charging current upper limit and the colour scheme of the LED info bar.

➔ See Chapter 6.1 "Setting the configuration switches" on page 15.

The actuator interlocks the charging plug in the charging socket during the charging process (applies only to charging stations with charging socket Type 2).

3.6 Components

3.6.1 Front panel

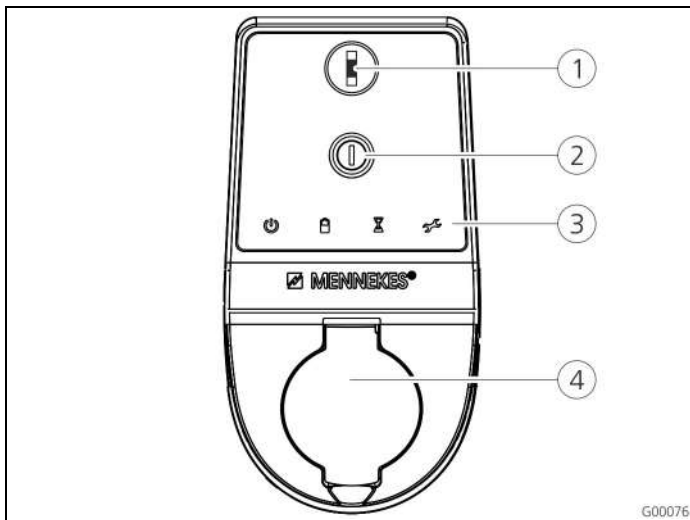


Fig. 8: Front panel (example)

- | | |
|-------------------------|--|
| ① Multi-function button | ③ LED info bar |
| ② Key switch (optional) | ④ Charging socket type 2 with hinged lid |

The control and display elements as well as the charging socket of the charging station are located on the front panel. The design of the front panel depends on the version of the charging station.

3.6.2 CPX communication box

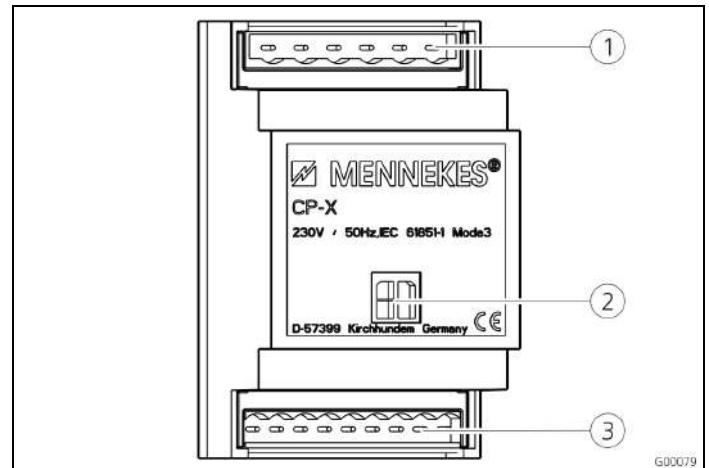


Fig. 9: CPX communication box

- | |
|---------------------------------------|
| ① Plug strip for low voltage 230 V AC |
| ② Plug strip for front panel |
| ③ Plug strip for low voltage DC |

The CPX communication box controls the charging process fully automatically and performs the following functions:

- Detecting the current-carrying capacity of the charging cable with resistance coding. Unsuitable charging cables are rejected.
- Verification of the conditions for proper charging
- Communicating with the vehicle using the CP contact. The charging current upper limit is communicated to the vehicle with a PWM signal. The protective earth connection to the vehicle is checked at the same time.
- Controlling the locking of the charging plug in the charging socket (for devices with charging socket Type 2).
- Controlling the charging contactor.

4 Technical Data

4.1 General data

	3.7 kW	7.4 kW	11 kW	22 kW
Nominal voltage	230 / 400 V AC ±10 %			
Nominal frequency	50 Hz			
Nominal current	16 A	32 A	16 A	32 A
Maximum back-up fuse	according to name plate / configuration			
Charging power Mode 3	3.7 kW	7.4 kW	11 kW	22 kW
Max. charging current Mode 3	16 A, single-phase	32 A, single-phase	16 A, three-phase	32 A, three-phase
Protection class	IP 44 (with permanently attached charging cable or charging socket Type 2 with shutter) IP 54 (with charging socket Type 2)			
Protection class	I			
Overvoltage category	CAT III according to EN60664-1			
Dimensions (H x W x D)	474.8 mm x 259.2 mm x 220.1 mm			
Weight	5 to 8.5 kg (depending on version)			

4.1.1 Maximum cable cross-sections at terminals

	rigid	flexible
3.7 kW	3 x 6 mm ²	3 x 4 mm ²
7.4 kW	3 x 10 mm ²	3 x 6 mm ²
11 kW	5 x 6 mm ²	5 x 4 mm ²
22 kW	5 x 10 mm ²	5 x 6 mm ²

☀ Refer to special instructions on charging stations without integrated circuit breaker (EU variants) in Chapter 5.5.2 "Safeguarding and personal protection" on page 13!

4.2 Ambient conditions

Ambient temperature	-25 to +40 °C
Average temperature over 24 hours	< 35 °C
Storage temperature	-25 to +40 °C
Altitude	max. 2,000 metres above sea level
Relative humidity	max. 95 % (non-condensing)

5 Installation

Danger

Mortal danger posed by improper installation.

There is a risk of injury for persons performing tasks for which they are neither qualified nor have received appropriate training.

- The device may only be installed by persons who are familiar with this task, have been instructed with regard to the associated hazards and who possess the necessary qualifications.
- Before installing, all safety requirements must first be met.

5.1 Choice of location

Warning

Risk due to unsuitable environmental conditions / installation locations.

Unsuitable ambient conditions and installation locations may lead to dangerous situations when dealing with electricity.

Please observe the following points when selecting an installation location:

- Do not install in potentially explosive atmospheres (e.g. gas refuelling stations).
- Do not install in flood-prone areas.
- Comply with local technical connection requirements and safety rules.
- For ambient conditions, see Chapter 4.2 "Ambient conditions" on page 9.
- The charging system must be protected from direct exposure to water jets.
- The mounting surface must have sufficient strength to withstand the mechanical stresses. When mounting on plasterboard walls they must have at least two layers.

5.2 Unpacking

Caution

Damage to the charging station by improper handling.

Collisions and impacts may damage the charging station.

- Move the charging station with utmost caution.
- Use a soft base to set aside the charging station.

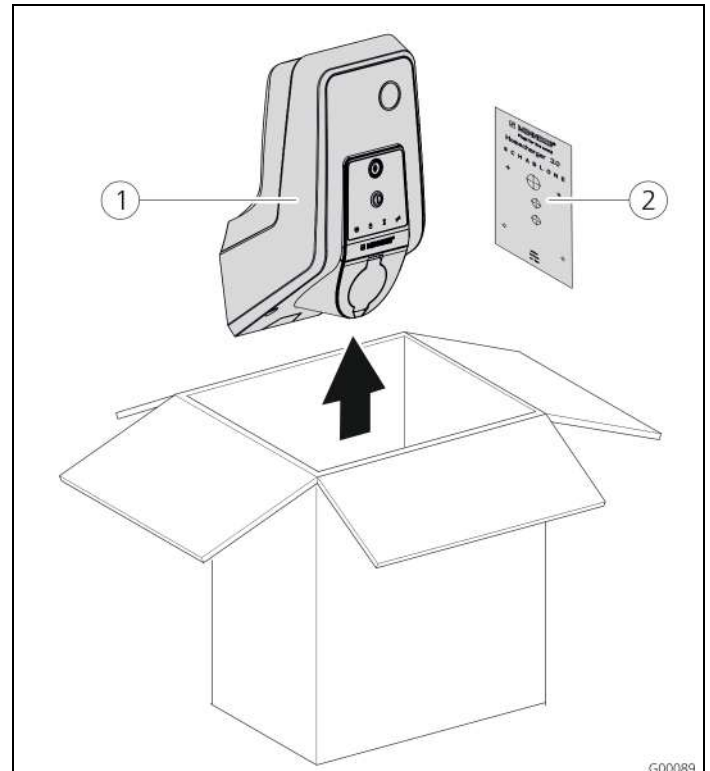


Fig. 10: Unpacking

Unpacking the charging station:

1. Remove the charging station ① and the drilling jig ② from cardboard box.
2. Place the charging station on a soft base.

5.3 Opening the charging station

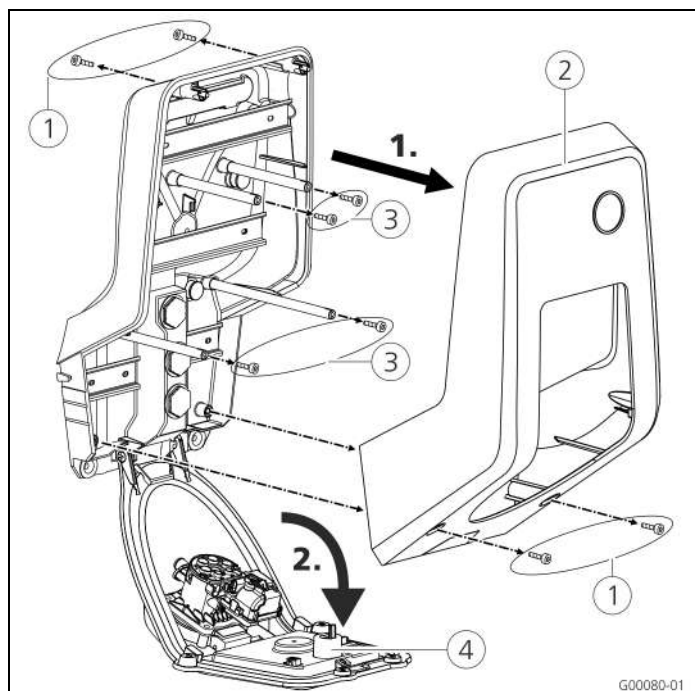


Fig. 11: Opening the charging station

Caution

Damage to the device.

Damage to the device by improper handling.

Do not use the brass bolts for attaching the front panel as transport support or handle.

- ⚠ When delivered, the front enclosure part is not attached with screws. The screws (1) are stored in the enclosed accessory bag.

Opening the charging station

1. Remove the screws (1) and the front enclosure part (2). Make sure that the screws are not lost.
 2. Remove the screws (3) for the front panel and fold down the front panel (4). Make sure that the screws are not lost.
- ⚠ After the installation of the charging station, the enclosure screws on the back of the charging station can be reached only with a shortened Allen key. The supplied Allen key can be used.

5.4 Assembly

5.4.1 Minimum distances

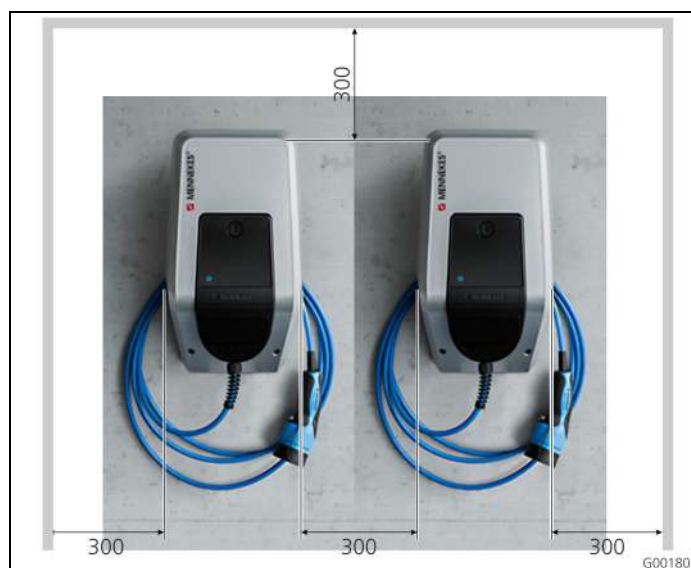


Fig. 12: Minimum distances (mm)

Maintain the specified minimum distances for unrestricted access during operation, maintenance and repair.

5.4.2 Installing the supply cable

On-wall installation of supply cable

If supply cable or cable duct comes from below, you have to break out the pre-cut opening in the front enclosure part.

- ⚠ The charging station can be placed on an on-site installed cable duct (H 30mm x W 45mm). Suitable recesses can be found on the back of the rear enclosure part.

➔ See also "Fig. 13: Wall mounting" on page 12.

Concealed installation of the supply cable

In a concealed installation of supply, data, and control lines, their positions must be arranged in accordance with the drilling jig.

5.4.3 Installing the charger station on the wall

- ☛ For installation on concrete, brick and wood walls, use the included installation hardware.

For other surfaces, a suitable on-site mounting method must be chosen.

MENNEKES recommends the installation of the charging station at a height (up to the top edge of the enclosure) of approximately 1.50 metres above the finished floor.

➔ See also "Fig. 13: Wall mounting" on page 12.

1. Mark the mounting holes using the supplied drilling jig and a spirit level.
2. Drill the holes in the wall with the diameter specified for the selected installation hardware.

3. Route the supply cable and possibly the data and control cables to the positions specified on the frilling jig. A cable of approx. 40 cm cable is needed for the electrical connection inside the charging station.
4. Open the charging station (see Chapter 5.3 "Opening the charging station" on page 11).
5. Run the supply cable and possibly the data and control cables through the cable glands into the charging station.
6. Secure the charging station to the wall by using dowels and screws.
7. Check the charger for firm and secure fit.

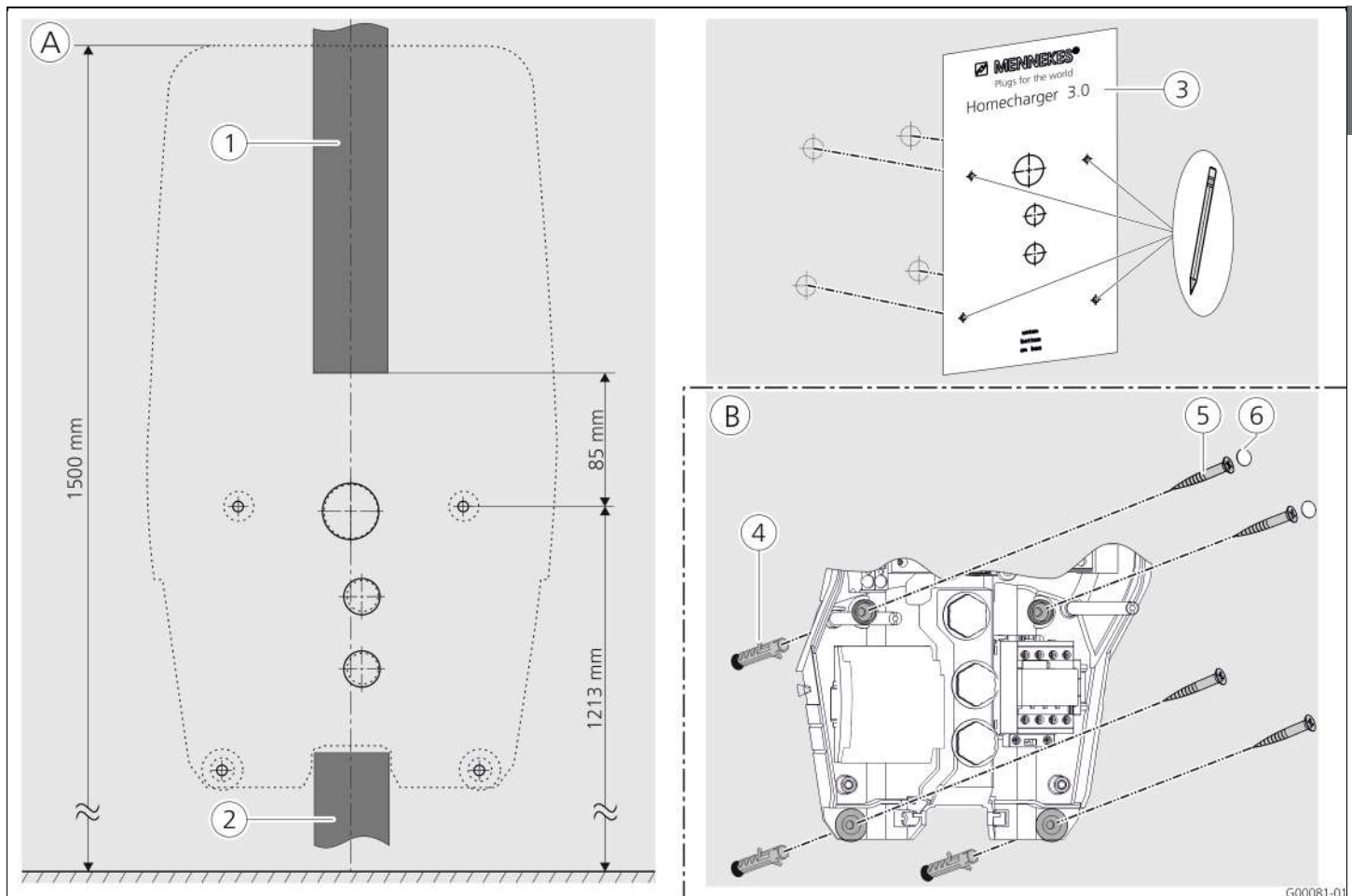


Fig. 13: Wall mounting

- | | |
|--|----------------------|
| Ⓐ Marking | Ⓑ Installation |
| ① Cable duct (for supply cable from above) | ④ Dowels |
| ② Cable duct (for supply cable from below) | ⑤ Screw |
| ③ Drilling jig | ⑥ Plug (touch guard) |

5.5 Electrical connection

5.5.1 Voltage supply / supply network connection

Danger

Risk of death by electric shock!

Components have voltage applied.

Contact with current conducting parts results in an electric shock, burns or death.

When working with the electrical system, the following points must be observed:

- Disconnect device from voltage.
- Secure device from being turned back on.
- Ensure that no voltage is applied.
- Earth and short-circuit the unit.
- Cover neighbouring components that are under voltage and secure the danger area.

During installation, the following points must also be observed:

- The electrical installation, setting-up and maintenance of the device may only be carried out by qualified electricians and in compliance with the applicable national regulations (see chapter entitled 2.4 "Qualification of Personnel" on page 3).
- Before connecting the device, caution must be taken to ensure that it is free of voltage or the appropriate protective measures have been taken.

Note the following points when connecting to the power supply:

- Observe DIN VDE 0100 Part 530 for installation in Germany.
- Observe the applicable national / local regulations when installing in other countries.
- Ensure a clockwise rotating field for a three-phase connection.

5.5.2 Safeguarding and personal protection

Danger

Danger to life by electric shock

RCCBs (type B) sensitive to universal currents may not be installed behind RCCBs (type A) sensitive to pulse currents.

Depending on the equipment package, the charging stations are fitted with the required safety equipment according to the following table.

Version	RCCB type A	RCCB type B	CB
Light, Pro, Basic (3.7 kW / 7.4 kW) single-phase	✓	—	✓
Light, Pro, Basic (11 kW / 22 kW) three- phase	—	✓	✓
Start E, Standard E, Basic E (3.7 kW / 7.4 kW single- phase) (11 kW / 22 kW three- phase)	—	—	—
Basic R (3.7 kW / 7.4 kW single- phase)	✓	—	—
Basic R (11 kW / 22 kW three- phase)	—	✓	—

Note the following points when connecting the charging station:

- Each charging station must be connected using a separate residual current circuit breaker (residual current circuit breaker type A for single-phase versions, residual current circuit breaker type B for three-phase versions).
- No other circuits may be connected to this residual current circuit breaker.
- For versions Start E, Standard E and Basic E, the residual current circuit breaker (RCCB) must be provided on site.
- For versions Start E, Standard E, Basic E und Basic R, the circuit breaker (CB) must be provided on site.

Design of the on-site circuit breaker

Danger

Fire hazard due to device overload.

Fire hazard due to device overload in case of wrong design of the on-site circuit breaker.

The nominal current of the selected circuit breaker must not exceed the specifications on the nameplate.

The EU versions of the devices (Start E, Standard E, Basic E and Basic R) are supplied without integrated circuit breakers. The circuit breakers must be scaled according to the specifications on the name plate, the configuration switch settings, the supply line (line length, cable cross-section) to the charging station and national regulations.

➔ See Chapter 6.1.1 "Setting the charging current upper limit" on page 15.

5.5.3 Terminals

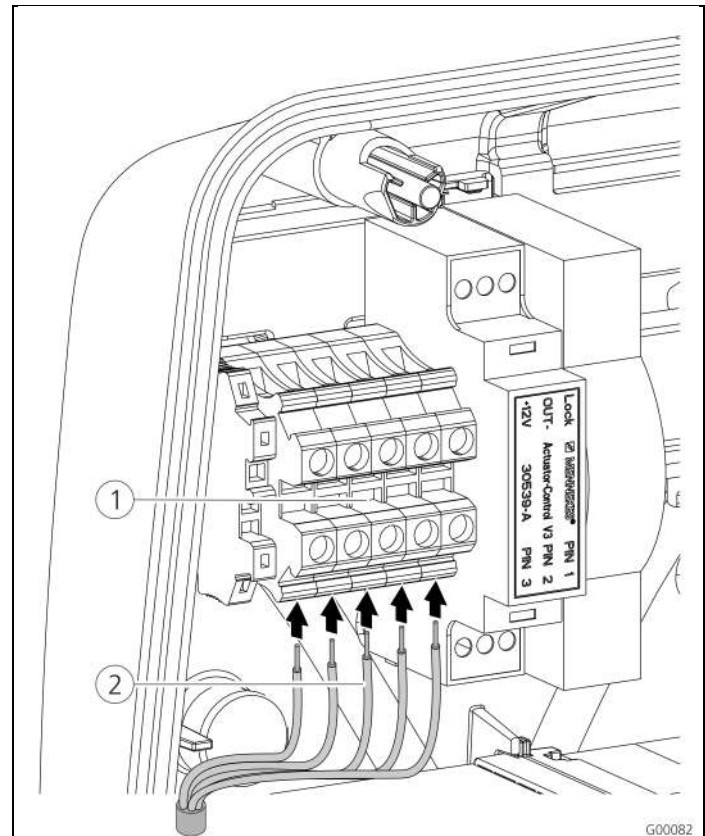


Fig. 14: Terminals for the supply line (example)







Connect the supply line:

1. Strip the supply cable over a length of 370 mm and remove the core insulation over a length of 12 mm.
2. Connect the cores ② of the supply cable to the terminal block ① according to the circuit diagram. The protective earth conductor (PE) must be longer than all other conductors!
3. Check that the individual cores are properly connected and that the screws are tightened.

6.1.2 Setting the colour code of the LED info bar

The configuration switch 6 (S6) is used to set the colour scheme of the LED info bar.

The luminous colour of the symbols "Operational" and "Charging" can be adapted, for example, to requirements typical for a country.

S6 OFF Standard	S6 ON Option
 Operational (blue)	 Operational (green)
 Charging (green)	 Charging (blue)
 Waiting period (white)	
 Malfunction (red)	

➔ See Chapter 7.2 "LED Info bar" on page 18 for more information about displays and flash codes.

6.2 Switching on the device

To turn on the charging station, proceed as follows:

1. Make sure that all protective devices (RCCBs and CBs) in the charging station are turned on.
 2. Turn on the power supply (back-up fuses, residual current circuit breaker or circuit breaker).
 3. Check the supply voltage at the charging station for clockwise rotating field (see Chapter 9.3 "System monitoring" on page 24).
- ✓ The LED on the power supply unit will light.
 - ✓ The corresponding symbol on the LED info bar indicates the operational readiness of the charging station.

6.2.1 Checking the charging station

⚠ Warning

Risk of injury

Risk of injury due to damage to the charging station.

If it appears that safe operation of the charging station is not possible:

- Put the charging station out of service.
- Determine and eliminate any faults / malfunctions.

➔ See Chapter 9 "Troubleshooting" on page 22.

Inspection in accordance with DIN VDE 0100 or national regulations

Carry out an inspection of the charging station in accordance with DIN VDE 0100 or the applicable national regulations prior to the initial setting-up process and according to the specified maintenance intervals.

System check

A test box is required for a systems check. The test box simulates the communication with the vehicle.

Test boxes are available from MENNEKES.

➔ See Chapter 11.1 "Accessories" on page 26.

Carry out a system check with a test box before approving the charging station for use.

- 📄 Carry out the system check according to the documentation of the test box.

6.3 Closing the charging station

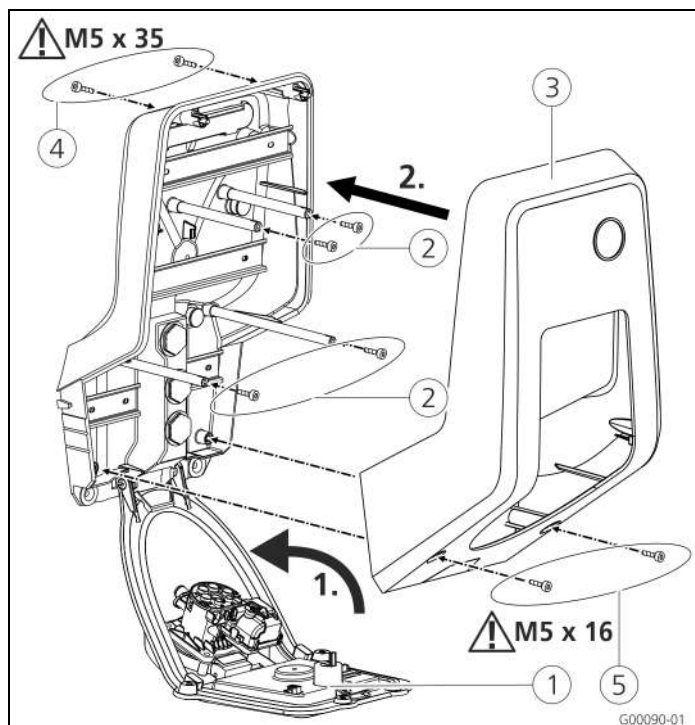


Fig. 16: Closing the charging station

Caution

Damage to the device.

Damage to the device by improper handling.
Do not use the brass bolts for attaching the front panel as transport support or handle.

Closing the charging station

1. Fold up the front panel (1). Secure the front panel with the screws (2).
 2. Fit the front enclosure part (3) and secure with screws (4) (M5 x 35) and (5) (M5 x 16).
- ☀ When delivered, the front enclosure part is not attached with screws. The screws (4) und (5) are stored in the enclosed accessory bag.
 - ☀ After the installation of the charging station, the enclosure screws on the back of the charging station can be reached only with a shortened Allen key. The supplied Allen key can be used.

7 Operation

⚠ Warning

Risk of injury

There is a risk of injury due to damage to the charging system.

If it appears that the charging system cannot be operated safely:

- Take the charging system out of service.
 - Determine and eliminate any faults / malfunctions.
- ➔ See Chapter 9 "Troubleshooting" on page 22 .

7.1 Charing cable storage



Fig. 17: Integrated charging cable storage

The design of the enclosure

7.2 LED Info bar

The LED info bar displays the operating status of the charging station. The colour scheme (green / blue) for "Operational / Charging" depends on the setting of the configuration switches during the setting-up process.

LED info bar	Description
 lit blue permanently	Ready for operation The charging station is operational; no vehicle is connected to the charging station.
 flashes blue	Once-off authorisation (Standard E, Basic (E/R) only) The charging station is authorised for a single charging process; no vehicle is connected to the charging station.
 pulsating green	Ready to charge: vehicle pauses All requirements for charging an electric vehicle are met. A charging process is not taking place. The charging process is paused due to a vehicle feedback or was terminated by the vehicle.
 lit green permanently	Charging enabled All requirements for charging an electric vehicle are met. Charging in progress.
 flashes green	Overtemperature warning The charging station reduces the charging current to prevent overheating and deactivation.
 flashes white	Wait time Connection to the vehicle is established. Charging at the vehicle or at the charging station has been terminated. Waiting for removing the charging cable from the vehicle.
 lit red permanently  Flashes red	Fault A fault prevents the vehicle from charging. ➔ See Chapter 9 "Troubleshooting" on page 22.

7.3 Multi-function button

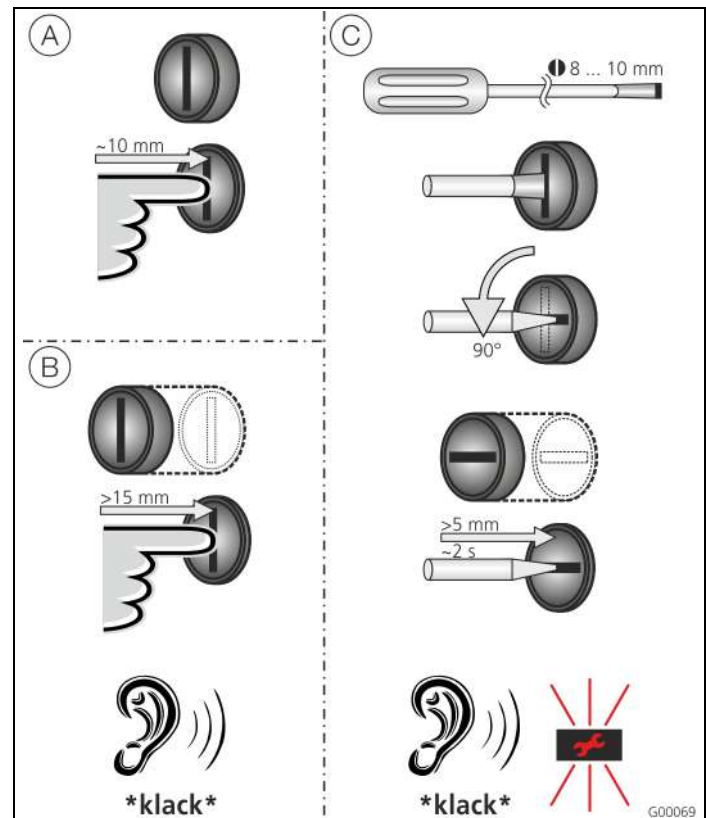


Fig. 18: Multi-function button

The multi-function button has several functions:

- (A) Terminating an on-going charging process (only for charging stations without authorisation) and acknowledging of errors.
- (B) Re-activating the residual current circuit breaker (RCCB) and / or circuit breaker (CB) in case of failure.
- (C) Triggering the test-function of the residual current circuit breaker (RCCB).

7.3.1 Terminating an on-going charging process

The charging process by charging stations without authorisation (Start (E), Light and Pro) can be terminated with the multi-function button.

- Press the multi-function button to terminate a charging process.

7.3.2 Re-activating the residual current circuit breaker and circuit breaker

The multi-function button can be used to re-activate the residual current circuit breaker (RCCB) and circuit breaker (CB) inside the charging station mechanically from the outside without opening the enclosure.

1. Press the multi-function button until you feel resistance.
2. Now press the multi-function button firmly up to the end position.

Residual current circuit breaker (RCCB) and circuit breaker (CB) are re-activated and charging station is operational again.

7.3.3 Testing the integrated residual current circuit breaker (RCCB)

The multi-function button can be used to trigger the test-function of the residual current circuit breaker (RCCB) inside the charging station from the outside without opening the enclosure.

1. Insert a flat screwdriver with a blade width of 8 to 10 mm in the slot of the multi-function button.
2. Turn the multi-function button by 90 ° anti-clockwise.
3. Press the multi-function button briefly (about 2 seconds).

The residual current circuit breaker (RCCB) is triggered and the fault display on the LED info bar flashes red.

4. Re-activate the residual current circuit breaker (RCCB) (see Chapter 7.3.2 "Re-activating the residual current circuit breaker and circuit breaker" on page 19).

7.3.4 Acknowledging faults

Faults are indicated by the "Fault" LED on LED info bar. Some faults can be resolved by acknowledging.

- Press the multi-function button to acknowledge a fault.
- ➔ See also Chapter 9 "Troubleshooting" on page 22.

7.4 Key switch

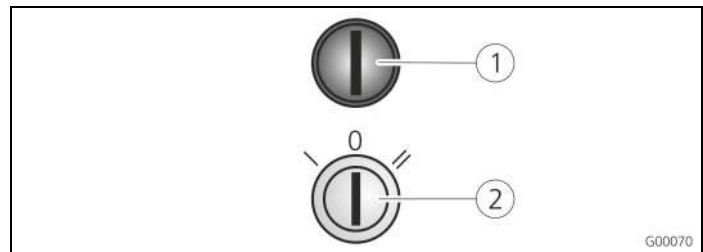


Fig. 19: Key switch (only version "Basic")

- ① Multi-function button ② Key switch

The key switch can be used to control the authorisation of charging processes.

- Position 0 (neutral position): charging function disabled.
- Position I (momentary): charging function enabled once-off.
Only one charging process is possible. If another charging process should be authorised, you need to key to position I again.
- Position II (engaging): charging function is permanently enabled.

The key can be removed in switch positions 0 and II.

7.5 Charging the vehicle

⚠ Warning

Risk of injury due to incorrect handling!

Using an extension cable or second charging cable may result in electric shock or cable fire. Using extension cables is not permitted.

- Never use more than one charging cable for connection the electric vehicle to the charging station.
- Use only undamaged charging cables.

7.5.1 Starting the charging process

The charging station can be used without prior authorisation. Charging stations with key switch require prior authorisation by using the key switch.

- ➔ See Chapter 7.4 "Key switch" on page 19.

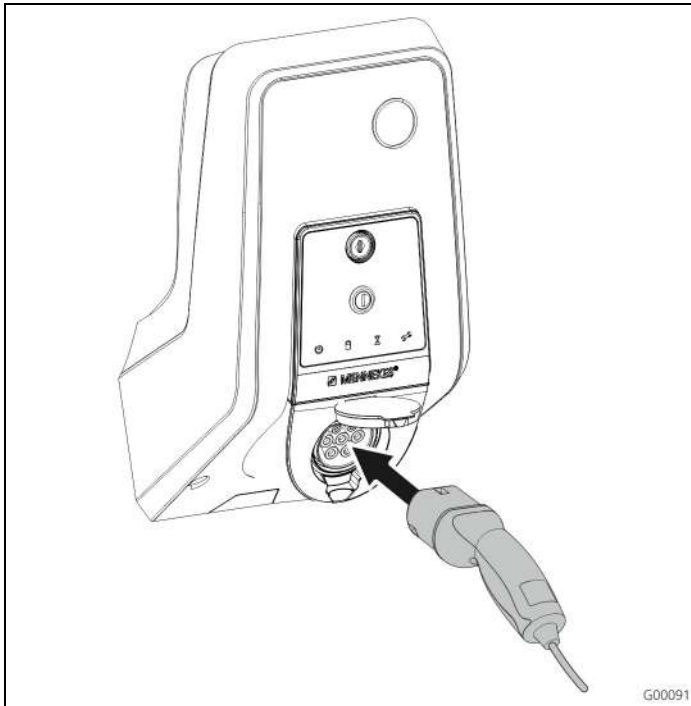


Fig. 20: Connecting the charging cable

Make sure that vehicle and charging cable are suitable for mode 3 charging.

1. Connect the charging cable to the vehicle.
2. Insert the plug of the charging cable completely into the charging socket type 2 at the charging station (only for charging stations with integrated charging socket type 2).

The charging station performs now the following steps automatically:

- Detecting the current-carrying capacity of the charging cable with resistance coding. Unsuitable charging cables are rejected.
- It checks that the requirements for proper charging have been met.
- Communicating with the vehicle using the CP contact. The charging current upper limit is communicated to the vehicle with a PWM signal. The protective earth connection is checked at the same time.
- The charging station interlocks the charging plug mechanically (only for charging stations with integrated charging socket type 2). The vehicle signals the charging station that it is ready for charging. The charging process starts.
- The symbol "Charging in Progress" lights up on the LED info bar.

The maximum available charging current depends on the following points

- Power rating of the charging station.
- Features / version of the charging station.
- Current load capacity of the charging cable.
- Configuration of DIP switches in the charging station.

7.5.2 Terminating the charging process

Caution

Damage to the charging cable.

Pulling the cable may cause cable breaks and other damages.

Remove the charging cable only by pulling the plug from the charging socket.

1. Press the multi-function button on the charging station or terminate the charging process at the vehicle (see Chapter 7.3.1 "Terminating an on-going charging process" on page 18).
2. Remove the charging cable by pulling the plug from the charging socket.
3. Remove the charging cable from the vehicle.

7.5.3 Power failure during charging process

A power failure aborts the charging process.

The charging plug of charging stations with charging socket type 2 is unlocked and removed.

If the charging plug cannot be pulled out, an actuator has mechanically interlocked the charging plug.

➔ See Chapter 9 "Troubleshooting" on page 22.

8 Maintenance

Danger

Risk of death resulting from improper maintenance / repair.

There is a risk of injury for persons performing tasks for which they are neither qualified nor have received appropriate training.

- The maintenance / repair of the device may be performed only by persons who are familiar with this task, have been instructed with regard to the associated hazards and who possess the necessary qualifications.
- All technical safety conditions have to be satisfied prior to performing maintenance / repairs.

Danger

Risk of death by electric shock!

Components have voltage applied.

Contact with current conducting parts results in an electric shock, burns or death.

When working with the electrical system, the following points must be observed:

- Disconnect device from voltage.
- Secure device from being turned back on.
- Ensure that no voltage is applied.
- Earth and short-circuit the unit.
- Cover neighbouring components that are under voltage and secure the danger area.

8.1 Maintenance plan

Carry out the following maintenance work at the specified intervals.

Maintenance interval every 6 months (biannually)

Part / component	Maintenance work
Enclosure	Visual inspection for defects or damage.
	Check the device for secure fastening.
	Clean the outside of the enclosure with damp cloth.
Front panel	Visual inspection for defects or damage.
Switching and safety devices	Visual inspection for defects or damage.
	Check the function of the circuit breaker (CB).
	See Chapter 7.3.3 on page 19.

Maintenance interval every four years

In addition, carry out all maintenance specified in "Maintenance interval every 6 months (biannually)".

Part / component	Maintenance work
Cable connections and connectors	Check for firm seat
	Visual inspection for defects or damage.
Charging station	Visual inspection for defects or damage.
	Check function
System check	Check the system
	➔ See Chapter 6.2.1 on page 16.

9 Troubleshooting

Danger

Risk of death resulting from improper maintenance / repair.

There is a risk of injury for persons performing tasks for which they are neither qualified nor have received appropriate training.

- The maintenance / repair of the device may be performed only by persons who are familiar with this task, have been instructed with regard to the associated hazards and who possess the necessary qualifications.
- All technical safety conditions have to be satisfied prior to performing maintenance / repairs.

Danger

Risk of death by electric shock!

Components have voltage applied.


Contact with current conducting parts results in an electric shock, burns or death.

When working with the electrical system, the following points must be observed:

- Disconnect device from voltage.
- Secure device from being turned back on.
- Ensure that no voltage is applied.
- Earth and short-circuit the unit.
- Cover neighbouring components that are under voltage and secure the danger area.


EN

9.1 Troubleshooting by a qualified electrician

Fault	Cause	Notes on troubleshooting
 lit red permanently	Self-test of the charging station is faulty.	Acknowledge the fault with multi-function button.
	Thermal shutdown of the charging station.	Wait until the charging station has cooled down.
	Internal system error.	Acknowledge the fault with multi-function button. If you cannot rectify the fault, contact your service partner.



Iris Hellas
Technology Innovations
www.irishellas.com

Fault	Cause	Notes on troubleshooting
 flashing red	Residual current circuit breaker (RCCB) or circuit breaker (CB) in the charging station has tripped.	Re-activate residual current circuit breaker (RCCB) or circuit breaker (CB). ➔ See Chapter 7.3.2 on page 19.
	Error in the power supply to the charging station (incorrect phase sequence, missing phase, etc.).	Check the power supply.
	Charging plug not interlocked.	Acknowledge the fault with multi-function button. Disconnect charging cable and plug in again.
	Incorrect or faulty charging cable.	Acknowledge the fault with multi-function button. Disconnect charging cable and plug in again. Check charging cable and replace if necessary.
System monitoring indicates faulty operating state.	E.g. incorrect phase sequence, missing phase / neutral, undervoltage.	Check the power supply. ➔ See Chapter 9.3 on page 24.
Charging plug cannot be removed from the charging station.	Failure of the unlocking function.	Unlock the charging plug manually. ➔ See Chapter 9.2 on page 24.
LED info bar does not light up.	No power supply to the charging station.	Check the power supply.
	Control fuse in the charging station has tripped.	Re-activate control fuse.

If you cannot rectify the error or fault, contact your local service partner.

9.2 Emergency release of charging plug

If the unlocking function fails, the charging plug may be mechanically locked in place in the socket panel by an actuator.

The charging plug cannot be removed and must be unlocked manually.

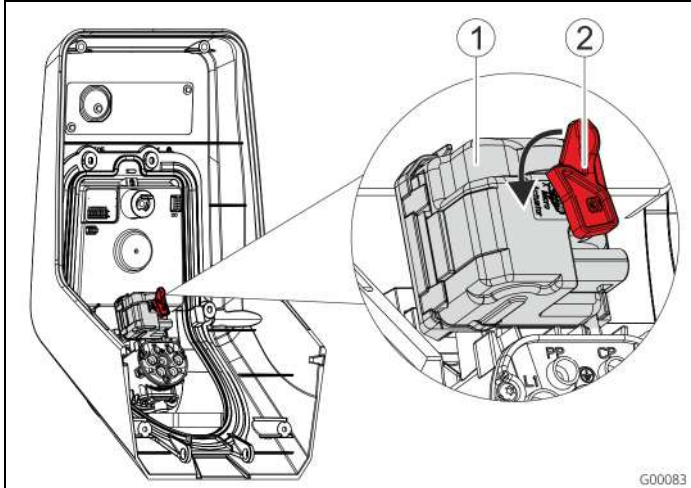


Fig. 21: Emergency release of the charging plug

1. Open the charging station, see Chapter 5.3 "Opening the charging station" on page 11.
2. Attach the red lever (2) to the square shaft of the actuator (1).
- ⚡ The red lever is attached with a cable tie close to the actuator.
3. Turn the red lever on the actuator by 90 ° anti-clockwise.
4. Remove the charging plug.
5. Remove the red lever and attach it close to the actuator with a cable tie.
6. Close the charging station, see Chapter 6.3 "Closing the charging station" on page 17.

9.3 System monitoring

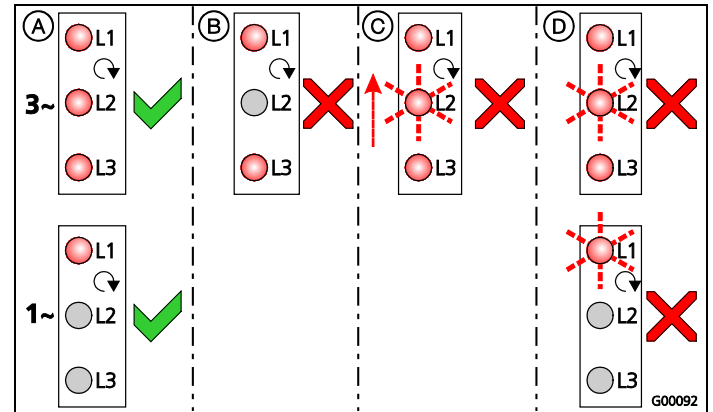


Fig. 22: System monitoring

The system monitor checks the three phases (L1, L2, L3) and the neutral conductor (N) of the charging station's power supply for correct phase sequence, phase failure or undervoltage.

- ⚡ In single-phase charging stations (3.7 / 7.4 kW), the system checks only for mains failure and undervoltage.

The operating status is indicated by three LEDs:

No.	Description
(A)	All LEDs light up. All three phases are present, clockwise rotating field is applied.
(B)	Phase failure / power failure (only for three-phase units) The corresponding LED is off.
(C)	Anti-clockwise rotating field (only for three-phase units). A flashing LED moves from L3 ... L1.
(D)	Undervoltage between two phases or between phase and neutral conductor. L - L = < 295 V L - N = < 170 V The corresponding LED flashes.

10 Disassembly, Storage and Disposal

10.1 Disassembly

Danger

Risk of death by electric shock!

Components have voltage applied.

Contact with current conducting parts results in an electric shock, burns or death.

When working with the electrical system, the following points must be observed:

- Disconnect device from voltage.
- Secure device from being turned back on.
- Ensure that no voltage is applied.
- Earth and short-circuit the unit.
- Cover neighbouring components that are under voltage and secure the danger area.

Disassemble as follows:

1. Make sure that the power supply is turned off.
2. Disconnect the supply line.
3. Remove the charging station.

10.2 Storage

The storage spaces must be dry and temperature regulated. See chapter 4 "Technical Data" on page 9 for ambient storage conditions.

10.3 Disposal

The disposal of old devices must comply with the common national and regional laws and regulations. Ecological considerations must be taken into account.

Old devices and batteries cannot be disposed of with household rubbish.

- Dispose of the device in accordance with the applicable environmental regulations of your country.
- Dispose of old devices through your specialised dealer.
- Dispose of old batteries in a recycling bin for old batteries or through the specialised dealer.
- Dispose of the packaging material in the recycling bin for cardboard, paper and plastic.

11 Appendix

11.1 Accesories

Part number	Description
On request	Channel adapter for cable ducts
36113	Charging cable Mode 3, 32 A, 3P+N+PE
320011	Test box

11.2 Glossary

Term	Explanation
CP	Control pilot Designation of the plugs and sockets contacts / line, over which the information is communicated.
CPX communication box	MENNEKES designation of the PWM module or charging controller.
RCCB	Residual current circuit breaker Type A = sensitive to pulse currents, type B = sensitive to universal currents.
CB	Circuit breaker
Mode 3 (IEC 61851)	Charging mode for vehicles with a type 2 communication interface on the charging socket.
PP	Proximity Pilot or Plug Present Contact for determining the current load capacity of the charging cable and activating the immobiliser.
PWM	Pulse-width modulation Transmission type of data communication.

Term	Explanation
PWM module	Element of the charging station (in mode 3 charging) for communicating with the vehicle.
Type 2 (IEC 62196-2)	Single- and three-phase charging couplers with identical plug geometry for charging powers from 3.7 to 44 kW AC.
Resistance coding	The charging cables feature resistance coding that is analysed by the charging system. The resistance value defines the maximum allowable current of the charging cable. The charging system will reject cables with insufficient current load capacity.

11.3 Index

A

Accessories	16, 26
Ambient conditions	9, 10
Appendix	26
Assembly	6, 11

C

Charging cable storage	17
Charging current upper limit	15
Charging plug	
emergency release	24
Charging process	
power failure	20
starting	19
terminating	18, 20
Charging station	
closing	17
opening	11
Choice of location	10
Commissioning	15
Configuration switches	7, 15
Connector systems	4
CPX communication box	8

D

Delivery Contents	5
Disassembly	25
Disposal	25

E

Electrical connection	13
Emergency release	24
Emergency release of charging plug	24
Exterior view	6

F

Fault	
acknowledging	19
Front panel	6, 8

G

General data	9
General Information	2

Glossary	26
----------------	----

I

Identification Plate	5
Index	26
Installation	10
Intended Use	3
Interior view	7

K

Key switch	19
------------------	----

L

LED info bar	16, 18
switching colour scheme	16

M

Maintenance	21
Maintenance plan	21
Minimum distances	11
Multi-function button	18

O

Operation	17
-----------------	----

P

Personnel qualification	3, 13
electrician	3
Product description	3, 4

R

Re-activating CB	19
Re-activating RCCB	19
Returning Devices	3

S

Safety	2
Safety Information	3
Storage	25
Switching on	16
System check	16
System monitoring	16, 24

T

Technical Data	9, 25
Terminals	14

Troubleshooting	16, 17, 18, 19, 20, 22
Turning on	16

U

Unpacking.....	10
----------------	----

V

Voltage supply	13
----------------------	----

W

Warranty	3
----------------	---